HEARING OFFICER'S REPORT

TO: The Honorable Shawn M. Garvin
Cabinet Secretary, Department of Natural Resources and Environmental Control

FROM: Lisa A. Vest
Regulatory Specialist, Office of the Secretary
Department of Natural Resources and Environmental Control

RE: On-Site Wastewater Treatment and Disposal System ("OWTDS") Construction Permit and OWTDS Operations Modification and Renewal Permit Application for Mountaire Farms of Delaware, Inc.'s Poultry Processing Complex located in Millsboro, Delaware (Hearing Docket No. 2020-P-W-0014).

DATE: December 17, 2020

I. BACKGROUND AND PROCEDURAL HISTORY:

A virtual public hearing was held on Thursday, May 21, 2020, at 6:00 p.m. via the State of Delaware Cisco WebEx Meeting Platform by the Department of Natural Resources and Environmental Control ("DNREC" or "Department") regarding the On-Site Wastewater Treatment and Disposal System ("OWTDS") Construction Permit and the OWTDS Operations Modification and Renewal Permit Application submitted to the Department by Mountaire Farms of Delaware, Inc. ("Mountaire" or "Applicant"), for the Mountaire Poultry Processing Complex in Millsboro, Delaware. Mountaire has applied for a State of Delaware OWTDS Construction Permit for significant upgrades of the existing wastewater treatment system to provide enhanced wastewater effluent treatment capabilities. The Applicant has also requested to modify and renew their existing State of Delaware OWTDS Operations Permit, which authorizes their wastewater treatment system to receive and treat poultry processing wastewater, stormwater, and sanitary waste ("Applications").

The Applications submitted by Mountaire are subject to various state and federal regulatory requirements, including, but not limited to, Delaware's *Regulations Governing the Design, Installation, and Operation of On-Site Wastewater Treatment and Disposal Systems*, as set forth in 7 DE Admin. Code 7101 ("Regulations"), and as provided for under Delaware law in 7 *Del.C.* Chapter 60.

As noted above, Mountaire has applied for a State of Delaware OWTDS Construction Permit for significant upgrades to the existing wastewater treatment system at its Poultry Processing Complex in Millsboro, Delaware, to provide enhanced wastewater effluent treatment capabilities. The proposed upgrades will allow the wastewater treatment system to treat wastewater to a total nitrogen concentration of 10 mg/L or less.

The proposed wastewater treatment system upgrade project includes improvements to the activated sludge biological nitrogen removal ("BNR") treatment system components. The project also includes the installation of a new tertiary sand filtration system for final effluent polishing, and a new screw press sludge dewatering system designed to increase waste activated sludge handling capacity. The existing spray storage lagoon will continue to be used for final effluent storage prior to disposal in the existing spray irrigation fields, however, a new spray storage lagoon will also be installed to expand the final effluent storage volume.

In addition to the above construction upgrades, Mountaire has also requested permission from the Department to modify and renew its existing State of Delaware OWTDS Operations Permit, authorizing the Applicant's wastewater treatment system to receive and treat poultry processing wastewater, stormwater, and sanitary waste. After the completion of the above requested construction upgrades, the wastewater treatment system will discharge treated wastewater effluent with a total nitrogen concentration of 10 mg/L or less. The effluent will be spray irrigated onto approximately 893.63 acres of agricultural fields in Sussex County, Delaware, where further nitrogen reduction will occur via crop uptake. Seven center pivot spray irrigation systems are located north of Route 24, and are designated as WHBJ Systems Nos. 1, 2, 3, 4, 5, 6, and 7. Additionally, six center pivot spray irrigation systems are located south of Route 24, and are designated as Center Block Systems Nos. 3, 3A, 3B, 3C, 3DE, and 3DW.

The above-described Applications submitted to the Department by Mountaire were deemed technically complete by the Department's Division of Water, Groundwater Discharges Section ("GWDS"). Accordingly, the Department published legal notices in both the *Sunday News Journal* and the *Delaware State News* on April 29, 2020, advertising that a virtual public hearing would be held, as referenced above. The Department also posted such information on the State of Delaware Public Meeting Calendar and the DNREC web site. Thereafter, the Department held its public hearing concerning this matter on May 21, 2020.

Department staff, representatives of Mountaire, and approximately thirty members of the public virtually attended the May 21, 2020 public hearing. Due to the high level of public interest in these Applications, and in response to requests made by the public for the Department to extend the public comment period, the Record remained open for receipt of written comment through June 22, 2020. Proper notice of the hearing was provided as required by law.

II. SUMMARY OF THE PUBLIC HEARING RECORD:

The hearing record ("Record") consists of the following documents:

(1) The official verbatim Transcript of Proceedings from Wilcox & Fetzer, Ltd., generated from the virtual public hearing of May 21, 2020;

(2) Ten exhibits, introduced by responsible Department staff at the aforementioned hearing, marked accordingly by this Hearing Officer as "Dept. Exhibits 1-10," and posted on the Department's hearing web page dedicated to this matter as "DNREC Exhibits";

(3) Copy of the Mountaire PowerPoint presentation offered at the aforementioned hearing, marked accordingly by this Hearing Officer as "Applicant Exhibit 1";

(4) Written comments (with attached Exhibits A-G) offered by Chase T. Brockstedt, Esquire, as posted on the Department's hearing web page dedicated to this matter as "Brockstedt Comments (05/21/2020)";

(5) Written comments offered by Ronald W. Schmoyer (05/24/2020), as posted on the Department's hearing web page dedicated to this matter under the "Public Comments" Section;

(6) Written comments offered by Kim Letke (06/05/2020), as posted on the Department's hearing web page dedicated to this matter under the "Public Comments" Section;

(7) Written comments offered by Lewis R. Podolske (06/05/2020), as posted on the Department's hearing web page dedicated to this matter under the "Public Comments" Section;

(8) Written comments offered by Delaware Center for the Inland Bays (06/19/2020), as posted on the Department's hearing web page dedicated to this matter under the "Public Comments" Section; and

(9) Technical Response Memorandum ("TRM"), with attachments, from the Department's experts in the Division of Water, Groundwater Discharges Section, ("GWDS") including, but not limited to, John Rebar, Jr., Environmental Program Manager, dated November 23, 2020.

The Department's person primarily responsible for reviewing the pending Applications, Mr. Rebar, as referenced above, developed the Record with the relevant documents in the Department's files.

The Record generated in this matter indicates that the Department received written comments and questions regarding the above-described Applications from three individual members of the public, Chris Bason, Executive Director, Delaware Center for the Inland Bays, and from Chase T. Brockstedt, Esquire, who noted that his extensive comments were submitted on behalf of Gary Cuppels, Christina Caliguire, and "more than 800 other residents and property owners…in the vicinity of the Millsboro, Delaware property and facilities owned and operated by, among others, Mountaire…." The comments received by the Department concerned not only the water quality in Sussex County, but also the potential overall environmental and public health impacts of the proposed operations at Mountaire's facility.

At the request of this Hearing Officer, the technical experts in the Department's GWDS prepared the aforementioned TRM to (1) specifically address the concerns set forth in the public comments received by the Department; and (2) offer conclusions and recommendations with regard to the aforementioned pending Applications for the benefit of the Record generated in this matter.

During the GWDS's review of the Record, similar comments and questions received from the public were grouped together, to better organize the Department's formal responses to the same. In order to adequately address concerns raised by the public regarding the pending Applications, the GWDS requested additional information from Mountaire in a letter dated July 28, 2020. That request, along with Mountaire's response to the same, are all contained within the TRM, formally provided to this Hearing Officer on November 23, 2020.

The GWDS's TRM provides a summary of the public comments received by the Department in this matter and offers responses to those concerns specifically associated with the Applications pending before the Secretary at this time. It does not, however, address those comments that pertain to matters outside the permitting authority of the GWDS, nor is it responsive to any comments not specifically related to the Applications, which were the subject matter of the virtual public hearing held by the Department on May 21, 2020.

I find that the GWDS's TRM offers a thorough and detailed review of all aspects of Mountaire's pending Applications, addresses those concerns germane to the subject matter of the aforementioned public hearing, and responds to them in a balanced manner, accurately reflecting the information contained in the Record. Thus, the GWDS's TRM, dated May 21, 2020, with attachments, is attached hereto as Appendix "A" and is expressly incorporated herein as such.

III. RECOMMENDED FINDINGS AND CONCLUSIONS:

Currently pending before the Department are the above-described Applications submitted to the Department by Mountaire Farms of Delaware, Inc., for its Poultry Processing Complex in Millsboro, Delaware. I find that the proposed project requires Mountaire to obtain both an OWTDS Construction Permit and an OWTDS Operations Modification and Renewal Permit for its aforementioned Millsboro facility. I further find that the Applicant's proposed project is subject to various state and federal regulatory requirements, including, but not limited to, Delaware's *Regulations Governing the Design, Installation, and Operation of On-Site Wastewater Treatment and Disposal Systems*, as set forth in 7 DE Admin. Code 7101, and as provided for under Delaware law in 7 *Del.C.* Ch. 60.

In reviewing the applicable statutes and regulations, as well as weighing public benefits of this project against potential detriments, the Department's experts in the GWDS have concluded that the Applications submitted by Mountaire, as described in detail above, comply with all applicable federal and state laws and regulations. Should the Applications be approved, the permits that would be issued to Mountaire by the Department would be reflective of the Applications submitted, and would include effluent limitations, along with operational, monitoring, and reporting requirements intended to protect public health and the environment.

In response to the above referenced comments received from the public in this matter, the Department has sought to minimize the impacts to the surrounding communities. To that end, the Department's experts in GWDS have made the following determinations:

1. The OWTDS Construction Permit will authorize significant upgrades to the existing wastewater treatment system, providing enhanced effluent treatment capabilities, ultimately allowing the system to treat wastewater to a total nitrogen concentration of 10 mg/L or less, in-line with Federal Drinking Water Standards.

2. Additional upgrades include the installation of a new tertiary sand filtration system for final effluent polishing, a new screw press sludge dewatering system designed to increase waste activated sludge handling capacity, and a new spray storage lagoon expanding the system's final effluent storage volume.

3. In addition to the construction and/or installation of the aforementioned proposed upgrades and equipment, the OWTDS Construction Permit will also include a schedule of compliance, construction requirements, monitoring equipment installation requirements, and project completion requirements designed to (1) eliminate poorly constructed systems; (2) reduce treatment system malfunctions; (3) ensure the retention of construction documents; and (4) ultimately result in wastewater treatment systems that are protective of water resources and the public's health, safety, and welfare.

4. The OWTDS Operations Modification and Renewal Permit will require the wastewater treatment system to achieve a maximum total nitrogen concentration of 10 mg/L within four (4) months of completing the wastewater treatment system upgrades. This enhanced water quality is in-line with Federal Drinking Water Standards and therefore protective of human health and the environment. Additionally, effluent total nitrogen concentrations will be further reduced by plant uptake during disposal via spray irrigation.

5. The OWTDS Operations Permit will include effluent limitations, as well as operational and reporting requirements designed to protect human health and the environment. Additionally, the permit will govern the volume and manner in which treated wastewater (effluent) may be used for spray irrigation, prohibiting spray during periods of high winds, saturated or frozen soil conditions, or when effluent ponding or runoff is observed.

6. Furthermore, the OWTDS Operations Permit will require extensive water quality monitoring through spray effluent monitoring, the use of lysimeters (in-field), monitoring wells (in-field, up-gradient, and down-gradient), and surface water monitoring, allowing the GWDS to assess what impact the spray irrigation activities are having on the spray fields, groundwater, and surface waters within and adjacent to the spray fields.

7. In the event trends of increasing concentrations and/or impacts are observed, Mountaire will be required to take all necessary actions to eliminate and correct any adverse impact on public health or the environment resulting from permit non-compliance. This includes the addition of nitrogen and fecal coliform contingency plans for poor water quality.

Additionally, as a direct result of the comments received by the Department in this matter, the GWDS has made revisions to both the Draft OWTDS Construction Permit and the Draft OWTDS Operations Modification and Renewal Permit for Mountaire's Poultry Processing Complex in Millsboro, Delaware. These revisions are specifically set forth in the Department's TRM, and are noted herein as follows:

Revisions to Draft OWTDS Construction Permit:

1. Mountaire is now required to upgrade the wastewater treatment system to achieve a Total Phosphorous ("TP") effluent concentration of 3.0 mg/L within three (3) years of permit issuance.

2. The Department acknowledges that Mountaire does not intend to construct a future dryer for Class A solids disposal. The Department recommends Mountaire submit a revised Process Flow Diagram with the Drawings required in Part I, C.1 of the Draft OWTDS Construction Permit.

3. On Page 5, Item #2 – DAF Cell 1B – should indicate 2400 gpm, not 1800 gpm. Also, DAF Cell 1B can operate either in parallel or independently. The DAFs will operate 24 hours/day, 6-7 days per week.

4. On Page 7, Item #11 – Any modifications to the number of screw presses to be installed for sludge dewatering, based on size and/or brand chosen, should be included with the Drawings and Technical Specifications required in Part I, C.1 of the Draft OWTDS Construction Permit. Revisions have been made to indicate the minimum number.

