



Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Western Regional Office • 436 Dwight Street, Springfield MA 01103 • 413-784-1100

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Matthew A. Beaton
Secretary

Martin Suuberg
Commissioner

Willow Hill Road Solar, LLC
20 Park Plaza, Suite 320
Boston, MA 02116
Attention: Mitchell Jacobs

Nov. 24, 2015

RE: Lee-DSWM-Landfill
Willow Hill Road
Schweitzer-Mauduit – Capped Landfill
Post Closure Use – Solar Power
Permit Approval
BWPSW36
Transmittal #X267230
15-150-002

Dear Mr. Jacobs:

On October 16, 2015, the Massachusetts Department of Environmental Protection (the Department), Solid Waste Section, received the BWPSW36 Major Post Closure Use permit application (the application) from you for the construction and operation of a Solar Farm at the closed and capped Schweitzer-Mauduit International, Inc. (SWM) paper sludge landfill (the landfill), located off Willow Hill Road in Lee, MA. The application was prepared by Tighe & Bond, Inc. (T&B) on behalf of the applicant, Willow Hill Road Solar, LLC. The application was signed and stamped by Brian S. Huntley, Massachusetts-registered Professional Engineer (P.E.) #46273, of T&B, and the application was also signed and certified by Jamie Fordyce, Manager of Willow Hill Road Solar, LLC. The engineering drawings were signed and stamped by Francis J. Hoey III, Massachusetts-registered P.E. #40111 and Brian Huntley. On November 18, 2015 MassDEP received additional supporting information from T&B as part of the application. The application consists of the completed transmittal form, application form, text describing the proposed use, engineering calculations, and twelve engineering drawings.

Summary of Proposal

Schweitzer-Mauduit, Inc. (SMI) is the owner of the landfill. The landfill was closed and capped in 1994 in accordance with MassDEP regulations and requirements, and the cap consists of a six-inch sand gas vent layer, a 40-mil impermeable HDPE geomembrane, a 15-inch sand drainage layer, and an 8-inch topsoil layer. A perimeter active landfill gas collection system is operated along the

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northern perimeter of the landfill by SMI to prevent landfill gas from migrating off-site towards Willow Hill Road. A Comprehensive Site Assessment (CSA) was completed for the landfill in 1993/1996, and annual post-closure groundwater and landfill gas (LFG) monitoring has been completed for the landfill since 1995.

The applicant and permittee for the Solar Farm Post-Closure use permit is Willow Hill Road Solar, LLC (Willow Hill Road Solar), which will construct and operate the Solar Farm. The application proposes the construction and maintenance of a 2.7 megawatt (MW) photovoltaic solar farm on approximately 7 acres of the capped landfill and 10.5 acres off the landfill cap. The additional, off-cap portion of the Solar Farm will be located on the contiguous SMI landfill property, immediately west and southwest of the landfill stormwater retention basin, towards the residences on Mill St. and Sunshine Ave. in Lenox and Lee. Approximately 3 acres of the westernmost Solar Farm area will be located in the Town of Lenox. The Solar Farm will be constructed as follows:

- The existing, off-cap access road near the landfill entrance will be improved by the addition of 6 inches of gravel to its surface;
- Within the landfill cap area, pre-cast concrete foundation footings (ballasts) will be placed on the vegetative support layer, on the topslope area of the cap;
- Off the landfill cap area, ground screw or driven posts will be used as footings;
- Photovoltaic (PV) panel racks will be installed on the ballasts (on-cap) and on the ground screws/driven posts (off-cap);
- Approximately 8,750 solar panels (PV modules) will be installed on the panel racks;
- Approximately 84 string inverters will be installed on the panel racks, where DC electrical power from the solar panels will be converted to AC power;
- Three electrical equipment (transformer) pads will be installed off the landfill cap, where electrical power from the string inverters will be conveyed, and stepped up to the line voltage of the utility grid;
- Low-voltage electrical power output from the solar panels will be conveyed to the transformer pads via above-ground electrical cables on cable trays or directly on the panel racks;
- Medium-voltage electrical power will be conveyed off the landfill from the transformer pads via buried conduit off the landfill cap, in accordance with electrical code, to the Eversource utility connection at new utility poles to be installed off Willow Hill Road, west of the landfill entrance.

