

RESOURCE RECOVERY PERMIT #SW-XX/XX

Original Issue Date: Month Day, Year

Facility Name: Bioenergy Development Company, LLC
Mailing Address: 50 State Street
Annapolis, MD 21401

Contact Person: Peter Ettinger, Chief Development Officer
Phone Number: (301) 943-4860

Alternate Contact Person: Vinnie Bevivino, Director of Organics
Phone Number: (202) 360-1805

Location of Approved Activity: 28338 Enviro Way
Seaford, DE 19973
Tax Parcel Numbers: 132-11.00-41.00, 132-11.00-41.02,
132-6.00-88.01, 132-6.00-95.00

I. GENERAL CONDITIONS:

- A. In accordance with Delaware’s *Regulations Governing Solid Waste* (“DRGSW”), Section 4.4.2.1, the Department of Natural Resources and Environmental Control (“Department”) issues Resource Recovery Permit #SW 22/XX (“Permit”) to Bioenergy Devco, LLC (“BDC”) for the purpose of accepting waste materials as outlined in Section III.P. of this permit, and successfully processing them into pipeline-grade renewable natural gas, digestate, and compost on approximately two hundred twenty five and one-tenth (225.1) acres comprised of Tax Parcel #'s 132-11.00-41.00 (97.64 acres) , 132-11.00-41.02 (26.62 acres), 132-6.00-88.01 (10.00 acres), and 132-6.00-95.00 (90.84 acres) in Seaford, Delaware (see attached tax parcel map).
- B. This Permit applies to:
1. Anaerobic Digester operations
 2. Compost facility operations
- C. This permit was issued based on the following documents submitted to the Department:
1. (1) Bioenergy Development Company, LLC Resource Recovery Permit Application dated November 30, 2020 and associated documents;
 2. (2) Financial assurance: a trust agreement in the amount of \$1,196,400 effective Month Day, Year; and

3. (3) other procedures and policies specifically referenced in this Permit. Conditions of this Permit shall take precedence over any of the above listed documents.
- D. Failure to comply with any condition of this Permit or any provisions within the aforementioned documents is a violation of this Permit.
- E. BDC shall, upon request, present a copy of this Permit to any law enforcement officer or representative of the Department.
- F. BDC shall notify the Compliance and Permitting Section (“CAPS”) in writing within twenty-four (24) hours of any changes in the ownership, facility operators, name, or company officials of BDC.
- G. BDC shall notify the CAPS in writing at least thirty (30) days prior to the anticipated need to implement any change in waste characteristics, changes that will alter the beneficial use of the incoming waste material or the processed compost, or changes to processes, operations, or procedures described in the Application documents referenced above in section I.B., or to this Permit. BDC shall not implement said changes unless and until they have been notified in writing from the CAPS approving the change(s).
- H. This Permit may be modified by the Department at any time, including additional limitations, requirements and/or special conditions. In the event the regulations governing activities authorized in this Permit are revised, this Permit may be modified.
- I. In the event that any condition of this Permit cannot be achieved or is violated, BDC shall immediately notify the CAPS and take immediate action to correct the violation.

II. GENERAL CONSTRUCTION CONDITIONS

A. Siting, Design and Construction

All local zoning and planning approvals for the site must be in place prior to construction commencing.

An engineering report must be submitted and approved by the Department prior to construction commencing. The engineering report must be signed and sealed by a professional engineer registered in the State of Delaware.

All construction permits required by local, state, or federal programs must be obtained prior to construction commencing.

Modifications to previously approved documents must be reviewed and approved by applicable parties before implementation.

B. Standards for Construction

1. The plans provided by BDC will, at a minimum, conform to all of the design requirements in Delaware’s Regulations Governing Solid Waste (DRGSW)

subsection 9.3.4, Minimum Design Requirements.

2. Any additional standards required by permits other than those issued by the Division of Waste and Hazardous Substances (WHS) must be included in design plans submitted for the Resource Recovery Facility Permit.

C. Final Report

1. After construction has been completed and prior to the commencement of any operations of the anaerobic digester, BDC shall submit a final report for the Department's approval prepared by a 3rd party Engineering firm. The final report shall certify that the construction of the facility was completed in accordance with the design specifications submitted to the Department and approved as part of the Resource Recovery Permitting process. BDC shall not commence operations until the Department has provided its written notification that the construction and the final report meet the requirements of the Permit and the Delaware *Regulations Governing Solid Waste*. The final report shall include:
 - a. A cover letter presenting the final report and signed by the permittee after their review and concurrence.
 - b. Title page to include date, facility, project name, responsible party (BDC), and preparing firm.
 - c. Signature page.
 - d. Table of contents, to include a detailed list of the contents of the appendices.
 - e. Introductory narrative with project overview.
 - f. Qualifications and responsible parties. The 3rd party quality assurance engineer shall make a determination if all construction qualifications were met throughout the project for Quality Assurance Laboratories including but not limited to, the general contractor and all manufacturers and additional equipment installers that were part of the facility construction. This section shall also include a listing of key personnel involved with the project with business contact information to include the BDC project engineer, the design engineer, the consulting project engineer, the general contractor's representative(s) on-site, the installers representative(s) on-site, and all staff providing CQC and CQA oversight including those responsible for off-site conformance sampling.
 - g. Site topographic drawing showing property boundaries, outlines of all site buildings (e.g. digester tanks, gas systems, water/wastewater systems,

compost operations, etc.), stormwater controls, stormwater flow directions and all environmental monitoring locations required by this Permit.