In addition to the above revisions, the Department notes that the requirement of two synthetically lined storage lagoons in Part I, C.3 of the Draft OWTDS Construction Permit was drafted in error. The Department provides the following correction regarding the same:

> *Part I C.3 on Page 9 of the draft construction permit will be revised to reflect the requirement of only one new, synthetically lined storage lagoon. Part I, A on Page 8 of the draft construction permit has also been revised to include the required new, synthetically lined storage lagoon in the list of authorized construction items as Item Number 23.*

Revisions to Draft OWTDS Operations Permit:

1. Mountaire is now required to achieve a TP effluent concentration of 3.0 mg/L within three (3) years and four (4) months of permit issuance. As a component of the system upgrade, Mountaire will be allowed to investigate TP effluent concentrations further and submit additional information for the GWDS to evaluate and may request a Permit Modification regarding the TP limit.

2. As noted previously, the Department acknowledges that Mountaire does not intend to construct a future dryer for Class A solids disposal. The Department recommends Mountaire submit a revised Process Flow Diagram with its required Drawings.

3. The Department acknowledges that typical farming practices require soybeans to be harvested only once per year. Thus, revisions have been made to require crops to be harvested as appropriate. The permit will continue to require harvested crops to be removed from the irrigation site within six (6) months of harvest.

4. The intent of the requirements regarding the application of fertilizer iterated in Part I, D.10 of the Draft OWTDS Operations Permit is to limit the application of Nitrogen and Phosphorus. The Department acknowledges that typical farming practices, at times, require the addition of pot ash and lime. Thus, revisions have been made to specify the prohibition of fertilizer containing Nitrogen and Phosphorus.

The Record developed in this matter indicates that the Department's GWDS experts have considered all applicable statutes and regulations that govern projects such as the Applicant's above proposed activities and have recommended approval of the aforementioned permits necessary for the same.

I find and conclude that the Applicant has adequately demonstrated compliance with all requirements of the statutes and regulations, as noted herein, and that the Record supports approval of the Applications as submitted by Mountaire in this matter. In conclusion, I recommend both the revised OWTDS Construction Permit and revised OWTDS Operations Modification and Renewal Permit for Mountaire's Poultry Processing Complex in Millsboro, Delaware, as set forth in the Applications described above, be issued at this time by the Department in the customary form, consistent with the Record developed in this matter and with appropriate conditions.

Further, I recommend the Secretary adopt the following findings and conclusions:

1. The Department has jurisdiction under 7 *Del. C.* §§6003, 6004, 6006(4), Delaware's *Regulations Governing the Design, Installation, and Operation of On-Site Wastewater Treatment and Disposal Systems* (7 DE Admin. Code 7101), and all other relevant statutory authority, to make a final determination on the Applications submitted by Mountaire after holding a public hearing, considering the public comments, and all information contained in the Record generated in this matter;

2. The Department provided proper public notice of the Applications submitted by Mountaire, as described above, and of the public hearing held on May 21, 2020, and held said hearing to consider any public comment that may be offered on the Applications, in a manner required by the law and regulations;

3. The Department considered all timely and relevant public comments in the Record, as established in the TRM provided by the Department's GWDS, which has now been expressly incorporated into the Record generated in this matter;

4. The Department has carefully considered the factors required to be weighed in issuing the permits required by the aforementioned Applications, and finds that the Record supports approval of the same;

5. The Department shall issue to Mountaire both the On-Site Wastewater Treatment and Disposal System Construction Permit and Operations Modification and Renewal Permit for Mountaire's Poultry Processing Complex in Millsboro, Delaware, with the revisions proposed by the Department's GWDS, consistent with the Record developed in this matter. Furthermore, said permits shall include all conditions as set forth in the Department's revised Draft Permits for Mountaire, to ensure that Delaware's environment and public health will be protected from harm;

6. The Department has an adequate Record for its decision, and no further public hearing is appropriate or necessary; and

7. The Department shall serve and publish its Order on its internet site.

/s/Lisa A. Vest
LISA A. VEST
Regulatory Specialist

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Attachment A: GWDS TRM (11/23/20)

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES &
ENVIRONMENTAL CONTROL
DIVISION OF WATER
89 KINGS HIGHWAY
DOVER, DELAWARE 19901

Groundwater Discharges Section

Telephone: (302) 739-9948

MEMORANDUM

TO: Lisa Vest, Hearing Officer, Office of the Secretary

THROUGH: Virgil Holmes, Director, Division of Water (DW) VH
Jennifer Roushey, Environmental Program Administrator, DW JR
John Rebar Jr., Environmental Program Manager I Groundwater Discharges Section (GWDS) JJR

FROM: Marlene Baust P.E., Engineer IV, GWDS JJR for MB

RE: **Technical Response Memorandum - Response to Comments Received during the Public Comment Period and the May 21, 2020 Public Hearing (Docket # 2020-P-W-0014) on the application and draft construction permit and associated modification and renewal draft permit for Mountaire Farms of Delaware, Inc.'s On-Site Wastewater Treatment and Disposal System**

DATE: November 23, 2020

This Technical Response Memorandum (TRM) was prepared at the request of the presiding Hearing Officer to assist in the completion of the Hearing Officer's Report to the Secretary of the Delaware Department of Natural Resources and Environmental Control (the Department). This TRM provides the information necessary to inform the final decision on the issuance of the proposed On-Site Wastewater Treatment and Disposal System (OWTDS) Construction Permit and modified, renewed OWTDS Operations Permit for the Mountaire Farms of Delaware, Inc. processing plant in Millsboro, Delaware.

Mountaire Farms of Delaware Inc. (Mountaire) has applied for a State of Delaware Construction Permit for significant upgrades of the existing wastewater treatment system at the Mountaire Poultry Processing Complex in Millsboro, DE to provide enhanced wastewater effluent treatment capabilities. The proposed upgrades will allow the wastewater treatment system to treat wastewater to a total nitrogen concentration of 10 mg/L or less. The proposed wastewater treatment system upgrade project includes improvements to the activated sludge biological nitrogen removal (BNR) treatment system components. The project also includes the installation of a new tertiary sand filtration system for final effluent polishing and a new screw press sludge dewatering system designed to increase waste activated sludge handling capacity. The existing spray storage lagoon will continue to be used for final effluent storage prior to disposal in the existing spray irrigation fields. However, a new spray storage lagoon will also be installed to expand the final effluent storage volume.

Mountaire also requested to modify and renew their State of Delaware Operations Permit authorizing their wastewater treatment system to receive and treat poultry processing wastewater, stormwater, and sanitary waste. After the completion of construction upgrades, the wastewater treatment system will discharge treated wastewater effluent with a total nitrogen concentration of 10 mg/L or less. The effluent will be spray irrigated onto approximately 893.63 acres of agricultural fields. Seven center pivot spray irrigation systems are located north of State Route #24 and are designated as WHBJ Systems Nos. 1, 2, 3, 4, 5, 6, and 7. In addition, six center pivot spray irrigation systems are located south of Route #24 and are designated as Center Block Systems Nos. 3, 3A, 3B, 3C, 3DE, and 3DW.

The construction application was submitted in accordance with 7 Del. Admin. C. § 7101 *Regulations Governing the Design, Installation and Operation of On-Site Wastewater Treatment and Disposal Systems* (the Regulations) along with a request to renew and modify the existing Operations Permit to authorize the future operation of the improved wastewater treatment system. A virtual public hearing was held on the application and proposed draft permits on Thursday, May 21, 2020, at 6:00 PM. To allow the public ample time to review the application, draft permits, and provide comment, the Hearing Officer left the hearing record open until June 22, 2020. The Department received comments and questions from three individuals, a representative of the Center for the Inland Bays, and an attorney representing more than 800 residents and property owners in the vicinity of the Mountaire Farms of Delaware, Inc.'s Millsboro property and facilities. In many cases, comments and questions were provided on the same issues; in others, the comments and questions were unrelated. During the Groundwater Discharge Section's (GWDS) review of the written comments to prepare this *response to comments* document, the GWDS paraphrased and grouped similar comments and questions together. In addition, to adequately address all comments and questions, the GWDS requested additional information from Mountaire in a letter dated July 28, 2020 (Exhibit 1). Mountaire provided the requested additional information in a response letter dated August 21, 2020 (Exhibit 2). Comments and the GWDS's responses follow.

1. **Comment: The proposed permit and its referenced supporting documents do not include an assessment of surface water (SWAR), a groundwater mounding analysis and a fate and transport model for nitrogen, as required by Section 6.2 of the Regulations.**

   Response: Section 6.2 of the Regulations describes the site characterization requirements (i.e. Soil Investigation Report (SIR), Hydrogeologic Suitability Report (HSR), Surface Water Assessment Report (SWAR)) needed to determine if a discharge site is suitable to receive treated wastewater (effluent) for final disposal while protecting human health and the environment. These actions are usually initiated through the submission of a "*Letter of Intent*" prior to constructing a large OWTDS.

   The Mountaire OWTDS in Millsboro initially received a State of Delaware Permit in 1987. Since 1987, the GWDS has issued various construction permits and renewal permits to Mountaire with operational, monitoring, and reporting requirements designed to protect human health and the environment. The current Operations Permit (No. 359191-04) requires Mountaire to submit monthly and annual monitoring reports along with other site-specific information. This includes influent and effluent water quality data, vegetation

monitoring data to verify nitrogen uptake, along with groundwater, lysimeter, and soil monitoring data. This monitoring information allows the GWDS to evaluate Mountaire's operational processes and impact on the environment.

The Mountaire OWTDS is currently permitted and operating and since the application for the wastewater treatment system's proposed upgrades did not include the addition of new land area for disposal, the Regulations do not require any additional site characterization or suitability information to be submitted with the application.

2. **Comment: There was no environmental impact study for the long-term effects on the aquifer.**

Response: The Regulations dictate application requirements for OWTDS construction and operations permits to ensure the protection of public health and the environment. The application requirements can vary depending on the size of the treatment and disposal system, the type of wastewater disposal (e.g., spray irrigation, rapid infiltration basins, etc.), and permit cycle (initial v. renewal) and can include soil and groundwater data, Design Engineer Report, "as-built" construction drawings, an Operation and Maintenance Plan, and a Vegetative Management Plan. This information is designed to provide the GWDS with an application with the information and data necessary to prepare, technically and legally, defensible discharge permits that are protective of the environment and public health. However, the Regulations do not currently require a local or regional public health study or the preparation of a formal Environmental Impact Statement (EIS) as a component of the application package for OWTDS construction and operation permits.

The GWDS believes that the application, as submitted in compliance with the Regulations along with information on-file with the Department, provides all the essential information necessary to develop a construction permit and modified, renewed operations permit for Mountaire's OWTDS that will adequately protect the environment and human health.

3. **Comment: What is the water and environmental impact?**

Response: Wastewater is composed a wide range of physical, chemical, and biological constituents. The goal of wastewater treatment is the removal of specific constituents of concern for the protection of public health and the environment. The primary constituents of concern in wastewater include total suspended solids (TSS), pathogens, biodegradable organics, nutrients (i.e., nitrogen and phosphorus) and other dissolved inorganics, heavy metals, and priority pollutants (i.e., carcinogenic organic and inorganic compounds). Wastewater treatment systems are designed to remove specific constituents depending on the source of the wastewater (i.e., municipal, industrial, agricultural, etc.) and point of discharge (surface water, groundwater, public or agricultural reuse, etc.).

The GWDS is mandated by Section 3.13 of the Regulations to ensure that all permitted on-site wastewater treatment and disposal systems are "operated and maintained so as not to create a public health hazard or cause water pollution." In order to comply with this Section

of the Regulations, the GWDS prepared a draft On-Site Wastewater Treatment and Disposal System Construction Permit (No. 359191-05) and a draft (modified and renewed) On-Site Wastewater Treatment and Disposal System Operations Permit (No. 359191-06) for the Mountaire processing facility. The draft permits include effluent limitations along with operational, monitoring, and reporting conditions designed to protect public health and the environment.

Mountaire Farms of Delaware, Inc., Draft Construction Permit, No. 359191-05

Mountaire applied for a State of Delaware Construction Permit for significant upgrades of the existing wastewater treatment system at the Mountaire Poultry Processing Complex in Millsboro, DE. The primary focus of these upgrades is to provide enhanced wastewater effluent treatment capabilities ultimately allowing the wastewater treatment system to treat wastewater to a total nitrogen concentration of 10 mg/L or less. This nitrogen concentration is in-line with Federal Drinking Water Standards. The proposed wastewater treatment system upgrade project includes improvements to the activated sludge biological nitrogen removal (BNR) treatment system components. The project also includes the installation of a new tertiary sand filtration system for final effluent polishing and a new screw press sludge dewatering system designed to increase waste activated sludge handling capacity. The existing spray storage lagoon will continue to be used for final effluent storage prior to disposal in the existing spray irrigation fields. In addition, a new spray storage lagoon will be installed to expand the final effluent storage volume.

The proposed draft construction permit authorizes the construction and/or installation of the proposed upgrades and equipment. In addition, the draft permit includes a schedule of compliance, construction requirements, monitoring equipment installation requirements, and project completion requirements designed to eliminate poorly constructed systems, reduce treatment system malfunctions, ensure the retention of construction documents, and ultimately resulting in wastewater treatment systems that are protective of water resources and the public's health, safety, and welfare.