Erosion and sediment barriers will be placed around the entire work zone of the Solar Farm prior to construction. Approximately 8 acres of tree clearing will be completed in the off-cap areas; a buffer of trees at least 25 feet wide will generally remain along the SMI property line towards the abutting residences on Mill Street and Sunshine Avenue, except one small section where tree clearing may extend within approximately 10 feet of the SMI property line. The shortest setback distance of solar panels to existing residences would be approximately 180 feet, to a residence on Sunshine Avenue.

The Solar Farm work zone is outside the 200-foot Riverfront Buffer and 100-foot wetlands buffer zone, and is not located within any mapped Rare Species or Rare Wildlife habitats. The project site

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is located within the Upper Housatonic River Area of Critical Environmental Concern (ACEC), therefore an Environmental Notification Form (ENF) was submitted to the Massachusetts Environmental Policy Act (MEPA) office on September 30, 2015. The ENF was published in the Environmental Monitor on October 7, 2015, and the MEPA Certificate was issued on November 6, 2015, stating that no further MEPA review was required.

At MassDEP's request, on November 18, 2015 T&B submitted a plan (Figure 1 – Clearing and Filling Figure), showing five areas on the landfill cap which have settled and which pond stormwater. These five settled/ponded areas will be remediated by the addition of clean soil fill (bank-run gravel) and 8 inches of topsoil, seeded with grass, graded to allow stormwater to flow off the cap.

The existing access road entrance off Willow Hill Road will be used for delivery of materials, including photovoltaic panels, panel racks, precast footings, and electrical equipment. Only low-ground pressure equipment, 7 pounds per square inch (PSI) or less will be used on the landfill cap. Field personnel from T&B will be on-site during all construction activities on the cap, to monitor for potential damage to the cap. Ballasts/solar panels will not be placed over the rock-lined stormwater swales or the LFG piping on the landfill.

The concrete foundations (ballasts) for the photovoltaic racks on the landfill cap will be pre-cast off-site. At each ballast location, the ballast will be placed directly on the VSL, and crushed stone or clean, crushed asphalt, brick and concrete (ABC) material will be used in levelling the ballast. Ballasts on the exterior of the array will be 2.75 feet wide, 1.5 feet thick, and 9 feet long; ballasts on the interior of the array will be 2.33 feet wide, 1.5 feet thick, and 9 feet long. The panel racks will be bolted to the footings, and the photovoltaic panels will be mounted to the racks. DC electrical transmission wiring from the racks will run in cable trays on the racks to 85 string inverters, where DC power will be converted to AC power. Each string inverter will be mounted on a concrete ballast 3 feet long, 3 feet wide, and 1 foot thick, placed on 6 inches of dense graded crushed stone at the top of the VSL. All photovoltaic rack assemblies and above-ground wiring will be kept at least 10 feet from any landfill gas vents.

AC power from the string inverters will be conveyed to three transformer pads off the landfill cap. Each transformer pad will include a three-phase transformer, panel, stepdown transfer, meter, and data acquisition system. Specifications included in the application show that the electrical equipment, including the inverters and transformers, will be in metal boxes (cabinets) with no opportunity for worker entry into the cabinets.

T&B performed geotechnical analyses for the loading on the pre-cast ballasts on the landfill cap, settlement of the ballasts, and overturning and sliding stability of the ballasts. The maximum surface slope on which ballasts will be placed will be 9% grade. Uplift, overturning and sliding calculations were based on a modeled wind velocity of 90 miles per hour. T&B concluded that:

- The maximum loading (bearing pressure) of the ballasts on the VSL was 2.85 pounds per square inch (PSI);
- The maximum loading (bearing pressure) of the ballasts and the underlying crushed

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- stone on the VSL was 3.3 PSI;
- The maximum settlement of the ballasts was less than 0.5 inches;
- The maximum settlement estimate would produce a strain on the geomembrane liner of the landfill cap of 0.01%, well below the industry standard of 5% allowable strain;
- The Factor-of-Safety (FOS) for the worst-case ballast sliding scenario (north wind, uplift) was 1.59, above the minimum recommended FOS of 1.5.
- The FOS range for worst-case ballast overturning was 1.51, above the minimum recommended FOS of 1.5.
- All analyses showed minimal loading and settlement, no stresses or settlement which would damage the impermeable layer of the landfill cap, and acceptable FOS for overturning and sliding .

T&B performed updated stormwater analyses for changes to stormwater runoff from the proposed work; T&B concluded that there will only be small changes in stormwater runoff, and the existing stormwater control system can handle the flows. T&B states that the proposed construction and operation of the Solar Farm will not alter the conclusions of the previous Qualitative Risk Assessment for the landfill (completed as part of the Comprehensive Site Assessment); i.e. that there are no significant risks to human health and the environment posed by the landfill, or by the presence of the Solar Farm on the landfill.