- h. Supporting documents for Construction Quality Assurance to include manufacturer's quality control program manuals, manufacturer's installation recommendations (as required by the technical specifications), site visits to manufacturing facilities (if applicable), CQA forms, logs, daily reports, record drawings, field quality control testing results, laboratory results, manufacturer's certifications and warranties, and project meeting minutes. The Permittee shall provide this information electronically, in a format acceptable to the Department and bookmarked by section to allow for easy retrieval and review.
 - i. Site plans/drawings, including all detailed schematics for control components (e.g. digester, gas system, water system(s), etc.). The permittee shall provide this information electronically, in a format acceptable to the Department and bookmarked to allow for easy review and retrieval.
 - j. Project photographs. The permittee shall provide project photographs electronically. Images shall be sorted by date and labeled to include a description of the material or activity pictured.
 - k. Other items specified by the Department.
2. Approved and constructed design modifications during the construction phase of this Permit that impact any documents required for operations (e.g. Operating Plan, Engineering Plan, etc.) must be updated and approved by the Department prior to allowing BDC to commence operations at the facility.
 3. BDC shall provide one paper copy of the final report and an electronic version included as appendices (for supporting information, record drawings and photographs). Additionally, BDC shall provide one complete, web-ready copy of the final report electronically in a format acceptable to the Department. The web-ready copy shall be organized by section in accordance with the table of contents and bookmarked to allow for easy review and retrieval.

III. **GENERAL OPERATING CONDITIONS:**

- A. Operating hours: Incoming feedstock materials may be received at any time but must be managed in accordance with Section III of this Permit. BDC hours of operation are Monday through Friday 7:00 a.m. to 7:00 p.m. and Saturday and Sunday 7:00 a.m. to 1:00 p.m. Processing hours may occur 24 hours a day, 7 days

- per week. Employees in the waste receiving area, the anaerobic digester area, and the compost processing area may work beyond the stated hours as necessary.
- B. Security: Access to the BDC anaerobic digester and/or composting facilities shall be controlled to prohibit the entry of unauthorized individuals.
- C. Access: Representatives of DNREC may, at any reasonable time, inspect this facility to verify compliance with the requirements of this Permit, the DRGSW and 7 Del. C. Chapter 60.
- D. Litter control: Litter within and around the facility shall be controlled and collected daily. This includes collection, removal and proper disposal of any solid waste not approved for processing. It also includes collection and proper disposal of any incoming feedstock or outgoing product that falls along Enviro Way and Seaford Road (also known as Alternate Route 13) adjacent to the BDC site entrances. Prohibited wastes, collected litter, and associated operational wastes shall be stored in enclosed containers. Waste stored shall be removed by BDC the same day the container becomes full or within 72 hours of the Department's request to dispose of the waste (whichever comes first).
- E. Dust control: No dust shall be allowed to migrate off of the facility. Dust shall be controlled at the BDC facility by:
1. Closing mixing room doors while mixing dry waste material;
 2. Maintaining and utilizing the negative air pressure to mitigate dust within, and migrating from, the feedstock receiving buildings;
 2. Spraying down the operations area with water;
 3. Using the Managed Organic Recycling, Inc. ("MOR"), or other Department approved cover, in the Covered Aerated Static Pile ("CASP") area; and
 4. Other means as necessary.
- F. Odor Control: Odors resulting from BDC's operations shall not be perceived beyond the boundaries of the BDC property. If such conditions occur, corrective actions shall be immediately implemented to eliminate off-site odors. All odor complaints received shall be documented. Records of odor complaints shall be made immediately available to the Department upon request. Odors shall be controlled at the BDC facility by:
1. Closing mixing room doors at all times other than receiving waste or transporting mixed waste into the CASP area for composting;
 2. Maintaining and utilizing the negative air pressure and biofilter systems to mitigate odors within, and migrating from, the feedstock receiving buildings.
 3. Proper storage and handling of digestate, finished compost, and all wastes;
 4. Spraying down the CASP and windrow composting areas with water, as needed, to remove the presence of potentially odor causing materials;
 5. Using the MOR cover, or other Department approved cover, in the CASP area;
 6. Maintaining optimal composting conditions in actively composting wastes to reduce the potential for anaerobic decomposition;
 7. Control moisture in finished compost to reduce the potential for anaerobic decomposition;

8. Maintain, as designed, all feedstock receiving, processing, and discharge equipment for the anaerobic digester system;
9. Maintain, as designed, all biogas collection, processing, storage, and discharge equipment; and
10. Other means as necessary.

G. Vector control:

1. BDC shall monitor the entire facility (Anaerobic Digester Intake and Compost Facility) for the presence of any rodents or other undesirable vectors daily. BDC shall document the presence of any undesirable vectors and legally eradicate them.
2. Material in the aerated static piles must meet the requirements for Vector Attraction Reduction (“VAR”), which states aerated static piles (“ASPs”) shall maintain a temperature of 104 °F (40 °C) for at least 14 consecutive days, with an average temperature of over 113 °F (45 °C). BDC shall document daily temperatures of the ASPs and shall make the temperature records immediately available upon request by the Department.

H. Fire safety:

1. BDC shall conduct and record daily temperature monitoring for all digester tanks, ASPs and windrows in the composting process. If routine temperature monitoring shows a location in a tank or compost facility windrow where temperatures are greater than 160 degrees Fahrenheit or acceptable digester temperature, employees shall flag the location and report it to the site manager immediately.
2. BDC shall conduct and record weekly temperature monitoring for all digester tanks and compost facility windrows in the curing phase and feedstock piles provided that the conditions set forth in Section III.E.4 are met.
3. If smoke is detected at the compost facility, employees shall flag the location and report it to the site manager immediately.
4. The site manager shall act promptly to investigate all issues related to fire or explosion safety. Employees shall be trained in the proper procedures for fighting a compost fire, gas fire, or explosion.
5. If a fire or explosion is detected, BDC shall call 911 to request assistance from the local firefighting agency. BDC shall notify CAPS at (302) 739-9403 of any fire within 24 hours of detection.
6. BDC management shall meet with the representatives from the Blades Volunteer Fire Company to ensure that their personnel are familiar with the layout of the facility, the sources of water for firefighting, and the methods of fighting a compost fire, gas fire or explosion. BDC shall develop a fire management plan with the Blades Volunteer Fire Company, which shall be implemented immediately, reviewed annually, and updated as needed.