Schedule of Compliance

The draft permit includes a schedule of compliance designed to ensure that the upgrades to the wastewater treatment system are completed in the shortest timeframe possible. This includes:

1) submission of finalized plans and specifications submitted to the GWDS within 180 days of permit issuance;
2) complete construction of key wastewater treatment system components required to enhance treated water quality within two years of permit issuance; and
3) complete construction of all other remaining system components within three years of permit issuance.

Monitoring Requirements

The draft permit includes significant enhancements to Mountaire's monitoring program designed to further protect human health and the environment. This includes:

1) The installation of an influent sampling port positioned to ensure that a representative sample of the influent waste stream is obtained. The location of the port will be approved by the GWDS prior to installation. The sampling port will be installed in conjunction with the upgraded wastewater treatment system and will be the influent monitoring point of compliance at that point forward.

2) The installation of an effluent sampling port positioned to ensure that a representative sample of the treated wastewater is obtained prior to the storage lagoons. The location of the port will be approved by the GWDS prior to installation. The sampling port will be installed in conjunction with the upgraded wastewater treatment system and will be the effluent monitoring point of compliance (in part) at that point forward.

3) Within 30 days of permit issuance, the Permittee is required to submit a written work plan proposing an appropriately configured network of shallow observation wells for the purpose of better defining shallow groundwater flow in the upper portion of the unconfined aquifer in the area just upgradient of residents along Jersey Road (i.e., the area of spray pivot WHBJ2. The work plan is required to include, at a minimum, the following information.
    a. A map showing the proposed location of observation wells.
    b. Proposed screen intervals: the observation wells are required to be constructed with relatively short screen intervals designed to adequately measure fluctuating water table elevations.

    All observation well locations will be approved by the Department prior to installation.

    All observation wells will be installed within 60 days of work plan approval.

4) Within 30 days of permit issuance, the Permittee is required to submit a written work plan for two nested monitoring systems:
    a. one system in the northern spray field area north of Rt. 24, aka, the WHBJ spray area; and
    b. one system in the southern spray area south of Rt. 24 in the Center Block System spray area.

    The nested systems are required to be constructed at or very close to the center of a large spray irrigation field and will consist of a lysimeter, a shallow monitoring well that is constructed to sample the top of the water-table over a very discrete screen interval, and a deeper monitoring well with a well screened from 15 to 35 feet below the ground surface.

All nested monitoring system locations will be approved by the Department prior to installation.

All nested monitoring systems will be installed within 60 days of work plan approval.

All monitoring wells are required to be installed by a licensed well driller, and a permit to construct the wells must first be obtained from the Department. In addition, the GWDS will be notified prior to well installation.

All facility monitoring wells and lysimeters (including newly installed wells) are required to be surveyed by a Delaware-licensed Professional Land Surveyor to establish horizontal locations in Delaware State Plane coordinates relative to the 1983 North American Datum (NAD 83) as well as Latitude and Longitude relative to the World Geodetic System of 1984 (WGS 84). Additionally, the elevations of permanent markings on the top of casing for each well/lysimeter and the ground surface immediately adjacent to the wells/lysimeters will be surveyed to the nearest 0.01-feet relative to the 1988 North American Vertical Datum (NAVD 88). This information is required to be submitted to the Department in both map form and as a digital spreadsheet.

5) Within 60 days of completion of above well installation requirements, a comprehensive report detailing all monitoring well and lysimeter installations, including results of the comprehensive survey will be submitted to the GWDS.

Construction Requirements

The draft permit includes conditions designed to ensure that the upgrades to the wastewater treatment system are completed in accordance with GWDS approved construction plans and specifications. These requirements include:

1) GWDS construction inspections;
2) appropriate engineering supervision of construction activities;
3) proper surveying of all wastewater treatment system components; and
4) upon completion of construction, the Permittee is required to submit the following information:
   a. Design Engineer Inspection Report(s) certifying the wastewater treatment system was constructed in accordance with approved plans and specifications.
   b. Copies of any other applicable State/County inspection reports.
   c. Contractor's Certificate of Completion.
   d. A certificate or letter of completion/approval from the wastewater treatment system manufacturer.
   e. An Operation and Maintenance Plan for the wastewater treatment system.
   f. A set of as-built drawings of the facility bearing the seal and signature of a licensed Professional Engineer registered in the State of Delaware. The as-built drawings must include:

i. Site map showing the location of all structures, piping/appurtenances, disposal areas and buffers.
ii. A full equipment list and technical specifications for all equipment used, if different than submitted in the permit application.
iii. The new topography elevations of the system.
iv. Monitoring/Observation well locations, elevations at the top of the casing (TOC) and at the ground surface, GPS coordinates (State Plane), and local topography tied to a common benchmark.
v. The screen depth, length of stick up, and well ID's shall be provided for each monitor well.
vi. Surface water monitoring points.

Mountaire's proposed draft construction permit includes conditions and requirements to ensure that the proposed upgrades to the wastewater treatment system and other facility upgrades are completed within a timely manner and in accordance with GWDS approved construction plans and specifications. Ultimately, the upgrades will result in a treatment system producing enhanced water quality effluent in-line with Federal Drinking Water Standards for nitrogen, enhanced influent/effluent monitoring, and enhanced groundwater quality monitoring.

Mountaire Farms of Delaware, Inc., Draft Modified/Renewed Operations Permit, No. 359191-06

Section 6.5.3.2.3 of the Regulations authorizes the GWDS to establish specific permit conditions necessary for the protection of the environment and the public health. These conditions are based on a variety of site-specific characteristics associated with a facility. This can include influent and effluent water quality, volume of water treated, wastewater distribution and disposal methods, and potential for adverse environmental impacts to groundwater and surface water resources. The proposed draft modified and renewed operations permit includes effluent limitations along with operational, monitoring, and reporting conditions devised to protect public health and the environment.

Total Nitrogen

The proposed draft permit requires the wastewater treatment system to achieve a maximum total nitrogen concentration of 10 mg/L within four (4) months of completing wastewater treatment system upgrades. This enhanced water quality is in-line with Federal Drinking Water Standards and therefore protective of human health and environment. This effluent limitation applies to treated effluent prior to discharge into the facility's finishing pond. Total nitrogen concentrations will be further reduced by plant uptake during disposal via spray irrigation.

Effluent Water Quality

Treated effluent discharged from the wastewater treatment system is required to meet limited public access criteria (Table 1) which is designed for sites where access by the public is controlled and only accessed by operational or farm personnel.

Table 1: Limited Public Access Criteria

Parameter	Daily Permissible Average Concentration
5-Day Biochemical Oxygen Demand	50 mg/L
Fecal Coliform	200 colonies/100 mL
Total Suspended Solids	50 mg/L

In addition, treated effluent is required to achieve a total residual chlorine concentration not less than 1.0 mg/L nor more than 4.0 mg/L at any time when chlorination is used for disinfection purposes during spray operations. The pH of the treated effluent will achieve a concentration of not be less than 5.5 standard units nor greater than 9.0 standard units at any time and the treated effluent discharged to the spray irrigation fields shall be free from material such as floating solids, sludge deposits, debris, scum, oil and grease.

To ensure proper treatment the proposed draft permit requires routine influent and effluent wastewater monitoring (Table 2 and Table 3).

Table 2: Influent Monitoring Requirements

Parameter	Unit of Measurement	Monitoring Frequency	Sample Type
Flow	Gallons/Day	Continuous	Recorded
BOD5	mg/L	Monthly	Grab
TSS	mg/L	Monthly	Grab
Total Nitrogen	mg/L	Monthly	Grab
Ammonia Nitrogen	mg/L	Monthly	Grab
Nitrate/Nitrite as Nitrogen	mg/L	Monthly	Grab
pH	S.U.	Monthly	Grab
Total Phosphorus	mg/L	Monthly	Grab
Chloride	mg/L	Monthly	Grab

Table 3: Effluent Monitoring Requirements

Parameter	Unit Measurement	Monitoring Frequency	Sample Type
Ammonia Nitrogen	mg/L	Monthly	Composite
BOD_5	mg/L	Twice per month[2]	Composite
Cadmium	mg/L	Annually	Composite
Calcium	mg/L	Annually	Composite
Chloride	mg/L	Quarterly	Composite
Copper	mg/L	Annually	Composite
Effluent Flow	Gal/day	Continuous	Recorded
Fecal Coliform	Col/100 ml	Twice per month[2]	Grab
Lead	mg/L	Annually	Composite
Magnesium	mg/L	Annually	Composite
Nickel	mg/L	Annually	Composite
Nitrate + Nitrite Nitrogen	mg/L	Monthly	Composite
Oil and Grease	mg/L	Monthly	Grab
Organic Nitrogen	mg/L	Monthly	Calculation
pH	S.U.	Daily	Grab
Potassium	mg/L	Quarterly	Composite
Sodium Adsorption Ratio	N/A	Quarterly	Calculation
Sodium	mg/L	Quarterly	Composite
Total Dissolved Solids	mg/L	Quarterly	Grab
Total Nitrogen[1]	mg/L	Twice per month[2]	Composite
Total Nitrogen Loading	lbs/acre	Monthly	Calculation
Total Phosphorus	mg/L	Monthly	Composite
Total Phosphorus Loading	lbs/acre	Monthly	Calculation
Total Residual Chlorine	mg/L	Daily	Grab
Total Suspended Solids	mg/L	Twice per month[2]	Composite
Zinc	mg/L	Annually	Composite

[1]Until the construction upgrades are complete in accordance with Part I.C.2 of the State Permit DEN Number 359191-05, the Permittee shall continue the current enhanced monitoring frequency as required by the Department.
[2]Samples shall be taken 14 days apart.

To ensure proper spray irrigation operations in-line with the facility's design, the proposed draft operations permit requires the following information be submitted monthly to the GWDS (Table 4).

Table 4: Spray Irrigation Information

Parameter	Unit Measurement	Monitoring Frequency	Sample Type
Total Effluent Flow to all Fields/Zones/Pivots combined	Gallons	Monthly	Data
Max Daily Effluent Flow to all Fields/Zones/Pivots combined	Gallons	Monthly	Data
Average Daily Effluent to all Fields/Zones/Pivots combined	MGD or gpd	Monthly	Calculation (Total Monthly Effluent Flow / Number of Days in Month)
Total Effluent Flow to each Fields/Zones/Pivots	Gallons	Monthly	Data
Number of Days Sprayed During the Month to each Fields/Zones/Pivots	Days	Monthly	Data
Nitrogen Loading Rate to each Fields/Zones/Pivots	lbs/acre per Field/Zone/Pivot	Monthly	Calculation
Cumulative Annual Nitrogen Loading Rate to each Fields/Zones/Pivots	lbs/acre per Field/Zone/Pivot	Monthly	Calculation
Phosphorus Loading Rate to each Fields/Zones/Pivots	lbs/acre per Field/Zone/Pivot	Monthly	Calculation
Cumulative Annual Phosphorus Loading Rate to each Fields/Zones/Pivots	lbs/acre per Field/Zone/Pivot	Monthly	Calculation

Groundwater

The GWDS issues discharge permits that are designed to protect groundwater quality by including requirements to control the amount of nitrogen (i.e., nitrates as nitrogen) and other contaminants discharged in treated wastewater (effluent).

The proposed draft permit will require treated effluent discharged from the Mountaire on-site wastewater treatment system to meet a maximum total nitrogen (the sum of nitrate, nitrite, ammonia, and organic nitrogen) concentration of 10 mg/L. This limitation is derived from the Federal Drinking Water Standard and is, therefore, the maximum concentration of nitrogen that can be discharged without impacting groundwater resources. Further nitrogen reductions will then be achieved via crop uptake upon spray irrigation of the treated effluent.

Spray irrigation permits require extensive groundwater monitoring. The proposed draft permit requires a groundwater monitoring well network (currently a total of 33 wells) to ensure that wastewater-related contaminants are detected, quantified, and analyzed regarding their impact to groundwater quality. The following parameters are required to be sampled in Mountaire's monitoring wells (Table 5).

Table 5: Monitoring Well Sampling Requirements

Parameter	Unit Measurement	Measurement Frequency	Sample Type
Ammonia as Nitrogen	mg/L	Quarterly	Grab
Arsenic	mg/L	Quarterly	Grab
Chloride	mg/L	Quarterly	Grab
Depth to Water	hundredths of a foot	Quarterly	Field Test
Dissolved	mg/L	Quarterly	Field Test
Fecal Coliform	Col/100mL	Quarterly	Grab
Nitrate + Nitrite as Nitrogen	mg/L	Quarterly	Grab
pH	S.U.	Quarterly	Field Test
Sodium	mg/L	Quarterly	Grab
Specific Conductance	µS/cm	Quarterly	Field Test
Temperature	°C	Quarterly	Field Test
Total Dissolved Solids	mg/L	Quarterly	Grab
Total Nitrogen	mg/L	Quarterly	Grab
Total Phosphorus	mg/L	Quarterly	Grab

In addition, the proposed draft permit requires Mountaire to measure the depth of the groundwater table on a quarterly basis. In accordance with Section 6.5.3.2.1.4 of the Regulations, if the groundwater mound created by the added infiltration reaches within 2-ft of the ground surface than the spray irrigation operation must cease until the groundwater recedes to acceptable levels.

In order to verify that the spray irrigation system is producing a high quality percolate of <10 mg/L beneath the spray irrigation fields and not causing a groundwater impact, the proposed draft permit requires Mountaire's seven (7) lysimeters to be sampled for the following parameters on a quarterly basis (Table 6).