There are no proposed changes to the existing, long-term maintenance and monitoring program for the landfill. Annual groundwater and LFG monitoring will continue as required by MassDEP. The landfill will continue to be inspected annually and mowed semi-annually, and the Solar Farm will be inspected semi-annually. If erosion is observed, the surface will be stabilized. Site work on the cap will be avoided during periods of heavy precipitation or when cover soils are saturated and soft, to avoid damage to the cap.

The landfill perimeter is currently surrounded by existing 6-foot chain-link fence on its entire perimeter. Additional, 7-foot tall chain link fence will be installed around the entire perimeter of the portion of the Solar Farm which is off the landfill cap. Decommissioning of the solar farm, if required in the future, would consist of removal of all structures, including foundations, and restoration of the landfill cap to its original condition. SMI previously established a Financial Assurance Mechanism (FAM) for the post-closure maintenance and monitoring of the landfill, in the amount of \$562,000.

SMI and Willow Hill Road Solar entered into a Power Purchase Agreement (PPA) and lease on July 27, 2015, which extends for a period of 20 years. T&B states that construction of the solar farm will be completed by March of 2016.

MassDEP Determinations

Personnel of MassDEP have reviewed the Post-Closure Use permit application for the Schweitzer-Mauduit Landfill in accordance with MGL c. 111 s. 150A, MGL c. 30A, 310 CMR 19.000, and

MassDEP's publication Landfill Technical Guidance Manual (the LAC), revised in May, 1997. MassDEP has determined that the application is approved in accordance with MGL c. 111, s. 150A and MGL c. 30A, subject to the conditions outlined below.

1. Willow Hill Road Solar, LLC is the permittee for the Solar Farm construction and operation. Schweitzer-Mauduit, Inc. (SMI) is the owner and operator of the landfill.
2. A third-party, independent Massachusetts-registered professional engineer knowledgeable in landfill design and construction (the "Engineer") shall supervise the overall construction of the Solar Farm. The Engineer and/or a qualified QA/QC officer shall be present at the site at all times during road building, fence installation, ballast delivery and placement, installation of the electrical equipment pads, and rack/panel construction, when construction equipment is operating on the landfill. The QA/QC officer shall work under the direct supervision of the Engineer.
3. The Engineer's duties shall include, but not be limited to: oversee installation and construction of the components of the Solar Farm as outlined above; oversee quality assurance/quality control (QA/QC) testing and verify all data generated through the testing program; document all construction and QA/QC activities; and submit monthly construction progress reports to the MassDEP and Willow Hill Road Solar LLC, which shall summarize the work performed during the month.
4. The Engineer's monthly construction report shall include at a minimum the following:
 - (A) Any deviation from compliance with requirements approved or set forth in this Permit;
 - (B) Any actions taken to correct such deviations, as required by MassDEP or recommended by the Engineer;
 - (C) Schedules to correct identified problems;
 - (D) Review of quality assurance/quality control (QA/QC) testing data generated, and documentation for construction and QA/QC activities;
 - (E) The inspection report shall be signed and dated by the Engineer certifying that to the best of his/her knowledge all information is accurate and complete; and
 - (F) The Engineer shall submit one copy of the monthly report to the MassDEP no later than seven (7) days following the end of the previous month.
5. Upon completion of the Solar Farm installation, the Engineer shall submit to MassDEP a completion report, signed and sealed by a Massachusetts-registered P.E., certifying that the work was completed in accordance with the application and the conditions of this permit.
6. Willow Hill Road Solar LLC and the Engineer shall be considered operators with respect to the construction of the Solar Farm and compliance with plans and specifications. Willow Hill Road Solar LLC shall also be considered an operator during the operational life and decommissioning of the Solar Farm. As such, the Department may take enforcement action against Willow Hill Road Solar LLC or the Engineer, consistent with

its authority under applicable Massachusetts law and regulation, for any failure to construct the Solar Farm in accordance with approved plans and specifications of which Willow Hill Road Solar LLC or the Engineer were, or should have been, aware.