- I. Employee Health and Safety: Employees shall work under appropriate health and safety guidelines established by the Occupational Safety and Health Administration. Use of personal protective equipment shall be in accordance with 29 CFR Part 1910.132 as a minimum. First aid equipment shall be maintained and

available onsite. Emergency telephone numbers of nearby ambulance, hospital, police and fire services shall be prominently displayed on-site.

- J. Smoking: No smoking shall be permitted in the receiving, processing, screening, storage areas, or near potential sources of gas.
- K. Equipment Usage, Inspection, and Maintenance: A combination of processing equipment such as front-end loaders, a hammermill, screens, and a windrow turner will be used to implement this Permit. BDC shall use a combination of this equipment and manual labor to process the incoming waste material and to handle finished compost. Processing equipment at the anaerobic digester, gas system, and compost facility shall be selected and operated in a manner to meet DNREC Air Quality (DAQ) standards and conditions of applicable DAQ permits or registrations. BDC shall maintain all necessary air permits and registrations as long as they are required, and secure any other necessary DAQ permits and registrations in the future. All operating equipment shall be operated and inspected in accordance with the manufacturer's recommendation, any required permits, and this Permit. Equipment shall be maintained and operated in a manner that protects BDC employees, the public and the environment.
- L. Training: All employees who work in the anaerobic digester and/or composting receiving or processing areas will have received initial training, within 180 days of hiring, in (1) Health and safety procedures, (2) Fire/Explosion prevention and protection, (3) Emergency first aid and (4) CPR. Prior to working in the composting operation, employees shall receive compost operator training including site specific training on the basics of the MOR process, biofilter operation, how to identify acceptable compost feedstock materials, how to identify and respond to prohibited waste, and how to conduct an inspection of the facility. Similarly, employees working in the anaerobic digester plant shall receive appropriate training outlining materials acceptance, monitoring and mixing, and the processing of digestate for use by compost operation or a third-party buyer. All employees shall also receive equipment operation training conducted by the equipment manufacturer's representative or another person specifically knowledgeable in the operation of the equipment. Training shall include the manufacturer's operating and maintenance manual, operation instruction, equipment safety features, and hazards that might be encountered. Unless otherwise specified by a nationally recognized training provider (for example, the American Red Cross as a training provider for First Aid), training shall be required initially and annually thereafter.
- M. Recordkeeping:
 - 1. BDC shall maintain all training records on site for a period of three (3) years and the records shall be immediately provided to the Department upon request. These records shall document that required training has been provided to all employees who are to work at the facility.
 - 2. BDC shall record and maintain on site all data required by this Permit for a minimum of three (3) years and the records shall be immediately provided to the Department upon request, including:
 - a. Daily, monthly, and annual tonnages for all incoming waste and materials (listed by waste/material description)

- b. Daily, monthly, and annual tonnages for all outgoing waste and materials, including prohibited wastes and residuals (listed by waste/material description)
- c. A list of all buyers or outlets of products
- d. Records from all monitoring and inspections described in this Permit and in BDC's Operations Plan
- e. Daily compost process control and monitoring information, including all temperature records
- f. Laboratory results from all sampling described in this Permit
- g. Odor, dust, and vector complaints received from off site

N. Sampling and Analysis:

- 1. Sampling and analysis of actively composting batches can be performed without limitation. This shall be known as Work in Progress (WIP) Samples.
- 2. Final Samples shall be defined as samples collected when a batch is expected to be mature, for the purpose of determining if the compost meets the performance and analytical criteria in Table 1.
- 3. All Final Samples shall be designated as such prior to lab analysis.
- 4. All Final Samples for compost shall be collected in accordance with the methods and protocols set forth in the U.S. Composting Council's *Test Methods for Evaluation of Compost and Composting ("TMECC")* and reported on a quarterly basis as described in Section II.O of this Permit.
- 5. All digestate designated for direct marketing shall be sampled in accordance with the following procedure:
 - a. Digestate "batches" shall be determined as the date of production. For example, all digestate produced on January 1 for direct marketing will be designated as 1 batch and must be analyzed separately from all digestate that will be produced on January 2.
 - b. A Final composite digestate sample shall be comprised of at least 4 grab samples taken in accordance with the following time standards:
 - a. From digestate representing that produced within the first hour of batch construction
 - b. From digestate representing that produced within the final hour of batch construction
 - c. All grab samples shall represent digestate produced at least 2 hours apart, or, if unfeasible, at least, evenly distributed across time.
 - d. Digestate samples shall be analyzed for the criteria established in Table 1 with the exception of Maturity and Stability.
 - e. Subject to further testing an analysis from other Department and Division permitting.
- 6. Compost awaiting analytical sampling or analysis shall be stored separate from all other compost and windrows unless and until it can be shown to meet the analytical and performance criteria listed in Table 1, below.