Table 6: Lysimeter Monitoring Requirements

Parameter	Unit Measurement	Measurement Frequency	Sample Type
Total Nitrogen	mg/L	Quarterly	Grab
Total Phosphorus	mg/L	Quarterly	Grab

Nitrate + Nitrite as Nitrogen	mg/L	Quarterly	Grab
Ammonia as Nitrogen	mg/L	Quarterly	Grab
Chloride	mg/L	Quarterly	Grab
Sodium	mg/L	Quarterly	Grab
Total Dissolved Solids	mg/L	Quarterly	Grab
pH	S.U.	Quarterly	Field Test
Specific Conductance	µS/cm	Quarterly	Field Test
Temperature	°C	Quarterly	Field Test

The proposed draft permit also requires the monitoring of five (5) surface water locations (Table 7). All samples must be taken on the same day, with downgradient locations sampled first, and with no sampling to occur within three days of a measurable rainfall event to ensure that the streams have returned to base flow (groundwater dominant conditions).

Table 7: Surface Water Sampling Locations

Local ID	Location Type	Water Body	Northings	Eastings
SW-1	Upstream	Swan Creek	69152.576	69152.576
SW-2	Upstream	Longwood Creek	68292.426	68292.426
SW-3	Downstream	Longwood Creek	66926.088	66926.088
SW-4	Downstream	Waples Pond	67260.127	67260.127
SW-5	Downstream	Longwood Pond	66776.152	66776.152

The following parameters will be sampled on a quarterly basis (Table 8).

Table 8: Surface Water Sampling Requirements

Parameter	Unit Measurement	Monitoring Frequency	Sample Type
pH	S.U.	Quarterly	Field Test
Temperature	°C	Quarterly	Field Test
Specific Conductance	µS/cm	Quarterly	Field Test
Dissolved Oxygen	mg/L	Quarterly	Field Test
Ammonia Nitrogen	mg/L	Quarterly	Grab
Nitrate + Nitrite Nitrogen	mg/L	Quarterly	Grab
Total Nitrogen	mg/L	Quarterly	Grab
Enterococcus	Col/100 ml	Quarterly	Grab
Fecal Coliform	Col/100 ml	Quarterly	Grab
Total Phosphorus	mg/L	Quarterly	Grab

Sodium	mg/L	Quarterly	Grab
Chloride	mg/L	Quarterly	Grab
BOD_5	mg/L	Quarterly	Grab
Total Suspended Solids	mg/L	Quarterly	Grab
Total Dissolved Solids	mg/L	Quarterly	Grab

Since, the hydraulic capacity of soils to accept, transmit, and treat water are controlled by the physical, chemical, and microbial properties of soils at Mountaire, the proposed draft permit requires soil monitoring. Two composite soil samples (soil depth of 0-12 inches and 12-24 inches) are required to be collected from each soil series within the wetted spray fields. The following parameters will be sampled on an annual basis with metals sampled once every five years (Table 9).

Table 9: Soil Monitoring Requirements

Parameter	Unit Measurement	Measurement Frequency	Sample Type
pH	S.U.	Annually	Soil Composite
Organic Matter	%	Annually	Soil Composite
Phosphorus (as P_2O_5)	mg/kg	Annually	Soil Composite
Potassium	mg/kg	Annually	Soil Composite
Sodium Adsorption Ratio	meq/100g	Annually	Soil Composite
Cadmium	mg/kg	Once per 5 years	Soil Composite
Nickel	mg/kg	Once per 5 years	Soil Composite
Lead	mg/kg	Once per 5 years	Soil Composite
Zinc	mg/kg	Once per 5 years	Soil Composite
Copper	mg/kg	Once per 5 years	Soil Composite
Cation Exchange Capacity	meq/100g	*Only if soil pH changes significantly	Soil Composite

Phosphorus Adsorption (Mehlich 3 acceptable)	meq/100g	**Only if soil phosphorus levels become excessive for plant growth	Soil Composite
Percent Base Saturation	%	*Only if soil pH changes significantly	Soil Composite

Mountaire's proposed draft operations permit requires multiple layers of monitoring to ascertain any increasing trends of wastewater constituents in groundwater. Sampling will be required by the facility through the following devices: lysimeters (in-field), monitoring wells (in-field, up-gradient, and down-gradient), and surface water grab samples. Using these three sets of data the GWDS will be able to assess what impact the spray irrigation activities are having on the spray fields, groundwater, and surface waters within and adjacent to the spray fields. Annual soil sampling is also required and once every five years heavy metals are required to be sampled. These data will be used to verify any impacts occurring as a result of the spray irrigation activities. In the event trends of increasing concentrations and/or impacts are observed, the permittee will be required take all necessary actions to eliminate and correct any adverse impact on public health or the environment resulting from permit non-compliance in accordance with Part III A.23 and Part IV A.5 of the proposed draft operations permit and Section 3.20 of the Regulations.

Groundwater Mitigation

In accordance with the *First Amended Agreement and [Proposed] Consent Decree* as entered by the Department and Mountaire on May 29, 2020 (Exhibit 3), Mountaire is required to mitigate impacts to groundwater beneath the spray irrigation fields resulting from the 2017 WWTP failure through a production well relocation project. Mountaire's production wells will be relocated to areas within the spray irrigation fields as approved by the Department where high nitrogen levels are present in the groundwater. Therefore, once the relocated production wells are in place, any water extracted from the aquifer to meet Mountaire's process water needs will be extracted from areas of high nitrogen beneath the spray irrigation fields. This water is then utilized by Mountaire for production purposes and subsequently treated through the upgraded WWTP to a total nitrogen level of 10 mg/L or less prior to disposal via spray irrigation. This essentially establishes a pump and treat loop system to mitigate nitrogen impacts to groundwater beneath the spray facility. The primary design goals for the mitigation system include both nitrogen removal, as well as, the establishment of the highest level of hydraulic control practicable based on the need to establish and consistently maintain a hydraulic gradient away from offsite potable wells, and in part, on Mountaire's process water needs. The *First Amended Agreement and [Proposed] Consent Decree* requires Mountaire to maintain the production wells within the spray irrigation fields for as long as Mountaire is in operation at the Millsboro location. Therefore, nitrogen removal and hydraulic control will continue well beyond Mountaire's

satisfaction of the nitrogen load removal commitments established in the *First Amended Agreement and [Proposed] Consent Decree*.

4. **Comment: What is the air impact?**

   Response: The Department's Division of Air Quality (DAQ) monitors and regulates all emissions to the air and the GWDS frequently works with DAQ if odors are reported at a wastewater treatment facility. Odors are generally not associated with properly engineered and maintained wastewater treatment systems (which should only have a slight earthy odor). In fact, strong odors usually indicate that the wastewater treatment system is not being operated appropriately (e.g., lack of proper aeration). The GWDS routinely inspects wastewater treatment systems to ensure the systems are being properly operated and maintained. However, if the public were to notice any concerns, odors or otherwise, they may contact the DNREC 24-Hour Toll-Free Complaint Line at 800-662-8802 to have their concerns investigated.

   In addition, Part III A.4.c of the proposed draft operations permit prohibits aerosols or nuisance odors from extending beyond the boundary of the spray irrigation area when treated wastewater is being applied. If aerosols are not contained within the spray area or if odors are produced that are considered a public nuisance, the proposed permit will require Mountaire to submit a corrective action plan to alleviate aerosol migration and odors within 30 days of discovery for Department review and approval (with immediate action to begin upon Department approval).

5. **Comment: The Reid Final Design Summary (dated February 5, 2020) and posted on DNREC's website includes the use of two existing 18 million gallon (MG) anaerobic lagoons that provide preliminary treatment while the proposed construction permit replaces these lagoons with seven MG of flow equalization tanks that provide no treatment. The lost treatment capability afforded by the eliminated anaerobic lagoons is not shown to be offset by additional treatment unit capacity proposed in the new design.**

   Response: The public has expressed concerns regarding odor and potential groundwater impacts associated with Mountaire's anaerobic lagoons. To address the public's concerns Mountaire submitted a request to revise their wastewater treatment system upgrade design. In accordance with the requested revision, the anaerobic lagoons would be replaced with flow equalization tanks. On April 24, 2020, Mountaire submitted a revised Final Design Summary Report (FDS) providing the calculations and details of the flow equalization tanks along with a revised process flow diagram.

   The process flow train in both the previous proposed design and the revised proposed design results in a BNR system influent of 10,008 pounds of TKN per day. The design revision to include a two stage DAF pretreatment without anaerobic lagoons yields a calculated increase in the design maximum BOD loading into the BNR system of 16,640 pounds of BOD per day. Subsequent calculations to establish the requirements for the anoxic reactor BOD and Nitrate removal established the nitrogen loading as the governing

factor, requiring greater sizing to address the nitrogen removal and leaving adequate reactor volume for the increased BOD loading in the BNR system (Exhibit 2).

After reviewing the calculations provided in the FDS, as well as the additional information submitted by Mountaire on August 21, 2020, the GWDS has concluded that the design revision to include a two stage DAF pretreatment without anaerobic lagoons demonstrates that the same nutrient reduction will be provided as with the current anaerobic lagoon system.

6. **Comment: The wastewater treatment design is not shown to be effective in achieving permit limits in cold weather conditions when biological treatment typically suffers in efficiency.**

Response: The April 24, 2020 revised FDS submitted by Mountaire provided sizing calculations (Page 53) utilizing an expected minimum winter season design mixed liquor temperature in the nitrification reactors of 15ºC (59ºF). Additional information submitted by Mountaire on August 21, 2020 noted that historical temperature data for the existing DAF activated sludge treatment system showed both a minimum weekly average MLSS temperature of 14°C and a minimum monthly average MLSS temperature of 18°C in January 2018.

The FDS (Page 55) concludes that the calculations demonstrate a 5.00 MG nitrification reactor volume would adequately achieve the required winter season BOD and TKN (ammonia) removal. Further information provided indicates that the use of subsurface jet aeration equipment in reactor #2A and subsurface diffused aeration in reactor #2B would ensure maximum operating temperatures in the activated sludge treatment process during winter temperatures. The FDS recommends, if winter season aeration basin mixed liquor temperatures fall below 15°C, adequate TKN removal efficiency may be achieved by increasing the MLSS concentration up to 6,000 mg/L and/or by improving upstream DAF pretreatment efficiency by increased chemical dosage in the DAF cells to reduce the TKN loading on the downstream multi-stage activated sludge treatment system (Exhibit 4).

Additional information submitted by Mountaire, also noted that the wastewater being treated includes hot condensate wastewater with a temperature over 120°F (50°C) discharged from the on-site rendering plant. This wastewater stream provides a consistent heat source for the mixed liquor in the reactor tanks resulting in a higher winter mixed liquor operating temperature (Exhibit 2).

The additional information provided by Mountaire on August 21, 2020 further supported that the wastewater treatment design would be effective in achieving permit limits in cold weather conditions by utilizing and providing the results from a BioWin Model. BioWin software is a wastewater treatment plant simulation software for the design and optimization of wastewater treatment plants. BioWin combines biological, chemical, and physical process models. The BioWin model data provided utilized 10°C (50°F). The model results demonstrated the system would still achieve an effluent total nitrogen concentration of 8.18 mg/L at 10°C (50°F). The BioWin Model is attached as Exhibit 5.

After reviewing the calculations provided in the FDS, as well as, the additional information submitted by Mountaire on August 21, 2020 and September 16, 2020, the GWDS has concluded that the treatment design will be effective in achieving permit limits in cold weather conditions and that appropriate backup considerations are in place.

7. **Comment: The sludge handling equipment is not shown to be of sufficient capacity to treat the increased amount of sludge resulting from the elimination of the anaerobic lagoons.**

   Response: The GWDS has reviewed the sludge handling design calculations provided in the Application's FDS (Exhibit 4) including the return activated sludge (RAS) (Page 73), waste activated sludge (WAS) aerobic digestion (Page 85), screw press sludge dewatering system (Page 88) through ultimate disposal by hauling to off-site land application. The system has been designed to include three aerobic digester tanks to reduce the WAS production via volatile biosolids destruction and gravity thickening. The screw press design has been designed not only to handle the volume from normal operations, but also has been designed to be capable of processing the maximum flow rate assumed if the aerobic digesters were not in operation. A redundancy of three screw presses have been provided even though normal operations would utilize only two. Calculations indicate for normal operations two presses would be operated for 12 hours per day. Calculations also show the system capable of assimilating a maximum flow resulting if the aerobic digesters were not in operation by utilizing two presses for 20 hours per day.

   Therefore, the GWDS has concluded that the application demonstrates the sludge handling equipment has been designed with more than adequate capacity to treat the increased amount of sludge resulting from the elimination of the anaerobic lagoons.

8. **Storage Comment: The existing effluent storage lagoon is indicated as holding 22 MG while prior engineering documents rate it as holding only 14.2 MG.**

   Response: On July 28, 2020, the GWDS requested verification of the volume of the storage lagoon. Mountaire subsequently performed a drone survey and determined the lagoon volume to be 21,721,611 gallons (Exhibit 2).

