NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Permits, Region 5
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November 12, 2024

Raymond Apy
President, Saratoga Biochar Solutions, LLC
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Saratoga Springs, NY 12866
rapy@northeasternbiochar.com

Re: Notice of Permit Applications Denial
5-4144-00187/00001; Solid Waste Management Facility Permit Application
5-4144-00187/00002; Air State Facility Permit Application
Facility: Saratoga Biochar Solutions
Moreau (T), Saratoga County

Dear Raymond Apy:

The New York State Department of Environmental Conservation (DEC) has determined that the applications submitted by Saratoga Biochar Solutions, LLC (SBS) for the above-referenced facility do not meet issuance standards for an Air State Facility permit, a Solid Waste Facility permit, or a case-specific Beneficial Use Determination.

Background and Procedural History

On October 29, 2021, SBS applied to DEC for Air State Facility and Solid Waste Facility permits to construct a biosolids pyrolysis facility at 55 Farnan Road in the Town of Moreau, Saratoga County. In addition, SBS petitioned DEC to issue a case-specific Beneficial Use Determination under 6 NYCRR Part 360.12 to regulate the biochar from pyrolysis as a soil additive and not a solid waste.

SBS proposes to accept digested and undigested biosolids from regional wastewater treatment plants in New York and western New England under an exclusive 10-year contract with New England Waste Services of ME, Inc., d/b/a Casella Organics. SBS proposes to receive the biosolids at an indoor facility under negative pressure to control odors. Because incoming biosolids would have a high moisture content, SBS would dry the biosolids to achieve a moisture content of 10 percent or less using two passes through a rotary dryer and by the admixture of ground, unadulterated wood waste.

The dried mixture would be screened for particle size, then pyrolyzed at temperatures of up to 1,300°F in a pressurized, rotating, oxygen-free reactor (calciner) inside a natural gas-fired kiln. SBS indicates that the pyrolysis outputs would be chemically stable inorganic solids (biochar) and synthetic gas (syngas). The biochar would be cooled, hydrated, pelletized, and sold as a soil amendment product. Syngas—mainly consisting of methane, sulfur, and volatile organic compounds (VOCs) desorbed from the biosolids-and-wood mixture—would be combusted in a thermal oxidizer. Heat from the oxidizer would be recycled to the rotary dryer. Exhaust from the various processes would be ducted through a series of air pollution control devices and vented to the atmosphere through a 115-foot-high stack.

SBS would construct the facility in three phases, each consisting of a production line capable of processing up to 10 wet tons per hour of biosolids (78,400 wet tons per year) and up to 1.5 tons per hour of wood waste (11,760 tons per year). The 2021 applications are for the construction of offices, a materials-receiving area, product handling and storage facilities, and Phase 1 of the process lines, which includes a biosolids dryer, pyrolysis reactor, and air pollution controls. SBS indicates that all manufacturing activities would be conducted indoors under negative pressure to mitigate odors and that all process exhaust air would be treated by air pollution controls to reduce emissions of particulate matter, ammonia, sulfur dioxide, and VOCs.

SBS estimates that air contaminant emissions from Phase 1 would include particulate matter, nitrogen oxides, sulfur dioxide, carbon monoxide, and carbon dioxide. The facility also has the potential to emit an array of contaminants present in biosolids including VOCs; polycyclic aromatic hydrocarbons (PAHs); metals (including arsenic, cadmium, lead, mercury, copper, nickel, and zinc); other hazardous or toxic compounds such as hydrogen chloride, chlorinated dibenzodioxins and dibenzofurans, other chlorinated hydrocarbons; and per- and polyfluoroalkyl substances (PFAS). The proposed facility design incorporates air pollution controls intended to capture or destroy these contaminants, namely: a thermal oxidizer for nitrogen oxides reduction and VOCs destruction; dry and venturi cyclones for coarse and fine particulate removal; packed bed wet chemical scrubbers for sulfur dioxide and ammonia removal; and bio-scrubbers for odor and sulfur dioxide control.

The facility would generate wastewater composed of effluent from the venturi, sulfur dioxide, ammonia, and bio-scrubbers; washdown water from the materials-receiving area; and sanitary wastewater. All wastewater is proposed be discharged to public sewers for treatment at the City of Glens Falls Wastewater Treatment Plant.

State Environmental Quality Review Act Compliance

In July 2021, several months before submitting to DEC, SBS applied to the Town of Moreau Planning Board for site plan approval. The Planning Board assumed lead agency status under the State Environmental Quality Review Act and designated the project as an unlisted action. On March 7, 2022, the Planning Board adopted a resolution finding that the SBS proposal would have no significant environmental impact and issued a negative declaration pursuant to 6 NYCRR Part 617.7.