7. Digestate awaiting analytical sampling or analysis shall be stored separate from all other digestate and must meet the analytical criteria listed in Table X below.
8. Batches that meet all analytical and performance criteria listed in Table 1, as a result of a single Final Sample analysis, and compost that has been screened, are approved for immediate sale or use.
9. In the event that compost or digestate fails to meet any of the criteria for any parameter listed in Table 1, BDC shall notify the Department in writing within 72 hours of BDC's receipt of the data and provide what corrective actions shall be taken to address this failure and prevent future failures. Such notification shall include identification of the failed batch(es) and the corresponding full laboratory report detailing results for all analytical and performance criteria identified in Table 1 of this Permit.
10. Compost that does not meet the criteria for Maturity, Stability, Soluble Salts, pH, total inerts, plastic, or carbon to nitrogen ratio shall not be marketed unless and until BDC receives written Department approval or additional management and subsequent analysis of the same batch of finished compost demonstrates it meets the criteria for those parameters.
11. Digestate that does not meet the criteria outlined in Table 1, shall not be used by the compost facility or sold to market unless and until BDC receives written Department approval or additional management and subsequent analysis of the same sample of digestate demonstrates it meets criteria for valid use or sale.
12. A batch of finished compost product that fails to meet the criteria for Salmonella, Fecal coliform, or any metal listed in Table 1 may be resampled and analyzed once; however, BDC, at the Department's request, shall split samples with the CAPS.
13. In this event, BDC shall be responsible for the analytical costs of the Department's samples. If any of the samples fail to meet the criteria a second time, the compost shall be properly disposed of within 30 calendar days of BDC's receipt of the analytical data for that re-sampled batch.
14. Metals analysis shall be on a dry weight basis for arsenic, cadmium, chromium, copper, lead, mercury, molybdenum, nickel, selenium, and zinc using EPA's SW-846 (*Test Methods for Evaluating Solid Waste, Physical/Chemical*) method 6010 in its most currently approved version. Metals in the finished compost shall not exceed the limits shown in Table 1:

TABLE 1. PERFORMANCE and ANALYTICAL CRITERIA

PARAMETER	CRITERIA
Maturity & Stability	≥ 6 based on Solvita® Compost Maturity Index ¹
Soluble Salts (Conductivity)	≤ 10 mmhos/cm

Salmonella	< 3 MPN per 4 g dry wt.
Fecal Coliform	< 1,000 MPN/g dry wt.
pH	5 – 8.5
Total Inerts	< 1 %, not to exceed 0.5% plastic
Carbon to Nitrogen Ratio	< 20:1
Arsenic, Total	< 11 mg/kg ²
Cadmium, Total	< 7 mg/kg
Chromium VI	0.29 mg/kg ³
Chromium, Total	< 214 mg/kg
Copper, Total	< 1,000 mg/kg ⁴
Lead, Total	< 400 mg/kg
Mercury, Total	< 1 mg/kg
Molybdenum, Total	< 39 mg/kg
Nickel, Total	< 150 mg/kg
Selenium, Total	< 39 mg/kg
Zinc, Total	< 2,300 mg/kg

¹ Alternate Criteria for Maturity using TMECC method 5.05-A (Seed emergence and seedling vigor): > 80% relative to positive control; Alternate Criteria for Stability using TMECC method 5.08-B (Carbon Dioxide evolution rate): < 4 mg CO₂-C/g VS /day.

² Division policy sets the limit for Arsenic at 11 ppm (mg/kg).

³ If the limit for Chromium VI is below the routine laboratory method detection limit (“MDL”), the routine MDL becomes the limit.

⁴ Permit-specific value based on Risk Assessment Analysis

O. Reporting:

1. Quarterly: BDC shall submit the results from all analyses conducted in a given quarter to the Department via e-mail or in hard copy on a quarterly basis by the following dates: April 15th, July 15th, October 15th, and January 15th. BDC shall include in these quarterly reports tonnages and volumes of:
 - a. Wood waste, hatchery waste, poultry litter, DAF sludge, and DAF cake, and any other incoming waste received, including state of origin, listed by waste type
 - b. Finished compost produced
 - c. Digestate produced
 - d. Finished compost shipped to, or picked up by, customers
 - e. Digestate shipped to, or picked up by customers
 - f. Finished compost used at or around the facility
 - g. Digestate used by the compost facility
 - h. All waste sent for disposal, recycling, or reuse, and the date and facility where sent. An attempt to provide a general description of the waste shall also be provided, i.e. plastic, treated lumber.
 - i. Compost or digestate failing to meet performance and analytical criteria in Table 1 and Table X, including the parameter(s) that was not met and the facility at which the unacceptable compost was disposed, if applicable

- j. Rejected waste, tallied as number of loads, including reason for rejection, customer, and date it was brought to BDC
 - k. Finished compost stored
 - l. Wood waste, screened-overs, hatchery waste, poultry litter, DAF sludge, DAF cake, and any other waste stored, listed by waste type and storage location.
2. Annually:
- a. No later than February 1 of each calendar year, BDC shall provide an updated closure cost estimate, taking into account inflation. If the cost estimate has increased over the amount of financial assurance provided, BDC shall accordingly provide increased financial assurance, along with an updated trust agreement, within six weeks of the submission of the updated closure cost estimate.
 - b. No later than February 1 of each calendar year, BDC shall submit an annual report for the previous calendar year in hard copy format, and include the following information:
 - 1. Tonnages and volumes for the same materials described in Section II.O.1.a, total of each for the year and including state of origin
 - 2. Tonnages and volumes for the same materials described in Section II.O.1.b-g, total of each for the year.
 - 3. Tonnages and volumes for the same materials described in Section II.O.1 h-i, stored at the end of the year
 - 4. Names and addresses of all suppliers of DAF sludge, DAF cake, or hatchery waste
 - 5. A summary of the performance and analytical results from the quarterly finished compost testing reports, to include the range of results for each parameter and BDC's interpretation of those results.
 - 6. Written discussion by BDC of the facility's operations and processes to include any adjustments made in the process as well as a summary of materials management knowledge and experience gained during the past calendar year.
 - 3. All reports shall be submitted to the CAPS project officer, Zack Taylor (Zachary.Taylor@Delaware.gov), via email or a hard copy can be mailed to:

Attn: Zack Taylor
DNREC-CAPS
89 Kings Highway
Dover, DE 19901

P. Authorized Waste Types:

- 1. Only clean wood waste, poultry litter, DAF sludge, DAF cake, hatchery waste, and process water shall be accepted for processing and these waste

materials shall be managed in accordance with this Permit. Clean wood is defined as wood that is not painted, stained, coated or treated as well as shell casings, vines and woody materials from soybeans and corn or other feed crops. Process water is defined by BDC as leachate collected from the CASP system, water from the stormwater pond, or other non-potable water from the composting site. Process water shall not be included in annual permitted tonnage amounts.

2. DAF sludge and DAF cake shall be accepted only from the following locations:
 - a. Perdue Farms, Inc. - 20621 Savannah Rd, Georgetown, DE
 - b. Perdue Farms, Inc. - 255 N. Rehoboth Blvd, Milford, DE
 - c. Perdue Farms, Inc. – 521 Willow Street, Salisbury, MD
 - d. Perdue Farms, Inc. - 2401 East Cumberland Street, Lebanon, PA 17042
 - e. Mountaire Farms - 29005 John J Williams Hwy., Millsboro, DE 19966
 - f. Mountaire Farms - 55 Hosier Street, Selbyville, DE 19975
 - g. Amick Farms - 274 Nealson Street, Hurlock, MD 21643
 - h. Amick Farms - 39 Delaware Ave, Hurlock, MD 21643
 - i. Allen Harim Foods - 18752 Harbeson Road, Harbeson, DE 19951
 - j. Allen Harim Foods - 29984 Pinnacle Way, Millsboro, DE 19966
 - k. Tyson Foods - 11224 Lankford Hwy., Temperanceville, VA 23442
3. Hatchery waste shall be accepted only from the following locations:
 - a. Perdue Farms, Inc. - 37 Delaware Avenue, Hurlock, MD
 - b. Perdue Farms, Inc. - 9891 Old Princess Anne Rd, Westover, MD
 - c. Perdue Farms, Inc. – 6906 Zion Church Rd, ZCR Complex Hatcheries 2 & 3, Salisbury, MD
 - d. Perdue Farms, Inc. - 2401 East Cumberland Street, Lebanon, PA 17042
 - e. Mountaire Farms - 29005 John J Williams Hwy., Millsboro, DE 19966
 - f. Mountaire Farms - 55 Hosier Street, Selbyville, DE 19975
 - g. Amick Farms - 274 Nealson Street, Hurlock, MD 21643
 - h. Amick Farms - 39 Delaware Ave, Hurlock, MD 21643
 - i. Allen Harim Foods - 18752 Harbeson Road, Harbeson, DE 19951
 - j. Allen Harim Foods - 29984 Pinnacle Way, Millsboro, DE 19966
 - k. Tyson Foods - 11224 Lankford Hwy., Temperanceville, VA 23442
4. Wood waste material, or “overs”, from the ½ inch screen, shall be an acceptable feedstock as long as they have gone through an effective process to mechanically remove non-compostable material. Overs shall not be included in annual permitted tonnage amounts.
5. No other waste shall be accepted unless and until BDC obtains approval from the Department.

Q. Prohibited Waste:

BDC shall exercise reasonable care to ascertain whether waste accepted by the facility is prohibited waste, and shall not accept the following prohibited waste, including, but not limited to:

1. Glass, metal, and plastic
2. Painted, stained, coated, or treated wood; wood containing Chromated Copper Arsenate (“CCA”) or other chemical preservatives; wood containing creosote; and wood that is suspected of being contaminated with PCB’s, petroleum products, or hazardous chemicals
3. Mixed municipal solid waste (trash/garbage), tires
4. Batteries, electronics
5. Sewage sludge and septage
6. Infectious and medical wastes, radioactive materials, universal wastes or hazardous wastes
7. Hatchery waste not specifically described to, and approved by, the Department.
8. Waste, including DAF sludge and DAF cake, resulting from wastewater systems that contain a sanitary component are specifically prohibited, unless approved by the Department.

Reasonable care shall include contacting the waste transporter or individual generator if a visual determination regarding the acceptability of the waste material cannot be made. Any loads that appear to contain any of the prohibited wastes listed above shall be rejected. These wastes shall be reloaded onto the truck and removed immediately. If these wastes are noticed after the hauler/customer has left BDC, these wastes shall be immediately containerized and lawfully removed from the site within 72 hours of initial receipt.¹

IV. **RAW MATERIAL ACCEPTANCE, PROCESSING, AND STORAGE:**

- A. Procedures for Waste Acceptance: Waste acceptance and processing shall be conducted in accordance with BDC’s submitted *Operations Plan*, *DRGSW*, Delaware Code, and the conditions below.
1. All incoming waste, rejected waste, outgoing waste, and outgoing products shall be weighed and recorded.
 2. Upon arrival at the facility, all incoming loads of wood waste and poultry litter shall be inspected prior to, and after, unloading. Hatchery waste and DAF cake and sludge shall be inspected as it is dispensed or unloaded.
 3. Any prohibited wastes listed in section II.Q of this permit that are visible shall be reloaded onto the truck and removed immediately. If these wastes are noticed after the hauler/customer has left BDC, these wastes shall be immediately containerized and lawfully removed from the site within 72 hours of initial receipt.¹

¹ For information on the proper handling and disposal of sewage sludge and septage, please contact the Division of Water at (302) 739-9946. For information on the proper handling and disposal of all other listed prohibited wastes, please contact the CAPS at (302) 739-9403.