9. **Storage Comment: The proposed location for the construction of the new storage lagoon is partially within the 100-year floodplain. This should be moved out of the floodplain to reduce the risk of a flood that could compromise the lagoon or result in a spill.**

   Response: The proposed location for the construction of the new storage lagoon has not yet been provided. Detailed Drawings and Technical Specifications regarding the proposed new storage lagoon are required to be submitted within 180 days following the issuance of the proposed draft construction permit in accordance with Part I.C.1 Page 8 of the draft permit. Furthermore, the GWDS sought additional information from Mountaire on July 28, 2020 to address this question. Mountaire's August 21, 2020 response (Exhibit 2) stated that

the 100-year flood elevation of 18.03 noted in the previously submitted drawings was based on the ponding elevation of the stormwater collection system during a 100-year storm event. The FEMA FIRM map indicates the project site is in Zone X for the 100-year flood event from the Indian River and Swan Creek. Zone X is defined as areas determined to be outside the 0.2% annual chance flood plain. The 100-year flood is defined as the 1% annual chance flood. The GWDS has reviewed the additional information submitted by Mountaire and has concluded that the new storage lagoon will not be within the 100-year floodplain.

10. **Storage Comment: The current storage proposal only allows for 6-14 days of effluent storage. The Department should require additional storage (60-90 days of storage is suggested for the mid-Atlantic climate) to reduce the amount of spray irrigation occurring from September through April when nutrient uptake is not optimal.**

Response: The Regulations only require municipal facilities to have 45 days effluent storage capacity. Other facilities are required to demonstrate via a wastewater treatment system's design that adequate storage capacity is available for spray irrigation operational needs or when spray irrigation needs to cease because it is inappropriate to spray irrigate (e.g., frozen or saturated field conditions). Mountaire's wastewater treatment system design demonstrates through monthly spray irrigation rate calculations that adequate storage is provided for them to meet operational, water balance, and inclement weather needs.

Mountaire's design and vegetative management plan documents that the 13 spray irrigation fields consist of approximate 893 acres available for year-round irrigation. In addition, the water balance and active spreadsheets (Attachments B, H, I, J, K and L) demonstrate that the land area available is in excess of that required for hydraulic assimilation of the wastewater allowing a great deal of flexibility in managing the irrigation system.

Inclement weather storage capacity is the volume required to store treated wastewater during periods of excessive rainfall or saturated/frozen field conditions. Mountaire's analysis indicates that saturated conditions rarely persist onsite. Soils on the spray fields are generally deep and well drained and based on historic groundwater depth levels, the site is not subjected to excessive groundwater mounding such that the water table is within three feet of the soil surface. Saturated conditions, when present, are likely the result of temporary perching of water above a limiting soil layer, prior to draining laterally and vertically. Since Mountaire has additional land area available, Mountaire can shift the irrigation schedule to avoid irrigation onto saturated soils that are slower to drain and focus irrigation on fields that are no longer saturated. Therefore, some areas of field saturation do not require system-wide curtailment of irrigation. Therefore, Mountaire proposes that the projected storage, in excess of 16 days at maximum flow from the WWTP, is more than adequate storage for the expected days in any month when rainfall and saturated soils are such that spray irrigation is precluded.

Mountaire's analysis also indicates that frozen soil conditions rarely persist onsite. The 2006 *EPA Process Design Manual - Land Treatment of Municipal Wastewater Effluents*

(EPA/625/R-06/016) states that the lowest mean temperature for operation of a land treatment system is 25°F. Temperatures below this threshold (25°F) that persist for more than a few days are likely to lead to frozen soils. Mountaire reviewed the Millsboro Long Neck Climate Station daily temperature data (January 2014 through July 2020) and determined that temperatures below 25°F occur primarily in January and February, for three to five days per month on average. The data documents two periods where temperatures remained below 25°F for 8 and 11 days, respectively, that would likely have resulted in frozen soil conditions. Therefore, Mountaire contends that the design storage of approximately 16 days is adequate to allow curtailment of irrigation during such infrequent climatic events (Exhibit 2).

The GWDS has reviewed information submitted by Mountaire regarding storage and has concluded that adequate storage is available for times when it is inappropriate to spray irrigate. In addition, the proposed draft permit requires Mountaire to maintain at least two feet of lagoon freeboard, measured weekly vertically from the lowest point of the berm. In the event of encroachment into freeboard, Mountaire is required to notify the GWDS and initiate relief measures.

11. **Storage Comment: The system design and permit do not meet the minimum required amount of storage per DNREC regulations or best management practices for wastewater and must be revised to provide at least 45 days of storage.**

Response: Section 6.3.2.3.12 of the Regulations provides storage requirements for a large on-site wastewater treatment and disposal systems. Please note that the Regulations only require *municipal* systems to provide *45* days of storage, unless other disposal options are permitted. The Regulations require all other facilities to demonstrate through monthly wastewater irrigation rate calculations that adequate storage is provided for design flows. Since, Mountaire's on-site wastewater treatment and disposal system is not a municipal system, Mountaire is not required to provide 45 days of storage.

Mountaire is, however, required to demonstrate the application's design provides adequate storage for design flows through monthly wastewater irrigation rate calculations. These calculations were provided in Mountaire's application as Final Design Summary (FDS) Appendix 3 Attachments H. Attachment H demonstrates that under the proposed normal operating scenario, spraying 0.75 inches/acre per week over 893 acres, only 0.44 MG of storage would be required. Mountaire's application indicates the existing storage lagoon is 21.3 MG. The proposed additional storage lagoon will be a minimum of 22.0 MG. Therefore, the application has demonstrated that more than adequate storage is provided for design flows.

12. **Storage Comment: The proposed permit does not require any effluent storage to ensure that spraying is not conducted in the winter when crop uptake is minimal or non-existent.**

Response: The Regulations do not prohibit spray irrigation during the winter when crop uptake is minimal. However, the proposed draft permit prohibits spray irrigation when

saturated or frozen soil conditions exist. In addition, the proposed draft permit prohibits runoff resulting from spray irrigation. As discussed above, since the facility has approximately double the amount of irrigation acres necessary to dispose of the design volume, the facility is able to irrigate at a reduced application rate of 0.75 inches/acre per week, and cycle fields if needed because of saturation conditions. Please note that the Regulations can allow a permittee to apply 2.5 inches/acre per week. The calculations provided in Attachment H of the FDS indicate that in January a volume of 3.3 inches/acre per month (averaging 0.75 inches/acre per week) may be applied throughout the month without exceeding a percolate of 10 mg/L Total Nitrogen. Attachment H indicates the January percolate TN concentration would be approximately 4.6 m/L. Operations staff will have the flexibility to manage irrigating the monthly volume during the best suitable conditions. The proposed draft permit requires the monitoring of lysimeters and groundwater to evaluate the appropriateness of the design application rate, to ensure the application does not cause groundwater to exceed drinking water standards, and to determine the need for adjustments in the application rate as necessary.

13. **Temporary Sludge Storage Lagoon Comment: The permit should reinforce the 2019 Conciliatory Agreement between DNREC and Mountaire by including as an item of construction the closure of the temporary sludge storage lagoon adjacent to Swan Creek. The permit should also include any ongoing requirements for monitoring groundwater quality associated with the leakage of the lagoon. The status of the lagoon as closed should be marked on the site plans.**

    Response: The 2019 *Conciliatory Agreement* (Exhibit 6) provides an enforcement mechanism that addresses the closure and monitoring requirements raised by the commenter. Therefore, if Mountaire is not compliant with the 2019 *Conciliatory Agreement*, the Department has a legal remedy. Modifying the draft permit to incorporates the same issues would be duplicative and superfluous.

14. **Nitrogen Comment: Enhanced Nutrient Removal (ENR) of nitrogen resulting in 3-5 mg/l of total nitrogen in the effluent has been available as a technology since the 1980s and the proposed Spray Irrigation Operations Permit should require this level of treatment instead of allowing a total nitrogen discharge of 10 mg/l.**

    Response: Since, Mountaire's application is for upgrades to an existing system, the Regulations require the system to be designed to meet an effluent total nitrogen concentration in accordance with Performance Standard Nitrogen Level 2 (PSN2). By definition, PSN2 requires "Total Nitrogen levels achieve…[3] an average annual concentration of 10 mg/L beneath any permitted on-site wastewater treatment and disposal system as verified by in-field monitoring provided that the design percolate concentration does not exceed 10 mg/L on an average annual basis." This standard accounts for crop uptake of nitrogen as part of the treatment process. In accordance with the Vegetative Management Plan (VMP), FDS Appendix 3 Attachment G, corn requires approximately 155 lbs/acre per year. At a design value of 10 mg/L total nitrogen, the effluent will only be providing a maximum of 88 lbs/acre per year. Therefore, at an effluent concentration of 10 mg/L total nitrogen, the corn would not be receiving the necessary nutrients and the VMP

would recommend supplementing with fertilizer. Furthermore, if treating to a lower total nitrogen effluent concentration, the VMP would recommend increasing the supplemental fertilizer to meet the nutrients necessary for the crop.

In an effort recognize and balance both the nutrient needs of the crop and the need to protect groundwater and public health, the proposed draft permit requires the following relative to the application of fertilizer:

"*The application of commercial fertilizers on the spray fields is prohibited without written authorization from the Groundwater Discharges Section. Any requests for applying fertilizer shall be submitted with relevant crop analysis lab data, a Nitrogen Balance signed and sealed by a Delaware Class C licensed Professional Engineer demonstrating that the application of treated wastewater and fertilizer will not exceed 10 mg/L on a monthly basis in the percolate, and the written recommendation of a Delaware Certified Crop Advisor*."
In addition, the proposed draft operations permit requires:

- Semimonthly monitoring of effluent for Total Nitrogen to assess the effluent concentration
- Monthly calculation of Nitrogen loading in pounds per acre per field to assess the nitrogen loading
- Annual tissue analysis of the crop to determine actual nutrient uptake
- Quarterly sampling of lysimeters to assess the percolate concentration just below the root zone
- Quarterly sampling of monitoring wells to assess groundwater concentrations of Nitrate-Nitrogen

In conclusion, the design effluent concentration for total nitrogen is in accordance with the requirements of the Regulations. And, appropriate design and permitting safeguards are in place to monitor the effectiveness of the entire treatment system including crop nutrient uptake.

15. **Nitrogen Comment: The Nitrogen level of the output was decreased but the volume of the output was increased.**

Response: Both the existing Spray Irrigation Operations Permit DEN Number 359191-04 and the proposed modified/renewal Spray Irrigation Operations Permit DEN Number 359191-06 limit Mountaire Farms of Delaware, Inc. to an influent and effluent of 2.6 MGD monthly average calculated as the Total Monthly Volume divided by the number of days in the month. Both permits also restrict the application rate to 2.5 inches/acre per week. Therefore, the volume of disposal has not increased.

16. **Nitrogen Comment: Denitrification estimates (15%) used to calculate the amount of nitrogen in the percolate appear high, potentially underestimating nitrogen loss to groundwater and surface waters; the estimates should be reassessed with required supporting information included. The Regulations require the source of all data and**

assumptions made for design to be referenced in the DER (Section 6.3.2.3.13). This information should be provided with justification on the selection of the chosen rate.

No known peer-reviewed research or site-specific study on Delmarva has reported a 15% denitrification rate in similar soils. In fact, numerous publications over 40 years document the common occurrence of serious nitrate contamination of groundwater in eastern Sussex County from agriculture and wastewater disposal practices on well-drained soils with low organic matter content. Several of these studies focused on the land at and around the Mountaire facility. The permit application compounds the error by claiming a denitrification rate of at 15% for the entire year, an incorrect assumption given that denitrification rates are lower during seasonally cold weather. The soils of the site are by and large well drained with low organic matter (~1%). Meisinger and Randall (1991) estimate an 8% denitrification rate for such soils. The 15% denitrification rate underestimates pollution to ground and surface waters from operation of the spray irrigation disposal system. Without justification, this rate should be lowered to 8%.

Response: In accordance with Section 6.3.2.3.4.3.3 of the Regulations, row and forage crops assumed losses to denitrification should not exceed 15% of the total nitrogen applied. In the GWDS nitrogen template specifically (line 41 - Denitrification (15% of line 26)). The loss to denitrification depends on the BOD, nitrogen (N) ratio, soil temperature, pH and moisture. Intermittent application also serves to enhance nitrification followed by denitrification. The typical loss to denitrification is 15% to 25% of the applied nitrogen as discussed in *Natural Systems for Wastewater Treatment, Manual of Practice FD-16, Water Environment Federation* (2001). Additionally, in *Land Treatment Systems for Municipal and Industrial Wastes* (McGraw-Hill, 2000), Crites *et al*. suggests 10% to 80% site loss of total nitrogen applied occurs depending on wastewater characteristics and application methods. The *EPA Process Design Manual for the Land Treatment of Wastes* (EPA, 2006) uses nitrogen loss figures adapted from Crites *et al*. This document also notes that actual losses are dependent on C:N ratio, climate, forms of nitrogen applied and application method. Since, there are multivariable influences determining denitrification, the GWDS considers 15% to be a conservative estimate to utilize in modeling. Additionally, the proposed draft permit is designed with multiple levels of monitoring requirements in order to protect groundwater resources including monitoring wells, lysimeters, soils monitoring, and vegetative monitoring.