Completeness Determination and Request for Additional Information

Following several rounds of comments and revisions to the applications, DEC issued notices of complete applications for the Air State Facility and Solid Waste Facility permits on January 17, 2024. DEC conducted two public comment hearings on February 7 and 8, 2024, and accepted written comments through March 18, 2024. DEC received more than 500 public comments, many raising concerns about local impacts of the facility, its air emissions, and wastewater discharges.

On June 6, 2024, DEC issued a Request for Additional Information (RFAI) under 6 NYCRR Part 621.14(b) asking SBS to supplement its applications with additional information necessary for the agency's determination regarding the permit applications. SBS responded to the RFAI on August 6, 2024, in a letter accompanied by revised application documents.

Applicable Regulatory Provisions

The Air State Facility and Solid Waste Management facility permits are subject to DEC's Uniform Procedures Act regulations at 6 NYCRR Part 621, as well as program-specific requirements at 6 NYCRR Parts 201, 212, 257, 360, 361, and 362 and relevant federal requirements, notably 40 CFR Part 61, Subpart E. The petition for a case-specific Beneficial Use Determination is subject to review under 6 NYCRR Part 360.12.

DEC's decision on the applications is also subject to the requirements of the Climate Leadership and Community Protection Act (CLCPA). The proposed facility would be a new source of greenhouse gas emissions (GHG) and co-pollutants and would be constructed within one mile of the Hudson Falls disadvantaged community (DAC) and two miles of the Glens Falls DAC. Accordingly, DEC must consider whether the project would be inconsistent with or would interfere with the attainment of the statewide greenhouse gas limits as described in CLCPA Section 7(2) and whether the project would disproportionately burden a DAC as described in CLCPA Section 7(3).

Per UPA regulations at 6 NYCRR Part 621.10(f), "[a]n application for a permit may be denied for failure to meet any of the standards or criteria applicable under any statute or

regulation pursuant to which the permit is sought ….” In addition, if, at any time during review of an application, DEC requests additional information necessary to make findings or determinations required by law, the “[f]ailure to provide such information by the date specified in the request may be grounds for permit denial” per 6 NYCRR Part 621.14(b).

Discussion

New York State fosters innovation in industry and environmental pollution control. To this end, DEC allows research, development, and demonstration activities under 6 NYCRR Part 201-1.16 and 6 NYCRR Part 360.18 for limited-size, non-commercial trials of developing processes.

Unlike a research, development, and demonstration activity, in the SBS proposal, the applicant has applied to construct a permanent, industrial-scale commercial facility using novel technology that SBS has only tested in two small trials. SBS would construct a plant intended to process up to 15 percent of the biosolids generated in New York without first demonstrating that its process works at scale and is protective of human health and the environment. While the proposed technology shows promise, there are too many unanswered questions about the effectiveness of the process and too little information about its safe implementation at an industrial scale to approve the SBS applications.

<u>The SBS Application Does Not Include Sufficient Information to Allow for Air State Facility Permit Issuance</u>

The SBS Air State Facility permit application does not satisfy 6 NYCRR Part 201-5.2(b)(8), which requires that applicants provide “a list including the type, rate and quantity of all regulated air pollutant emissions and high toxicity air contaminant emissions … in sufficient detail for the department to determine those State and Federal requirements that are applicable to the facility.” SBS also did not provide additional information requested by DEC to evaluate the application as required by 6 NYCRR Part 201-5.2(b)(10) and 6 NYCRR Part 621.14(b). For these reasons, DEC denies the Air State Facility permit application.

SBS proposes to process 10 tons-per-hour of biosolids (78,400 tons per year (tpy)) and 1.5 tons-per-hour of wood waste (11,760 tpy) on a continuous basis at each of three processing lines, but its application is based on extrapolation from the results of two small-scale, single-batch tests. Although Section 8.3 of the SBS Air State Facility permit application includes a discussion of dozens air contaminants that may be emitted at the facility, Attachment 4 makes clear that the source emission rates and potential-to-emit for many of these contaminants is based on non-representative testing of dissimilar

source material. SBS relies on one pyrolysis test from 2019 using 10 tons of pre-dried biosolids from Illinois, and another test from 2021 using only 500 pounds of Illinois biosolids mixed with 500 pounds of off-the-shelf processed biosolids product. Neither bench test used undigested biosolids from the New York and western New England service area proposed for the SBS facility, and neither was run using wood waste.

DEC's June 6, 2024 RFAI asked for calculations showing how SBS derived its emissions rates from the small-scale tests, and for calculations estimating facility-wide emissions which DEC determined, pursuant to 6 NYCRR Part 201-5.2(b)(10) and Part 621.14(b), is reasonably necessary to determine whether the proposal will meet permit issuance standards. SBS did not provide any information on the derivation of emissions rates. Because this is a novel technology, there are not readily available, accepted emissions factors that DEC can apply to satisfactorily verify the company's projections. Accordingly, DEC cannot reasonably determine which State and federal requirements are applicable to the facility.