4. BDC shall be limited to 256,000 tons of material which is split into 200,000 tons to the anaerobic digestion facility and 56,000 tons to the compost facility which includes in-process and finished product, on site at any one time. This includes all feedstocks, except the clean wood waste which does not count towards the total tonnage.
 5. Procedures for Wood Waste Acceptance: BDC shall accept only clean wood waste that is not painted, treated, coated, or stained.
- B. Procedures for Waste Handling:
1. DAF Sludge and Cake: DAF sludge and DAF cake shall be delivered to the BDC site in a covered, leak-proof vehicle or container. All DAF sludge shall be pumped from the vehicle to the storage tanks. DAF sludge shall be pumped from a storage tank into either the anaerobic digester or compost facility Receiving Building. When delivered to the compost facility Receiving Building, DAF sludge must be placed on top of or surrounded by absorbent, approved feedstock. DAF Cake shall be unloaded into the appropriate Receiving Building. No liquid residue from any DAF sludge or DAF cake shall leave the absorbent, approved feedstock or the Receiving Building floor. All DAF sludge or DAF cake dispensed or unloaded into the Receiving Building shall be mixed and placed into a digester tank or a CASP within twenty-four (24) hours of the DAF sludge or DAF cake being dispensed into the appropriate Receiving Building.
 2. Hatchery Waste: Hatchery waste shall be delivered to the BDC site in a covered, leak-proof vehicle or container. Hatchery waste shall be unloaded into either the anaerobic digester or compost Receiving Building. Hatchery waste shall be unloaded on top of or surrounded by absorbent, approved feedstock in the compost facility Receiving Building or mixed with other inputs in the anaerobic digester receiving building. No liquid residue from the hatchery waste shall leave the absorbent, approved feedstock or the Receiving Building floor. All hatchery waste shall be mixed and placed in a CASP within twenty-four (24) hours of the hatchery waste being received.
 3. Poultry Litter: Poultry litter shall be unloaded into either the Receiving Building or a bunker in the Digester or CASP area. Poultry litter shall be used as needed to achieve the optimum blend of nutrients including balanced carbon to nitrogen ratio, moisture content and porosity of the mixture.
 4. Wood Waste: Wood waste shall be added to the digester tanks or compost mixture to achieve the optimum carbon to nitrogen ratio, moisture content and porosity of the mixture.
 5. Process water: Process water may be recycled back into digester tanks or added to the compost mixture to provide additional moisture as needed. BDC shall make every effort to ensure process water does not leave the Receiving Building floor.
- C. Procedures for Storage of Waste:
1. BDC shall not store any hatchery waste or DAF cake other than is allowed for initial mixing. Hatchery waste and DAF cake shall be stored only in the

appropriate Receiving Building. Storage of hatchery waste and DAF cake inside the compost facility Receiving Building is limited to twenty-four (24) hours from the time the hatchery waste is received by BDC.

2. Poultry litter shall be stored either in the appropriate Receiving Building or in a bunker in the CASP area. BDC shall store no more than 300 tons of poultry litter at any one time.
3. BDG shall store no more than 173 tons of DAF sludge. All DAF sludge shall be stored in the designated DAF storage tanks.
4. BDG shall store no more than 20,000 gallons of compost process water. All process water shall be stored in the designated process water storage tank.
5. BDC shall at all times store a minimum quantity of clean wood waste or screened overs sufficient for mixing with incoming feedstocks in batch-preparation proportion for the composting facility. Ground wood waste shall not be stored more than 12 feet in height.
6. The total amount of unprocessed waste stored in the Receiving Building shall not exceed 377 tons of material at any time. This total shall be any combination of hatchery waste, DAF cake, and poultry litter.
7. Wood waste material, or “overs”, from the ½ inch screen, shall be an acceptable feedstock as long as they have gone through an effective process to mechanically remove non-compostable material.
8. The temperature of the piles of ground wood waste, including overs described above in section III.C.7, shall be monitored and recorded at least once a week to ensure the temperature at the core of the pile does not exceed 160 degrees Fahrenheit. If the temperature is above 160 degrees Fahrenheit, BDC shall follow the fire safety procedures outlined in Section II.H above and take action to reduce the risk of fire. Records shall indicate the temperature measured as well as any actions taken to lower the temperature, if applicable.
9. Prohibited waste, collected litter, and associated waste shall be stored in enclosed containers. Waste stored shall be removed by BDC the same day the container becomes full or within 72 hours of the Department’s request to dispose of the waste (whichever comes first).
10. Any other storage of waste not described in this Permit is prohibited.

D. Procedures for Waste in the Anaerobic Digester

1. All materials that are destined for the Anaerobic Digester should be delivered to the Anaerobic Digester Receiving Building, which includes a solids tipping floor as well as liquid receiving tanks depending on the waste stream delivered.
2. Once material has been delivered it will be fed into the Pretanks. During this step, depending on the mix of materials going into the digester tanks, the appropriate amounts of feedstock will be moved from the Receiving area into the pretanks. The Pretank operates continuously so that all waste delivered into the facility will be integrated into the anaerobic digester within 24 hours.