17. **Supplemental Fertilizer Comment: Nitrogen balance calculations (Attachment H) under normal disposal conditions (2.6 MGD monthly average) do not include additions of supplemental fertilizers. However, the nutrient management plan provided states that "Supplemental fertilization is performed to account for nutrient needs not supplied via effluent applications." Further, DNREC's Compliance Review Report for the facility dated November 12, 2015 indicates that supplemental fertilization occurred over the period of 2009 - 2013 at an average rate of 60 to 100 lbs of nitrogen per acre per year. This was during a period of permitted effluent concentrations higher than the proposed permit level. Given this, it seems likely that supplemental fertilization will be undertaken (with permission) and thus should be**

added at some average level to the nitrogen balance calculations. Given that significant portions of nitrogen in fertilizers applied to sandy soils typical of the site are not taken up by crops or are otherwise lost to denitrification or volatilization, they will enter the groundwater percolate and should be accounted for in percolate nitrogen concentrations and mass.

Response: In an effort recognize and balance both the nutrient needs of the crop and the need to protect groundwater and public health, the proposed draft operations permit states that "*the application of commercial fertilizers on the spray fields is prohibited without written authorization from the Groundwater Discharges Section. Any requests for applying fertilizer shall be submitted with relevant crop analysis lab data, a Nitrogen Balance signed and sealed by a Delaware Class C licensed Professional Engineer demonstrating that the application of treated wastewater and fertilizer will not exceed 10 mg/L on a monthly basis in the percolate, and the written recommendation of a Delaware Certified Crop Advisor*." The nitrogen balance provided with a fertilizer application request will calculate the approximate effect the fertilizer will have on the groundwater percolate. The proposed draft permit condition above would prohibit the approval of a fertilizer application request that would exceed 10 mg/L on a monthly basis in the percolate. In addition, lysimeter and groundwater monitoring requirements in the proposed draft permit will verify that the application of fertilizer does not cause the groundwater to exceed drinking water standards for Nitrate-Nitrogen. The GWDS will review each request for the application of fertilizer on a case by case basis.

18. **Nitrogen Comment: According to the calculations provided in the April 2020 Final Design Summary (FDS) and Vegetative Management Plan Update, the average amount of nitrogen applied to the fields that enters the groundwater under normal disposal conditions is 32,782 pounds per year, or 90 pounds per day. Groundwater then rapidly flows through the aquifer over the order of days to years to discharge to Swan Creek and Indian River. Under higher effluent application rates used to compensate for periods where disposal is limited, the nitrogen entering groundwater is considerably more than twice that of normal disposal conditions: 74,987 pounds per year or 205 pounds per day.**

Response: According to Mountaire's nitrogen balance spreadsheet provided in the FDS Appendix 3 Attachment H, the amount of nitrogen applied would result in a percolate reaching groundwater that would not exceed a concentration of 5 mg/L total nitrogen and a percolate of 0 mg/L from May through August annually (Exhibit 4)

Please note that in accordance with the *First Amended Agreement and [Proposed] Consent Decree* (Exhibit 3) as entered by the Department and Mountaire on May 29, 2020, Mountaire is required to mitigate impacts to groundwater beneath the spray irrigation fields resulting from the 2017 WWTP failure through a production well relocation project. Mountaire's production wells will be relocated to areas within the spray irrigation fields as approved by the Department where high nitrogen levels are present in the groundwater. Therefore, once the relocated production wells are in place, any water extracted from the aquifer to meet Mountaire's process water needs will be extracted from areas of high

nitrogen beneath the spray irrigation fields. This water is then utilized by Mountaire for production purposes and subsequently treated through the upgraded WWTP to a total nitrogen level of 10 mg/L or less prior to disposal via spray irrigation. This essentially establishes a pump and treat loop system to mitigate nitrogen impacts to groundwater beneath the spray facility. The primary design goals for the mitigation system include both nitrogen removal, as well as, the establishment of the highest level of hydraulic control practicable based on the need to establish and consistently maintain a hydraulic gradient away from offsite potable wells, and in part, on Mountaire's process water needs. Mountaire is required to maintain the production wells within the spray irrigation fields for as long as Mountaire is in operation at the Millsboro location. Therefore, nitrogen removal and hydraulic control will significantly reduce any impact to Swan Creek and the Indian River by the spray irrigation operation.

19. **Phosphorus Comment: Page 5 of the Design Engineer Report and Vegetative Management Plan Update for Spray Irrigation of Treated Wastewater does state that total P effluent should be maintained at concentrations of 3.0 mg/l or less TP for effluent flows of 2.6 MGD.**

Response: The Final Design Summary of Wastewater Treatment System Upgrade dated February 5, 2020 and certified by a Delaware licensed engineer includes as a supporting document to the system's final design Appendix 3: Design Engineer Report (DER) and Vegetative Management Plan (VMP) Update for Spray Irrigation of Treated Wastewater dated February 2020.

The DER (Page 5) states that "*based on current soil P levels, the site's nutrient management plan recommends that effluent phosphorus be reduced to crop removal amounts. Attachment C [of the DER] includes calculations of annual phosphorous loading rates based on effluent TP concentrations ranging from 0.5 to 5.0 mg/L and irrigation rates ranging from 2.0 to 2.6 MGD. The most conservative scenario [regarding] crop P uptake is based on a year in which com is grown. Corn is [preceded] by a cover crop which is not harvested and therefore does not contribute to an overall P reduction through crop removal. Annual Corn phosphorus uptake based on DNREC standard values is 26.18 lb/ac/yr (total P basis) for a yield of 150 bushels/acre. To comply with nutrient management recommendations, effluent Total P should be maintained at concentrations of 3.0 mg/I or less for effluent flows of 2.6 MGD*."

Keen Consulting's Nutrient Management Planning - Effluent Irrigation Mountaire Farms Millsboro DE Facility supplemental document [of the DER] states that "*the current PSI calculations for Mountaire result in ratings ranging from low to medium. A medium PSI rating requires that strategies be employed to reduce the amounts of phosphorus applied to a given site. It is recommended that Mountaire strive to achieve a wastewater phosphorus concentration that results in a reduction of phosphorus application that matches crop removal based on a three-year cycle*."

The GWDS will revise the proposed draft construction to require Mountaire to upgrade the wastewater treatment system to achieve a TP effluent concentration of 3.0 mg/L within three (3) years of permit issuance. The GWDS will revise the proposed draft operations permit to require Mountaire achieve a TP effluent concentration of 3.0 mg/L within three (3) years and four (4) months of permit issuance. As a component of the system upgrade Mountaire will be allowed to investigate total phosphorous effluent concentrations further and submit additional information for the GWDS to evaluate and may request a Permit Modification regarding the TP limit. See Exhibit 7.

20. **Comment: The proposed permit does not include a requirement to establish any reserve spray fields whereas the industry standard is to have approximately 25% reserve area to accommodate excessive rainfall, frozen ground conditions, treatment plant upsets and crop disease conditions.**

Response: The Regulations do not require a reserve spray area. However, as demonstrated by the FDS Appendix 3 Attachment J – Active Spreadsheet for Reduced Wetted Area, the system is proposed to be able to operate utilizing only 420 acres without causing the percolate to exceed drinking water standards for Nitrate-Nitrogen (10 mg/L). The proposed application includes 893.63 acres, an excess of 473.63 acres. Therefore, the facility has significant acreage to accommodate adverse conditions.

21. **Buffer Comment: The proposed permit does not specify adequate buffers between the spray fields and residents and adjacent waterways.**

Response: Vegetated buffer zones are required by Section 6.3.2.3.10 of the Regulations to control aerosols at spray irrigation sites with limited public access. These buffer zones distances range from 50-150 feet depending on the site-specific characteristics of a spray site. However, Section 6.3.2.3.10.2 of the Regulations allows for lesser distances if the design and operations of a facility demonstrate that aerosols can be contained within the spray site and/or no threat to public health or the environment exists.

Part I F.1-3 of the proposed draft permit requires the following buffer requirements.

1. A buffer zone of at least 50 feet shall be maintained between the edge of the wetted field area and all highways, individual lots, and property lines.
2. A buffer zone of 50 feet shall be maintained between the wetted edge of the spray field and the edge of any wetlands or any perennial lake or stream provided that the buffer zone is maintained in perennial vegetation, otherwise a buffer zone of 100 feet shall be maintained.
3. Spray irrigation of treated wastewater in the reduced buffer areas along Route #24 and County Road 304 shall only occur during daylight hours.

These buffer zones are lessened because Part H.1 of the proposed draft permit requires Mountaire to maintain a weather station to track the wind direction to ensure that no spray drift occurs to roadways during irrigation. If wind conditions are such that spray drift could occur over roadways, then all spray irrigation activities shall cease on those fields thereby satisfying Section 6.3.2.3.10.2 of the Regulations.

22. **Buffer Comment: The Department should require an environmental offset resulting in additional and verifiable best management practices for nutrients within the receiving watersheds. These offsets should include establishing 100-foot buffers of species native to the area on surface water features of the disposal area, stream restoration projects, and enhancement of ditches to improve water quality. The offsets should be additional to any measures required to mitigate previous and ongoing violations of the existing permit. The nutrient reductions generated through these projects can be used to reduce the overall nutrient loading from the operation to achieve the TMDL reductions needed from the facility.**

    Response: In accordance with the *First Amended Agreement and [Proposed] Consent Decree* as entered by the Department and Mountaire on May 29, 2020 (Exhibit 3), Mountaire is required to mitigate impacts to groundwater beneath the spray irrigation fields resulting from the 2017 WWTP failure through a production well relocation project. Mountaire's production wells will be relocated to areas within the spray irrigation fields as approved by the Department where high nitrogen levels are present in the groundwater.

    Once the relocated production wells are in place, any water extracted from the aquifer to meet Mountaire's process water needs will be extracted from areas of high nitrogen beneath the spray irrigation fields. This water is then utilized by Mountaire for production purposes and subsequently treated through the upgraded WWTP to a total nitrogen level of 10 mg/L or less prior to disposal via spray irrigation. This essentially establishes a pump and treat loop system to mitigate nitrogen impacts to groundwater beneath the spray facility. The primary design goals for the mitigation system include both nitrogen removal, as well as, the establishment of the highest level of hydraulic control practicable based on the need to establish and consistently maintain a hydraulic gradient away from offsite potable wells, and in part, on Mountaire's process water needs. Mountaire is required to maintain the production wells within the spray irrigation fields for as long as Mountaire is in operation at the Millsboro location.

    Part I H.5 of the proposed draft permit requires the relocated production wells to be utilized as soon as practicable but, no later than the initiation of the operation of the upgraded treatment system.

23. **Buffer Comment: The draft permit requires that "a buffer zone of 50 feet shall be maintained between the wetted edge of the spray field and the edge of any wetlands or any perennial lake or stream provided that the buffer zone is maintained in perennial vegetation, otherwise a buffer zone of 100 feet shall be maintained." According to the Regulations (Section 6.3.2.3.10.1.5), "a 100-foot buffer is required between the wetted edge of spray fields and the edge of any perennial lake or stream or ephemeral drain," and these buffers must be vegetated. Clearly the intent of the buffer regulation is to maintain perennial vegetation in the buffer. Simply meeting the regulation's vegetation requirement does not justify a 50% reduction in the width requirement. A 50-foot buffer does not comply with the ERES designation of the receiving surface waters and could lead to direct runoff of improperly applied wastes into surface waters.**

Response: Section 6.3.2.3.10 of the Regulations outlines a series of vegetated buffer zone distances required to control aerosols. Section 6.3.2.3.10.2 of the Regulations allows for lesser distances to be permitted when "the design and operations demonstrate that aerosols will be contained within the site and/or no threat to public health or the environment exists.

The proposed draft operations permit includes several conditions designed to protect human health and the environment during spray irrigation. These conditions include:

1. The Permittee shall maintain a weather station to track the wind direction to ensure that no spray drift occurs to roadways during irrigation. If wind conditions are such that spray drift could occur over roadways, then all spray irrigation activities shall cease on those fields.

2. The spray irrigation fields shall be managed to assure at a minimum that:
    a. Spray irrigation of wastewater shall only occur on fields being prepared for planting or already planted with a crop and shall not occur on fields with crops not actively growing or on voluntary vegetation.
    b. The spray fields shall be maintained in such a manner as to prevent wastewater pooling and/or discharge of wastewater to any surface waters. Should pooled areas become evident, spraying on those areas shall be prohibited until saturated conditions no longer exist.
    c. Aerosols or nuisance odors shall not extend beyond the boundary of the spray irrigation site when treated wastewater is being applied. If aerosols are not contained within the site or if odors are produced that are considered a public nuisance, within 30 days the Permittee shall submit a corrective action plan to alleviate aerosol migration and odors for Department review and approval. All action taken shall be reported to the Department in accordance with this Permit.
    d. Erosion controls shall be employed to prevent wastewater runoff from the spray irrigation fields. The Permittee shall notify the Department immediately if any wastewater runoff occurs.
    e. The spray irrigation field's crops shall be maintained in optimal condition, including any necessary weed management, reseeding, or other vegetative management practices.
    f. Effective vegetative management shall be provided such that crops harvested on the spray irrigation sites are removed from the sites.
    g. Forage crops shall be harvested and removed from the irrigation field(s) at least twice a year. Crops harvested shall be removed from the irrigation site within six (6) months of harvest.
    h. The wastewater shall be applied in a manner such that the application is even and uniform over the irrigation area.

3. Spray irrigation is prohibited when saturated or frozen soil conditions exist.

In addition, the production well relocation mitigation project referenced in #22 above affords addition protection to ERES waters through nutrient reduction in the aquifer and some hydraulic control away from potential receptors.