SBS also has not provided data that DEC determined is reasonably necessary to ensure the facility would not be a source of PFAS emissions. SBS estimates that PFAS emissions would be below regulatory limits based on limited sampling of PFAS in the source materials and from estimated PFAS destruction efficiency in the thermal oxidizer. However, the SBS application materials do not provide a complete characterization of PFAS levels in its source material and available studies on the effectiveness of thermal oxidizers for PFAS destruction are inconclusive.

SBS's submissions include data for only six PFAS compounds in incoming biosolids, although SBS had tested for about two dozen PFAS in its bench tests. In the RFAI, DEC asked SBS to supplement its earlier submissions with data showing the average and maximum concentrations of all PFAS compounds and other contaminants tested for in biosolids in the company's proposed New York and western New England service area. SBS did not provide any additional data and instead referred DEC back to its earlier submissions. Without a complete PFAS profile of the feedstock, the company's estimates may understate the facility's emissions.

SBS's estimate that its thermal oxidizer will achieve 99.99 percent destruction efficiency for PFAS compounds is not supported by any clear demonstration of the effectiveness of this control technology. As summarized in the U.S. Environmental Protection Agency's April 2024 "Interim Guidance on Destruction and Disposal of PFAS Substances" at page 51, "[t]he operating conditions for some thermal oxidizers have the potential to effectively treat PFAS, but the data currently available are insufficient to make a determination about effectiveness." The limited studies available "do not present data on overall PFAS destruction or potential formation of PICs," (i.e., potentially harmful products of incomplete combustion), as noted on page 52 of the report.

For these reasons, the SBS application does not provide sufficient information to allow for issuance of an Air State Facility permit.

The SBS Application Does Not Include an Adequate CLCPA Analysis

When issuing permits, Section 7(2) of CLCPA requires all New York State agencies to consider “whether such decisions are inconsistent with, or will interfere with, the attainment of the statewide GHG emission limits established in Article 75 of the environmental conservation law.” Further, if issuance of a permit would be inconsistent with or interfere with the Statewide emission limits, then the agency must provide a detailed statement of justification. Finally, if the agency is issuing a permit that is inconsistent but nevertheless justified, then it must also identify alternatives or greenhouse gas mitigation measures.

DEC applies the requirements of Section 7(2) of CLCPA in the context of various permit applications. In 2022, DEC adopted Policy DAR-21: "The Climate Leadership and Community Protection Act and Air Permit Applications", to provide guidance for air permit applicants to comply with Section 7(2). DAR-21 lays out the stepwise requirements for DEC’s consideration of analyses submitted to DEC in support of such applications.

As outlined in DAR-21, DEC’s required review under Section 7(2) first includes an assessment of the GHG emissions associated with the project. DEC is required to consider whether such emissions are consistent with the Statewide limits. In the event of permit issuance that would be inconsistent with the limits, then the analysis must also include a justification and, finally, identification of alternatives and mitigation.

Here, SBS prepared a CLCPA analysis and estimated the facility's potential direct and upstream GHG emissions. In April 2022 comments on the CLCPA analysis, DEC identified shortcomings in the CLCPA analysis prepared by SBS and requested additional information. For example, DEC advised SBS that the company must consider mitigation for these emissions and that SBS could not claim carbon sequestration in biochar as mitigation for the facility's emissions. SBS declined to provide the information requested by DEC, writing in its August 6, 2024, response that the SBS facility is itself "a mitigating tool for curbing GHG emissions in the State of New York" because, by diverting biosolids from disposal in landfills, the facility would reduce GHG emissions compared to traditional biosolids management.

SBS did not provide the requested information or revise its CLCPA analysis. SBS continues to assert that carbon sequestration in biochar mitigates its emissions, and that the facility has "a carbon negative GHG footprint," while not providing the information required by DEC pursuant to CLCPA Section 7(2) and as outlined by DAR-

21. By failing to adequately respond to DEC's request for additional information consistent with DAR-21, the CLCPA analysis provided by SBS does not support DEC's obligation to fully consider whether issuance of a permit would comply with the requirements of CLCPA Section 7(2).

The SBS Application Does Not Meet Solid Waste Management Facility Permit Issuance Standards

DEC's solid waste management facility regulations at 6 NYCRR Part 360.16(b) require that permit applications contain "sufficient detail to … (3) demonstrate that the siting, design, construction, operation, and closure of the facility will be capable of compliance with the applicable requirements" of DEC's solid waste regulations. The SBS application fails to show that the proposed facility can appropriately control odors, or that wastewater will be managed in conformance with the State Pollutant Discharge Elimination System (SPDES) program. SBS also failed to provide characterization of its wastewater in response to DEC's RFAI, without which information DEC cannot fully evaluate the SBS application.