3. The Digester Tanks will be fed continuously from the Pretank until they reach their capacity of 2,000,000 gallons (roughly 50,000 tons of material). As material begins to breakdown within the Anaerobic Digester, gas will be formed that flows to a collection system at the top of the tank and solids will collect towards the bottom of the tank where paddles will be continuously mixing the material so that there is minimal clumping or buildup.
4. Material from the Anaerobic Digester tanks then flows to a Separator feed tank where the digestate material (a mix of liquids and solids) goes through a screw press to reduce the liquid component.
5. The resulting dewatered material from the Separator then goes to Centrifuge for further processing. During this stage, the bulk of the liquid is removed and sent either back into the digester tanks to be recycled or to a bioreactor which is the start of the wastewater treatment process. The 'solid' material remaining from the Centrifuge is digestate. Digestate is moved into the Compost Facility operation or gets sold as a product.
6. As stated, part of the water from the Centrifuge goes into the Digester Tanks to be mixed back into the process. The portion of water not designated for the Digester Tanks enters the wastewater treatment process which begins with a Bioreactor. If the Digester Tanks require additional water, the material coming out of the Bioreactor is diverted back again. Water that is not needed by the process goes through a final Ultrafiltration process where it is then tanked and trucked to the Seaford Wastewater Treatment Plant for processing.

E. Procedures for Biogas Production

1. Material that has been added to the Anaerobic Digester tanks produces gas which is collected from the top areas of each Digester Tank.
2. Once the gas exits the Digester Tank it is boosted, pressurized and fed into a Biogas Conditioning Unit.
3. In instances where the Biogas Conditioning Unit cannot accept gas, there is a flare, approved by the Division of Air Quality, that will burn off the gas being created by the Anaerobic Digester.
4. Gas that has been injected into the Biogas Conditioning Unit undergoes a filtration process to first remove Hydrogen Sulfides (H₂S), Moisture and then Volatile Organic Compounds (VOCs). All filtration media for this process is included in the overall solid waste tonnage of the facility and must be disposed of accordingly. Any instances where this media can be 'recharged' or reused should be outlined in the BDC Operations Plan.
5. Gas that has been appropriately filtered is then passed into the Biogas Upgrade system which includes a compression step and a remove of excess Carbon Dioxide (CO₂). In cases where the CO₂ levels are above pipeline quality, the gas is diverted back to the compressor to be put through the removal process again.
6. Gas that has undergone appropriate upgrading will then be pumped into gas delivery trucks where it will be delivered to an inlet for the Chesapeake

Utilities Natural Gas pipeline. All waste gas produced will be flared in accordance with Division of Air Quality emissions permitting.

F. Procedures for Waste in Covered Aerated Static Piles:

1. Material in the CASPs must meet the requirements for the Process to Further Reduce Pathogens (“PFRP”). As such, the piles shall maintain a temperature of 131 °F (55 °C) or higher for 3 consecutive days.
2. All aerated static piles shall be completely covered by the MOR cover (or approved equivalent) such that no compost is exposed and the MOR cover (or approved equivalent) shall be sufficiently weighted down so the cover does not move and the compost remains completely covered. The MOR cover (or approved equivalent) shall be monitored for wear and tear and shall be repaired or replaced as necessary to perform properly.
3. No aerated static pile shall exceed 165 feet in length, 25 feet in width or 12 feet in height. No aerated static pile shall extend beyond the concrete walls separating the piles.
4. The total amount of blended material and compost in the CASP Area, Windrow Composting Area and Finished Product Storage Area, including compost awaiting sampling or analysis, shall not exceed 56,000 tons. Clean wood waste is excluded from this total.
5. All leachate collected from the trench drain located underneath the CASPs shall flow through a sewer line to the process water storage tank.
6. Temperature monitoring for active compost being processed in CASPs shall be monitored daily until such time as it moves from the CASP to curing.

E. Procedures for Compost in the Curing Process:

1. No windrow shall exceed 165 feet in length, 25 feet in width, or 12 feet in height. Windrows shall be at least six feet apart at the base and at least 12 feet apart at the top.
2. Compost in the curing phase shall be stored in the Windrow Composting Area or in the CASP Area if necessary, to generate proper composting conditions. Compost that has been cured may be placed in the CASP area if forced aeration is needed to aid in the drying process. Any material placed in the CASP area that is not actively composting must be clearly identified and able to be distinguished from active composting CASPs.
3. The total amount of blended material and compost in the CASP Area, Windrow Composting Area and Finished Product Storage Area, including compost awaiting sampling or analysis, shall not exceed 56,000 tons.
4. Compost in the curing phase of the process must have its temperature checked daily until such time as the temperature is below 105°F. At this time, monitoring of temperature will shift to weekly. In the event a curing windrow is disturbed, such as through turning or addition of material, temperature monitoring will revert to daily for a minimum of five (5) days with a decreasing temperature trend and measurements below 105°F have been reestablished.
5. Water may be added to the windrows for additional moisture using well water or process water. If process water is used, the windrowed material shall again meet PFRP. For windrows, the PFRP requires material to be

held at 131°F (55°C) for 15 days or longer. During the period when the compost is maintained at 131°F (55°C) or higher, there shall be a minimum of five turnings of the windrow. In these cases, the temperature checks shall go back to daily to ensure that the 131°F (55°C) level is maintained.

IV. **STORAGE OF FINISHED COMPOST:**

- A. The total amount of blended material and compost in the CASP Area, Windrow Composting Area and Finished Product Storage Area, including compost awaiting sampling or analysis, shall not exceed 56,000 tons.
- B. Finished compost is defined as compost that has completed the curing phase, has been screened through a ½-inch screen (or smaller), has satisfied all performance and analytical criteria specified in Table 1 of this Permit, and is immediately available for distribution to a customer, whether paid or unpaid.
- C. Finished compost shall be stored as designated on the attached site map.