7. Construction work for the Solar Farm on the landfill cap shall not commence until a Financial Assurance Mechanism (FAM) for the Solar Farm project is in place in accordance with 310 CMR 19.051 .
8. The permittee and their contractor(s) are responsible to ensure that all necessary precautions are taken to protect the health and safety of workers and the general public during both construction and maintenance of the solar farm. A copy of the site-specific Health & Safety Plan for the construction and maintenance of the Solar Farm shall be submitted to the MassDEP prior to the beginning of any construction work, which shall include protocols for monitoring of landfill gas as needed (**a minimum of one landfill gas monitor shall be present and in use during all construction activities on the cap**), and protocols for modifying work practices if landfill gas is detected at levels deemed unsuitable.
9. Either prior to, or as part of, the Solar Farm construction, the five settled/ponded areas on the landfill cap depicted on Figure 1 – Clearing and Filling Figure, dated November 18, 2015, shall be remediated by the addition of clean soil fill (bank-run gravel) and 8 inches of topsoil, seeded with grass, graded to allow stormwater to flow out of the ponded/settled areas and off the cap. This work can be completed by either the owner or the permittee. MassDEP reserves the right to require, as may be deemed necessary, remediation of any other settled/ponded areas on the landfill cap, during or following Solar Farm construction.
10. All disturbance of the landfill cap shall be limited to the proposed installations on the vegetative support layer of the cap, i.e. - no excavations shall be performed into the vegetative support layer without prior approval of MassDEP, and there shall be no excavations, disturbances or penetrations of any kind into the sand drainage layer of the cap. All concrete footings (ballasts) on the cap shall be placed on the vegetative support layer of the cap. There shall be no penetrations (utility, conduit or other) at the base of any rack ballasts. There shall be no penetrations of any kind of the impermeable layer of the cap.
11. The permittee and their contractor(s) are responsible to ensure that the transformer boxes on the electrical equipment pads will not accumulate landfill gas within the boxes during the construction and operation of the solar farm. Any landfill gas levels exceeding 10% of the Lower Explosive Limit (% LEL) within any electrical equipment box shall trigger the requirements of 310 CMR 19.132(4)(g), for notification and action. All utility penetrations of the boxes shall be fully sealed (both outside and within each conduit) against landfill gas entry,
12. If MassDEP determines that nuisance noise conditions are being created off the landfill property by the electrical equipment of the Solar Farm, MassDEP reserves the right to require noise studies and/or the installation of noise mitigation measures.

13. All necessary precautions shall be taken to ensure that the proposed construction and maintenance work associated with the Solar Farm shall not in any way damage the impermeable layer of the landfill cap, landfill stormwater control structures, landfill monitoring wells, landfill gas venting wells, the passive landfill gas vents located within the landfill cap, or the perimeter active landfill gas collection and treatment system. If any damage occurs to any of the above-listed landfill components, SMI or Willow Hill Road Solar LLC shall notify MassDEP immediately (within 24 hours maximum), a written plan for repair of the components shall be submitted to MassDEP within 48 hours, and any repair work shall be completed on the schedule determined by MassDEP.
14. Prior to the commencement of construction activities, all landfill gas vents, landfill gas monitoring wells, landfill gas piping, groundwater monitoring wells, and other existing, above-ground structures of 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 cap area, including the landfill gas monitoring wells located north of the landfill.
15. **Vehicles operating on the landfill cap shall only be low-pressure construction equipment (with ground pressures of 7 PSI or less)** which shall operate in accordance with the remaining conditions of this permit. All operators of vehicles entering the cap 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 cap components. A six-inch thick, crushed stone travel path for low-ground-pressure equipment shall be installed on the landfill cap, from the access road entrance to the eastern portion of the cap.
16. Low-pressure construction equipment operating off the access roads shall limit turning by tracks on the vegetative support layer and repeated passes over the same areas as much as possible. In no case shall rutting or other disturbance extend more than 6 inches down into the vegetative support layer, or to the sand drainage layer. If MassDEP determines that the use of equipment is creating the potential for damage to the sand drainage layer or the impermeable layer, the usage of such equipment shall cease immediately upon notification by MassDEP, and alternative work practices for operation of equipment of the cap (i.e. placement of geotextile and crushed stone, as proposed) in the affected area(s) shall be instituted. Construction of the Solar Farm shall not create areas of ponded stormwater on the landfill cap, and any such ponded areas shall be remediated as part of the Solar Farm construction or operation.
17. If Willow Hill Road Solar LLC intends to use different solar panels, panel racks, ladder racks, or electrical equipment other than that detailed in the application, Willow Hill Road Solar LLC shall notify MassDEP and provide documentation that the alternative equipment does not increase calculated ground pressures or decrease calculated Factors of Safety for solar array stability.
18. Willow Hill Road Solar LLC and their contractor(s) are responsible to ensure that the

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proposed work complies with all applicable local, state and federal electrical codes and permits, including the National Electrical Code (NEC), 2011 Edition, Article 690 –“Solar Photovoltaic (PV) Systems”. Willow Hill Road Solar LLC and their contractor(s) are also responsible to ensure that the proposed work complies with all other applicable local, state and federal regulations.