Also, the *First Amended Agreement and [Proposed] Consent Decree* as entered by the Department and Mountaire on May 29, 2020 (Exhibit 3), requires Mountaire to install at least 1000 feet of a phytoremediation barrier between its lower spray fields and the wetlands bordering Swan Creek south of State Route 24.

These conditions along with the effluent limitations, operational, monitoring, and reporting requirements outlined in the proposed draft operations permit when taken in totality offer significant protection of public health and the environment including ERES designated surface waters.

24. Buffer Comment: The Shellfish Waters Guidelines state that the isolation distance between a watercourse included in shellfish growing waters and an on-site wastewater treatment and disposal system is to be maximized whenever possible and must be at least 100 feet. The Indian River and Swan Creek and are considered growing waters and so should their direct surface water connections in this regard.

Response: As discussed above the proposed draft operations permit includes effluent limitations, operational, monitoring, and reporting requirements designed to ensure the protection of Delaware's natural resources including its shellfish industry. Besides vegetative buffers and wind direction tracking, the proposed draft permit prohibits the pooling of wastewater on spray fields, or the discharge of wastewater to surface waters via runoff. Also, as discussed previously, in accordance with the *First Amended Agreement and [Proposed] Consent Decree* as entered by the Department and Mountaire on May 29, 2020 (Exhibit 3), Mountaire is required to mitigate impacts to groundwater beneath the spray irrigation fields resulting from the 2017 WWTP failure through a production well relocation project. The primary design goals for the mitigation system include both nitrogen removal, as well as, the establishment of the highest level of hydraulic control practicable based on the need to establish and consistently maintain a hydraulic gradient away from offsite potable wells. The production wells within the spray irrigation fields will be maintained for as long as Mountaire is in operation at the Millsboro location. The *First Amended Agreement and [Proposed] Consent Decree* also requires Mountaire to install at least 1000 feet of a phytoremediation barrier between its lower spray fields and the wetlands bordering Swan Creek south of State Route 24.

The proposed draft permit also includes a robust spill reporting condition (Part IV A.6). In the event of any environmental release of pollutants (i.e., spill), Mountaire is required to call Department's 24-hour Emergency Release Reporting Hotline at (800) 662-8802. Mountaire will also notify the GWDS regarding the environmental release of pollutants (i.e., spill) into surface water or groundwater or on land, within 24-hours from the time Mountaire becomes aware of the release. In addition, the following information will be reported to the GWDS within five days.

a) The facility name and location of release;
b) The chemical name or identity of any substance involved in the release;
c) An indication of whether the substance is an extremely hazardous substance;
d) An estimate of the quantity of any such substance that was released into the environment;

e) The time and duration of the release;
f) The medium or media into which the release occurred;
g) Any known or anticipated acute or chronic health risks associated with the emergency and, where appropriate, advice regarding medical attention necessary for exposed individuals;
h) Proper precautions to take as a result of the release, including evacuation;
i) The names and telephone number of the person or persons to be contacted for further information; and
j) Such other information as the GWDS may require.

In addition, Part III A.23 of the proposed draft permit requires Mountaire to take all reasonable steps to eliminate or minimize any adverse impact to waters of the State resulting from their operations, including such accelerated or additional monitoring as necessary to determine the source, nature, and extent of the impact from a noncomplying discharge. At the direction of the Department, Mountaire will submit a corrective action plan which will include a description of the proposed actions to mitigate or eliminate the source of the impact and an associated completion schedule. The plan shall be enacted as approved by the Department.

25. Buffer Comment: It is unclear from the language in the draft permit if buffers on intermittent streams are required. Does the adjective "perennial" apply to just lakes or to both lakes and streams? This should be clarified in accordance with the Regulations (Section 6.3.2.3.10.1.6) to require a 50-foot buffer is required between spray fields and the edge of any channelized, intermittent watercourse.

Response: In both the Regulations and the proposed draft permit "perennial" is referencing both lakes and stream. Part I F.2 of the draft permit requires "a buffer zone of 50 feet shall be maintained between the wetted edge of the spray field and the edge of any wetlands or any perennial lake or stream provided that the buffer zone is maintained in perennial vegetation, otherwise a buffer zone of 100 feet shall be maintained." Please note that the reduction from a 100-ft buffer to a 50-ft buffer is in accordance with Section 6.3.2.3.10.2 of the Regulations which allows for lesser distances when the design and operations demonstrate that aerosols will be contained within the site and/or no threat to public health or the environment exists. See responses to previous buffer responses above.

26. Buffer Comment: ERES provisions of the State Water Quality Standards state that DNREC shall not issue or reissue a permit for an existing source unless the applicant demonstrates a utilization of all economically feasible and reasonably available waste minimization practices and technologies, of which adequate buffers required by regulation certainly are one. The application materials did not appear to include a general layout of wastewater disposal area, including buffer areas as required under Section 6.5.1.5.3.8 of the Regulations. Neither could plans be found indicating the location of all wetland and water features in the disposal area nor the status of flowing water features (ephemeral, intermittent, and perennial). An examination of aerial photography of the entire disposal area shows numerous wetlands and channelized surface water conveyances in various locations throughout. Detailed plans indicating

each wetland and water feature to be buffered and its type along with adequate buffer widths must be provided.

Response: The GWDS believes the proposed draft construction and operations permits meet the requirements of the State Water Quality Standards including that the Department will not issue or reissue a permit for an existing source "unless the applicant demonstrates a utilization of all economically feasible and reasonably available waste minimization practices and technologies" including buffers. The draft construction permit requires the completion of wastewater treatment plant upgrades which will result in the enhanced total nitrogen concentration of 10 mg/L or less which meets Federal Drinking Water Standards. Further nutrient reductions will occur via crop uptake during spray irrigation. In addition, the draft operations permit includes effluent limitations, operational, monitoring, and reporting requirements designed to protect, public health, groundwater and surface water resources.

Since, this is the renewal/modification of an existing permit, the site's suitability and disposal capacity were previously submitted and reviewed. The primary focus of the construction application was the upgrade of the wastewater treatment system. 7 Del. Admin. C. §7101, *Regulations Governing the Design, Installation and Operation of On-Site Wastewater Treatment and Disposal Systems* (Regulations) specifies the application requirements for construction and operations permits. However, the GWDS believes that Mountaire applied with all the required information needed to understand the facilities operational capabilities and develop a technically and legally defensible discharge permit that is protective of the environment and public health. Buffer requirements (in particular) are clearly identified in the proposed draft operations permit.

27. **Comment: Are waste haulers allowed to discharge at the Mountaire facility? What impact will unwanted chemicals have on the treatment system and irrigation system.**

Response: The proposed draft permit does not authorize Mountaire to receive septage, sewage, grease trap/cooking oil waste, municipal or industrial biosolids, or biosolids from package treatment plants at Mountaire's Poultry Processing Complex in Millsboro, DE. The receipt of these non-hazardous liquid wastes would be a violation of the proposed permit.

Mountaire's wastewater treatment system is specifically designed to treat, disinfect, and discharge poultry processing wastewater, stormwater, and sanitary waste from Mountaire's Poultry Processing Facilities and therefore unwanted or unknown chemicals will not enter or impact the system. Please note that Mountaire's Millsboro Complex does accept rendering waste from Mountaire's Selbyville Poultry Processing Facility for further processing; however, proper waste hauling permits are in place for this activity.

28. **Comment: Why is this industrial waste not sent to a hazardous waste facility for final disposal?**

Response: 7 **Del.C** Ch. 60 defines industrial waste as any water-borne liquid, gaseous, solid or other waste substance or a combination thereof resulting from any process of industry, manufacturing, trade or business, or from the development of any agricultural or natural resource. The processing wastewater, stormwater, and sanitary waste generated by the Mountaire Millsboro Complex is therefore not classified as a "hazardous waste" and the treated wastewater from Mountaire wastewater treatment system can be discharged via spray irrigation for final disposal. The proposed draft operations permit includes terms and conditions designed to ensure that Mountaire's wastewater is treated and discharged in a manner that is protective of public health and the environment.

29. Comment: The fecal-coliform level was discussed but, not its long-term effect. Coliform found in drinking water from wells (where most of Delaware gets their water supply), may create another Flint Michigan-type story?

Response: Section 6.3.1.9 of the Regulations requires that "all wastewater containing domestic wastes must undergo disinfection prior to being discharged to the disposal system" and that "all disinfection must reduce fecal coliforms to ≤ 200 col/100 mL."

To ensure that Mountaire's treated wastewater effluent is properly disinfected, Part I H.7 of the proposed draft permit includes a "Fecal Coliform Bacteria Limitation Contingency Plan." The Plan states:

> *If analytical results of a treated wastewater sample collected at the irrigation pivot indicate an exceedance of the daily average concentration limitations for fecal coliform bacteria set by this Permit (i.e., confirmed exceedance), the contingency plan below shall be enacted.*
>
> *Within 24 hours of becoming aware of a confirmed exceedance (as identified above), the Permittee shall:*
> - *a) notify the Groundwater Discharges Section that the contingency plan is being enacted;*
> - *b) submit copies of the recent analytical results indicating an exceedance;*
> - *c) begin post-storage lagoon chlorination*
> - *d) submit weekly analytical sampling results to the Groundwater Discharge Section;*
> - *e) examine the operation and maintenance log, required to be maintained by this Permit, for any possible improper operational procedures; and*
> - *f) conduct a physical inspection of the treatment system to detect abnormalities. Any abnormalities discovered shall be corrected. A report detailing the corrections made shall be submitted to the Groundwater Discharge Section within 30 days of correction.*
>
> *When analytical results indicate that the daily average concentration limitations for fecal coliform bacteria set by this Permit is no longer being exceeded, the Permittee can cease submitting weekly results.*
>
> *Upon completion of the off-spec lagoon as authorized by State Permit DEN Number 359191-05, if a fecal coliform bacteria exceedance is identified, the Permittee shall notify the Department to determine if treated wastewater is required to be diverted. If required,*

the Permittee shall immediately cease discharging to the spray fields and divert treated wastewater to the off-spec lagoon for temporary storage and additional treatment.

If a facility is required to enact the contingency plan more than three times in a 12-month period, the Permittee shall have the system evaluated to determine the cause of the elevated fecal coliform bacteria concentrations and submit a revised Design Engineer Report with proposed corrective actions to achieve a maximum fecal coliform bacteria concentration of 200 col/100 mL that bears the seal and signature of a Class C licensed Delaware Professional Engineer to the Groundwater Discharges Section. The report shall be submitted within one year of the third notification of the contingency plan being enacted. The Permittee shall initiate implementation of the plan within 90 days following approval by the Groundwater Discharges Section.

Therefore, the GWDS believes that the design effluent concentration for Fecal Coliform is in accordance with the requirements of the Regulations. And, appropriate design and permitting safeguards are in place to monitor the effectiveness of the treatment system and to divert any off-spec effluent until the system malfunction is remedied in order to protect public health.

30. Comment: The spray fields near Swan Creek are not suitable for wet weather spray irrigation and have not been limited as such in the proposed permit.

Response: The authorization for "wet weather spray irrigation" in the existing Spray Irrigation Operations Permit (DEN Number 359191-04) as indicated in Part I.A, Part I.B.6, Part I.B.10, and Part I.I.1 is removed in the proposed draft permit. In addition, Part III A.5 of the proposed draft operations permit prohibits spray irrigation when saturated or frozen soil conditions exist.

31. Comment: The proposed draft permit omits the requirement of an alternative water supply for nearby private drinking water wells contaminated by Mountaire's spray irrigation.

Response: The *First Amended Agreement and [Proposed] Consent Decree* as entered by the Department and Mountaire on May 29, 2020 (Exhibit 3) requires Mountaire to provide the residents in the area as shown on the [Agreement's] attached Exhibit F (Residential Area) the availability of a central water supply system or in the alternative, deep water supply wells or water filtration systems in accordance with Section VII (Environmentally Beneficial Offset) of [the] Agreement."

Also, Part III A.2 of the proposed draft permit prohibits the operation of the wastewater treatment facility and spray irrigation system from causing the quality of Delaware's groundwater resources to be in violation of applicable Federal or State Drinking Water Standards. To ensure the protection of Delaware's groundwater resources the proposed draft permit includes multiple layers of monitoring to ascertain any increasing trends of wastewater constituents in groundwater. Sampling will be required by the facility through the following devices: lysimeters (in-field), monitoring wells (in-field, up-gradient, and down-gradient), and surface water grab samples. Using these three sets of data the GWDS

will be able to assess what impact the spray irrigation activities are having on the spray fields, groundwater, and surface waters within and adjacent to the spray fields. Annual soil sampling is also required and once every five years heavy metals are required to be sampled. These data will be used to identify any impacts occurring as a result of the spray irrigation activities.

32. Comment: Unlike the current permit, the proposed draft permit does not incorporate by reference the requirements of the *Regulations Governing the Design, Installation and Operation of On-Site Wastewater Treatment and Disposal Systems*, or other prior correspondence, documentation and/or reports received and approved by DNREC or sent by DNREC.

Response: The Regulations were adopted by the Secretary of the Department of Natural Resources and Environmental Control under and pursuant to the authority set forth in 7 **Del.C.** Ch. 60. The Regulations apply to all aspects of the planning, design, construction, operation, maintenance, rehabilitation, replacement, inspection and modification of on-site wastewater treatment and disposal systems within the boundaries of the State of Delaware.