V. **FINISHED PRODUCT USE AND APPLICATION:**

- A. Compost
 - a. BDC shall be responsible for ensuring all necessary permits have been obtained prior to marketing the compost
 - b. Finished compost may be used as a soil amendment.
 - c. Finished compost with a Solvita Maturity Index of ≥ 6 may be used for Bedding Plants; Container media; Potting mixes; Seedling starters; Hothouse beds; Greenhouses; Orchards; Pastures; Hay crops; Turf; Topsoil Substitute Blends; and General gardening.
- B. Digestate
 - a. BDC shall be responsible for ensuring all necessary permits have been obtained prior to marketing the compost
 - b. Finished compost may be used as a soil amendment.

VI. **CLOSURE:**

- A. BDC shall immediately notify the Department in writing the estimated date of facility closure and/or the date wastes will no longer be accepted for composting.
- B. BDC shall notify the Department in writing when closure activities are started, and again when closure is complete.
- C. Should BDC cease the processing of waste into compost, within one hundred and eighty (180) days of cessation of operation, all feedstocks, waste material in the process of composting, and compost product shall be properly recycled, re-used, or disposed of off-site. All disposal, re-use, and recycling activities undertaken in this section must be conducted per the requirements of the DRGSW and Delaware Code.

- D. During the 180 day closure period, the total amount of compost stored in the CASP Area, Windrow Composting Area and Finished Product Storage Area, including compost awaiting sampling or analysis, shall not exceed a total of 56,000 tons. By the end of the 180-day period, all compost, including compost which did not meet the analytical criteria established in Table 1 of this Permit, shall be properly removed from the site.

VII. ADDITIONAL CONDITIONS:

- A. The Department retains the right to collect samples of any material at any time. The Department and BDC retain the right to obtain split samples from each other's sampling events for separate analysis. BDC shall bear the expenses or reimburse the Department for the cost of analysis of all samples obtained and analyzed by, or for, the Department once per quarter.
- B. BDC shall obtain and maintain proper coverage under the Department's National Pollutant Discharge Elimination System ("NPDES") stormwater permit program. If the stormwater discharge associated with BDC results in an increase in nutrient load, additional best management practices shall be employed. If increased loading cannot be addressed strictly through BMP implementation, an offset plan shall be required.
- C. If BDC desires to renew this Permit, BDC shall submit a new application with all supporting documentation no later than 180 days prior to its date of expiration. BDC may be required to submit additional documentation as needed at the Department's sole discretion.
- D. This Permit does not relieve BDC from complying with any other applicable Federal, State, or Local laws, regulations or ordinances.
- E. Any violation of any condition of this Permit, regulation promulgated by the Department, Secretary's Orders, or provision of 7 *Del.C.* Chapter 60, shall justify termination of this Permit, and implementation of appropriate enforcement action.

VIII. Permit Renewal and Transfer History:

- A. December 2, 2016
 - 1. Composting Permit # SW-16/13 issued to Seaford AgriSoil, LLC
 - a. Initial composting permit
 - b. Issued for one year expiring December 2, 2017
- B. November 29, 2017
 - 1. Permit # SW-16/13 extension granted
 - a. Existing permit extended six months to June 2, 2018
 - b. Facility name updated to Purdue AgriRecycle, LLC
- C. June 1, 2018
 - 1. Permit # SW-18/03 issued to Purdue AgriRecycle, LLC
 - a. Issued for two years expiring June 2, 2020
- D. January 21, 2020
 - 1. Permit # SW-18/03 transferred to Bioenergy Development Group
- E. May 26, 2020

1. Minor Modification to Permit # SW-18/03 issued
 - a. Removed limitations of feedstock by type in Section III.A. Monthly and annual feedstock tonnage limits remain unchanged
 - b. Changed temperature monitoring requirements in Section II.H.1 from “daily” to “weekly”
 - c. Changed notification requirements from “24 hours” to “72 hours” for compost failing analytical criteria in Section II.N.3.
 - d. Changed C:N ratio criteria from “10:1-20:1” to “<20:1” in Table 1
 - e. Removed end use restrictions associated with Solvita 6 in Table 1 and Section V.C.
 - f. Changed wood storage requirements from “minimum of double the volume or tonnage of wood waste required for optimum compost mixture of a single CASP” to “100 tons of either clean wood waste or recycled wood” in Section III.C.
 - g. Updated Section III.D.6, III.E.4 and III.E.5 to clarify weekly temperature monitoring when conditions are met. Additionally, clarification of when monitoring must go back to daily with the addition of process water in compost in the curing phase
 2. Permit # SW-18/03 extension issued
 - a. Modified permit extended 18 months to December 2, 2021.
- F. November 19, 2020
1. Minor Modification to Permit #SW-18/03 issued
 - a. Updated section III.N Sampling and Analysis
 - i. Defined Work in Progress Samples and Final Samples to clarify sampling protocols
 - ii. Defined when a batch is approved for sale based solely on Final Sample results
 - iii. Updated batch failure reporting requirements to include batch identification and submission of the associated full lab report
 - b. Updated Project Officer contact info for reporting submissions
- G. June 8, 2021
1. Updated permit to add additional locations and vendors for acceptable material to be sourced from
- H. September 3, 2021
1. Modified permit to allow time to prepare for proposed facility expansion. Granted a 1-year extension to expire December 2, 2022
 2. Updated facility name from Bioenergy Development Group, LLC to Bioenergy Devco
 3. Updated facility address from previous address in Columbia, MD to a current address in Annapolis, MD
- I. Month day, year
1. Transitioned permit into resource recovery to accommodate the anaerobic digester facility expansion project.

Jason W. Sunde
Environmental Program Administrator
Compliance and Permitting Section

Date

TAX PARCEL MAP



Composting Site Map