To comply with 6 NYCRR Part 360.19(i), SBS must show that the facility can "ensure that odors are effectively controlled so that they do not constitute a nuisance as determined by the department." For thermal facilities that process putrescible waste such as biosolids, "the waste storage area and tipping area must maintain a negative air pressure, compared to atmospheric conditions, when the facility is in operation" to satisfy 6 NYCRR Part 362-1.5(b)(5).

SBS proposes to accept both digested and undigested biosolids six days a week to be deposited into recessed pits in the facility for storage. Undigested and partially digested biosolids are a known source of strong, offensive odors. Although both the Solid Waste Facility and Air State Facility permit applications indicate in numerous places that the entire facility, including the biosolids receiving area, will be maintained under negative pressure and all process air will be directed through odor control equipment, the applicant's ventilation flow diagram provided in response to DEC's RFAI shows that approximately one-third of the airflow from the biosolids receiving area would be directed into the main building, diluted with make-up air, and exhausted to the atmosphere without further treatment.

DEC has determined that the proposed facility design does not meet the standard of 6 NYCRR Part 362-1.5(b)(5) and has not demonstrated that the operation of the facility would prevent odors at levels that could constitute a nuisance to neighboring residential properties.

DEC also does not have assurance that the SBS wastewater would be managed in compliance with the SPDES program. Under 6 NYCRR Part 360.19(b)(2), "[t]he owner

or operator of a facility must operate the facility in a manner that minimizes the generation of leachate and that does not allow any leachate to enter surface waters or groundwater except under authority of a [SPDES] permit." SBS represents that all wastewater from the facility will be conveyed to the Glens Falls Sewer District for treatment at the City of Glens Falls Wastewater Treatment Plant. SBS provided a letter from the treatment plant operator committing to accept the SBS wastewater to show that the requirements of 6 NYCRR Part 360.19(b)(2) are satisfied.

However, SBS did not characterize wastewater pollutant concentrations in its Solid Waste Management permit application materials. When DEC asked SBS for this information, SBS quantified the amount of wastewater expected to be generated by different plant processes—including blowdown water from the scrubbers, wash-down water from the biosolids receiving area, and sanitary wastewater—but did not provide any data supporting estimated pollutants or concentrations in these waste streams. In its August 6, 2024, response to DEC's RFAI, SBS represents that it provided wastewater "constituents and loading rates" to the treatment plant operator, but did not provide this data to DEC.

Without sufficient characterization of the wastewater generated by SBS, DEC is unable to confirm that the Glens Falls Wastewater Treatment Plant can adequately treat the wastewater before being discharged to the environment or determine if its SPDES permit would need to be modified to include appropriate monitoring and limits for any constituents in SBS's wastewater.

The SBS Petition Does Not Satisfy the Requirements to Issue a Case-Specific Beneficial Use Determination

A petition for a case-specific beneficial use determination must include "analytical data concerning the chemical and physical characteristics of the waste and each type of proposed product" per 6 NYCRR Part 360.12(d)(2)(iv).

SBS's petition does not satisfy this requirement because SBS did not provide sufficient information on trace hazardous constituents in the biochar product. In the RFAI, DEC asked for quantification and explanation of compounds such as PAHs, nonylphenol chlorinated aromatic fractions, veterinary antibiotics, and other pharmaceuticals in the biochar product. SBS did not provide any information on these pollutants in the product.

Conclusion

For the foregoing reasons, DEC denies your applications for Air State Facility and Solid Waste Management facility permits and your petition for a case-specific Beneficial Use Determination.

Be advised, the Uniform Procedures Regulations (6 NYCRR Part 621) provide that an applicant may request an adjudicatory proceeding if a Uniform Procedures Act permit is denied or contains conditions which are unacceptable to the applicant. Any such request must be made in writing within 30 calendar days of the date of the mailing of this denial and must be addressed to the Regional Permit Administrator at the letterhead address. A copy of the request must also be sent to the Chief Administrative Law Judge, addressed to Chief Administrative Law Judge, NYSDEC, Office of Hearings and Mediation Services, 625 Broadway, Albany, NY 12233-1550.

Please contact me with any questions about this notice at (518) 897-1234 or by email at erin.burns@dec.ny.gov.

Sincerely,

Erin L. Burns

Erin L. Burns
Regional Permit Administrator

ec: Andrew Millspaugh, P.E., Sterling Environmental Engineering, P.C.
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