19. Herbicides shall not be used on the landfill property during the construction or operational life of the solar array.
20. Following completion of installation, inspections of the Solar Farm shall be performed on a quarterly basis by a qualified, third-party inspector, and quarterly inspection reports shall be submitted to MassDEP. After one year of quarterly inspections, Willow Hill Road Solar LLC may petition MassDEP in writing to reduce the frequency of inspections. Environmental monitoring shall continue to be performed at the landfill by the owner or operator as outlined in existing correspondence to SMI from MassDEP. The entire landfill shall continue to be maintained (inspected and mowed) on a minimum of an annual basis. Any erosion problems, settlement problems, or other issues observed on the landfill cap (inside or outside of the fenced Solar Farm) shall be reported to MassDEP and repaired immediately.
21. This post-closure use permit shall be valid for a period of 30 years from the date of this permit, provided that MassDEP may amend the term of the permit in accordance with an approved modification pursuant to either 310 CMR 19.039 or 19.040. This permit is issued to Willow Hill Road Solar LLC for the Solar Farm construction and operation. **If Willow Hill Road Solar LLC intends to transfer this permit to any other entity for operation of the Solar Farm, the requirements at 310 CMR 19.044, Transfer of Permits, shall be satisfactorily completed.** If the permittee, owner or operator discontinues operation of the Solar Farm, the permittee, owner or operator is responsible to perform decommissioning activities as outlined in the permit application, including removal of the solar array equipment, ballasts, and associated crushed stone. If Willow Hill Road Solar LLC intends to operate the Solar Farm after the expiration of this permit, Willow Hill Road Solar LLC is required to submit a request for a renewal of the permit at least 90 days prior to the expiration of the permit.
22. MassDEP and its agents and employees shall have the right to enter upon the landfill at all reasonable times, 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. This right of entry and inspection shall be in addition to MassDEP’s access authorities and rights under applicable federal and states laws and regulations, as well as any permits or other agreements between the Permittee and MassDEP.
23. MasDEP reserves the right to require additional or increased monitoring or maintenance activities in the event that the post-closure use is or may be having a detrimental effect on

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the landfill cap or appurtenances. MassDEP reserves all rights to suspend, modify or rescind this permit, should the conditions of this permit not be met, should the Solar Farm create nuisance conditions or threats to public health, safety or the environment, or should MassDEP otherwise determine that continued post-closure use is negatively impacting the landfill cap or appurtenances.

Pursuant to 310 CMR 19.033(5), any person aggrieved by the issuance or denial of this 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. c. 111, s. 150A and c. 30A not later than thirty [30] days following the receipt of the final permit. 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. 30 A. 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 remain effective or become effective at the conclusion of the 30 day period.

Any aggrieved person intending to appeal the decision to the superior court shall provide notice to MassDEP of said intention to commence such action. Said Notice of Intention shall include the MassDEP File Number (15-150-002) and shall identify with particularity the issues and reason(s) why it is believed the approval 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 made the decision. The appropriate addresses to which to send such notices are:

General Counsel
Department of Environmental Protection
One Winter Street-Third floor
Boston, 02108

Regional Director
Department of Environmental Protection
436 Dwight Street - Fifth Floor
Springfield, MA 01103

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 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 public health or environmental impact of the permitted activity. This approval pertains only to the Solid Waste Management aspects of the proposal and does not negate the responsibilities of the owners or operators to comply with any other local, state or federal laws and regulations now or in the future.

If you have any questions about this matter, please contact Larry Hanson of this office at 413-755-2287.

Sincerely,

Schweitzer-Mauduit Landfill
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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.

Daniel Hall
Section Chief, Solid Waste Management

cc: Tri-Town Health Dept – Jim Wilusz, Director
Lee – Electrical Inspector
Lee – Board of Selectmen
Lenox – Electrical Inspector
Lenox – Board of Selectmen
T&B – Brian Huntley, P.E.
Diane Shepardson
EMI – Wendy DeWolf