The draft proposed operations permit iterates on page one item number two, that the "purpose in issuing this Permit, and in imposing the requirements and conditions specified herein, is for the protection of public health and the environment as required by 7 Del. Admin. C. §7102 *Regulations Governing the Design, Installation and Operation of On-Site Wastewater Treatment and Disposal Systems* (the Regulations)."

Because permits are issued under the authority of, and in accordance with both 7 **Del.C.** 60 and 7 Del. Admin. C. §7102, it is not necessary to incorporate them by reference. Other correspondence, documents, and/or reports either submitted to comply with the existing permit or required for the application process are considered in developing the draft permits and do not need to be incorporated by reference.

33. Comment: Monitoring of lysimeters is specified as quarterly while DNREC's applicable regulations require monthly sampling of lysimeters.

Response: Section 6.8.4.3 of the Regulations outlines the constituents and "monthly" measurement frequency required for lysimeter monitoring. The proposed draft operations permit will be revised to include monthly lysimeter sampling (Exhibit 7).

34. Comment: Not checking for nitrosamines which are cancer-causing chemicals is most important to citizens.

Response: Nitrosamines are mainly attributed to the use of chlorine or chloramine for the disinfection of drinking water or wastewater. Mountaire's current wastewater treatment system utilizes chlorination for disinfection purposes and Mountaire is required to maintain a total residual chlorine concentration of not be less than 1.0 mg/L nor more than 4.0 mg/L at any time when chlorination is used. Samples are collected at the spray irrigation pivot.

The proposed upgrades to the wastewater treatment system includes the conversion from chlorination to UV disinfection. The UV disinfected treated wastewater (effluent) will be stored in up to two spray storage lagoons prior to irrigation. Mountaire will maintain a backup chlorination system to be used if fecal coliform levels are elevated at the pivot. This backup chlorination system is essential to ensure the protection of public health.

The upgrade of Mountaire's primary disinfection system from chlorination to UV will significantly lower risk for the creation of nitrosamines through the disinfection process.

35. Comment: Heavy metals are not routinely checked.

Response: In accordance with Section FF (Page 97) of the FDS, the expected final effluent concentrations for metals are as follows and are based on existing data from the facility.

Pollutant	**Expected Average Final Effluent Quality**
Copper	<0.0040
Cadmium	<0.0004
Nickel	0.0040
Lead	0.0040
Zinc	<0.0500

Part II A.2 of the proposed draft permit requires heavy metals to be monitored in the effluent annually. In addition, Part II A.6 requires heavy metals to be monitored in the soils once per every 5 years. Also, that the testing of Cadmium, Nickel, Lead, Zinc and Copper should be performed approximately one year prior to permit renewal so results may be utilized in the Compliance Monitoring Report (CMR).

As part of a five year CMR, Section 6.5.4.3.1.1.7.2 of the Regulations requires Mountaire to review the design land limiting constituents [metals] and the approximate site life calculated at the time of design [the approximate number of years the soil may assimilate metals]; to review the current levels of potential land limiting constituents (e.g., hydraulic loading, phosphorus, cadmium, copper, lead, nickel, zinc); and to determine the current land limiting constituent and estimate remaining site life based on trends of the monitored parameters.

36. Comment: DNREC's proposed "Nitrogen Contingency Plan" in the draft spray irrigation permit is much too attenuated to be meaningful and notes that the plan for handling "off-spec" wastewater is woefully inadequate because a lagoon already likely full of storm water has little or no capacity to hold effluent that does not meet permit limits.

Response: The proposed draft permit requires Mountaire's upgraded wastewater treatment system to achieve a total nitrogen concentration limit of 10 mg/L. If the total nitrogen limit is exceeded the following contingency plan is to be enacted.

Total Nitrogen Limitation Contingency Plan

Upon enacting the maximum Total Nitrogen concentration limitation of 10 mg/L, if analytical results of a treated wastewater sample indicate an exceedance of the Total Nitrogen limitation, the Permittee shall collect and analyze a second sample within 24 hours of becoming aware of the original exceedance. If the second sample results indicate that the maximum Total Nitrogen limitation is continuing to be exceeded, the following contingency plan shall be enacted.

a) *The Permittee shall notify the Groundwater Discharges Section within 24-hours after becoming aware of the second exceedance and submit a copy of the analytical results indicating the exceedances.*
b) *The Permittee shall increase the frequency of Total Nitrogen treated wastewater sampling to once daily and submit weekly results to the Groundwater Discharge Section.*
c) *The Permittee shall examine the operation and maintenance log, required to be maintained by this Permit, for any possible improper operational procedures.*
d) *The Permittee shall conduct a physical inspection of the treatment system to detect abnormalities. Any abnormalities discovered shall be corrected. A report detailing the corrections made shall be submitted to the Groundwater Discharge Section within 30 days of correction.*

The Permittee shall follow their emergency contingency plan and submit monthly TN balances indicating that they can continue spray irrigation at higher concentrations while not exceed 10 mg/L on a monthly basis in the percolate.
When daily analytical results from three consecutive weeks of wastewater sampling do not exceed the limitation, the Permittee is authorized to return to a bi-weekly monitoring frequency.

Upon completion of the off-spec lagoon as authorized by State Permit DEN Number 359191-05, if a Total Nitrogen exceedance is confirmed, the Permittee shall notify the Department to determine if treated wastewater is required to be diverted. If required, the Permittee shall immediately cease discharging to the spray fields and divert treated wastewater to the off-spec lagoon for temporary storage and additional treatment.

Since the FDS Appendix 3 Attachment J – Active Spreadsheet for Reduced Wetted Area, the system is proposed to be able to operate utilizing only 420 acres without causing the percolate to exceed drinking water standards for Nitrate-Nitrogen (10 mg/L). The proposed application includes 893.63 acres, an excess of 473.63 acres. Therefore, the facility has significant acreage to accommodate adverse conditions until the wastewater treatment system can be repaired.

In addition, Section EE (the "Off-spec Water Recycle Plan") located in the FDS, includes three stages of handling off-spec water. Stage #1 includes implementing alternative spray plans as outlined in Appendix 3 and utilizing existing spray fields to receive spray irrigated effluent with higher nitrogen concentrations and/or increased hydraulic loading. The

alternative spray plans show the total nitrogen concentration in the percolate does not exceed 10 mg/L. Stage #2 involves recycling some and/or all material from the clarifiers back to Lagoon #1 for reprocessing through the wastewater treatment system. Stage #3 would divert off-spec water from the current spray irrigation storage lagoon to the new final effluent lagoon, which would be pumped back through the system again for treatment.

Stormwater can be pumped from lagoon 1 through the wastewater treatment system at a specified rate. That rate will be determined by lagoon level, pumping capacity, current processing flow rates and forecasted rain events. Since, the Off-spec Water Recycle Plan has three stages, there should not be any issues with storage capacity and the GWDS believes the Plan adequately addresses an "off-spec" event.

37. Comment: The draft spray irrigation permit does not address Mountaire's impacts to the adjoining L & T Tax Ditch, Swan Creek and Indian River in the same fashion as an NPDES-type permit which must demonstrate compliance with all receiving water quality standards. See generally DNREC Regulation 7201 at Part IV.

Response: Effluent limitations, operational, monitoring, and reporting requirements for National Pollutant Discharge Elimination System (NPDES) Permits issued by the State of Delaware are derived from the Federal Clean Water Act and Regulations and 7 Del. Admin. C. §7201 *Regulation Governing the Control of Water Pollution*. These permits are issued under the delegated authority provided to Delaware from the United States Environmental Protection Agency and issued to point source dischargers (by sector) to Waters of the State.

State of Delaware Permits issued to groundwater dischargers (including spray irrigators) are under the authority of 7 **Del.C.** Ch. 60 and 7 Del. Admin. C. §7102 *Regulations Governing the Design, Installation and Operation of On-Site Wastewater Treatment and Disposal Systems*. These two programs and their respective set of regulations both seek to ensure the protection of public health and the environment from dischargers but, the regulatory requirements for achieving that goal are significantly different.

7 Del. Admin. C. §7102 *Regulations Governing the Design, Installation and Operation of On-Site Wastewater Treatment and Disposal Systems* (in part) utilizes crop uptake as part of the treatment process for nutrient (i.e., nitrogen) removal. In the draft operations permit, the percolate directly underneath the crop is required to meet drinking water standards for Nitrates as Nitrogen (i.e., 10 mg/L). In order to understand the impacts to adjacent surface water bodies, Mountaire's proposed draft permit requires multiple layers of monitoring. Sampling will be required by the facility through the following devices: lysimeters (in-field), monitoring wells (in-field, up-gradient, and down-gradient), and surface water grab samples. Using these three sets of data the GWDS will be able to assess what impact the spray irrigation activities are having on the spray fields, groundwater, and surface waters within and adjacent to the spray fields. Annual soil sampling is also required and once every five years heavy metals are required to be sampled. These data will be used to verify any impacts occurring as a result of the spray irrigation activities. In the event trends of increasing concentrations and/or impacts are observed, the Mountaire will be required take all necessary actions to eliminate and correct any adverse impact on public health or the

environment resulting from permit non-compliance in accordance with Part III A.23 and Part IV A.5 of the proposed draft operations permit and Section 3.20 of the Regulations.

In addition, in accordance with the *First Amended Agreement and [Proposed] Consent Decree* as entered by the Department and Mountaire on May 29, 2020 (Exhibit 3), Mountaire is required to mitigate impacts to groundwater beneath the spray irrigation fields resulting from the 2017 WWTP failure through a production well relocation project. Mountaire's production wells will be relocated to areas within the spray irrigation fields as approved by the Department where high nitrogen levels are present in the groundwater. Therefore, once the relocated production wells are in place, any water extracted from the aquifer to meet Mountaire's process water needs will be extracted from areas of high nitrogen beneath the spray irrigation fields. This water is then utilized by Mountaire for production purposes and subsequently treated through the upgraded WWTP to a total nitrogen level of 10 mg/L or less prior to disposal via spray irrigation. This essentially establishes a pump and treat loop system to mitigate nitrogen impacts to groundwater beneath the spray facility. The primary design goals for the mitigation system include both nitrogen removal, as well as, the establishment of the highest level of hydraulic control practicable based on the need to establish and consistently maintain a hydraulic gradient away from offsite potable wells, and in part, on Mountaire's process water needs. Mountaire is required to maintain the production wells within the spray irrigation fields for as long as Mountaire is in operation at the Millsboro location. Therefore, nitrogen removal and hydraulic control will significantly reduce any impact to Swan Creek and the Indian River by the spray irrigation operation.

38. **Comment: The draft spray irrigation permit doesn't indicate that DNREC has considered and applied its Criteria for Waters of Exceptional Recreational or Ecological Significance ("ERES"). This includes the requirement that "discharges to ERES waters shall be avoided to the maximum extent practicable" and, "in order to be permitted, a discharge must be the least environmentally damaging practicable alternative." Id. at Section 5.6.1.3. The Indian River and its tidal tributaries, including Swan Creek, have been designated by DNREC as ERES waters. Id. at Section 3.0. By allowing Mountaire to discharge up to 10 mg/l total nitrogen to its spray fields, and then in turn allowing up to 10 mg/l nitrate in the percolate which is within 20-200 feet from the adjoining waterways, DNREC is not requiring the "least environmentally damaging practicable alternative" when Enhanced Nutrient Removal treatment systems can reduce total nitrogen to 3-5 mg/l and such systems and permits have been required for Virginia poultry processing plants discharging into the Chesapeake Bay watershed for a number of years. See Ex. E, Bauer Report at p. 7. Therefore, effluent and percolate limits for total nitrogen are too high to protect surface waters that adjoin the spray fields and should be set at Enhanced Nutrient Removal ("ENR") levels of 3 mg/l average monthly and 5 mg/l maximum daily.**

Response: The proposed draft operations permit will require the wastewater treatment system to achieve a maximum total nitrogen concentration of 10 mg/L within four (4) months of completing wastewater treatment system upgrades. This enhanced water quality is in-line with Federal Drinking Water Standards and therefore protective of human health and environment. This effluent limitation applies to treated effluent prior to discharge into the facility's finishing pond and total nitrogen concentrations will be further reduced by plant uptake during disposal via spray irrigation. The lower total nitrogen concentration, additional nutrient uptake by crops, and dilution in groundwater will ensure that water quality reaching any adjacent surface water bodies will be protective of the Inland Bays. This strategy will be verified through surface water and groundwater monitoring. Additionally, Mountaire's production well relocation project will essentially establish a pump and treat loop system to mitigate nitrogen impacts to groundwater beneath the spray facility. The primary design goals for the mitigation system include both nitrogen removal, as well as, the establishment of the highest level of hydraulic control practicable based on the need to establish and consistently maintain a hydraulic gradient away from offsite potable wells and potential adjacent surface water bodies.

Therefore, the GWDS believes that the proposed total nitrogen concentration limit of 10 mg/L, in addition to, the other proposed operational, monitoring, and reporting permit requirements will be protective of the of exceptional recreational or ecological significance Inland Bays.

Comments Provided by the Applicant, Mountaire:

Draft Operations Permit #359191-06

- **Page 6 – Future dryer Class A solids should be removed.**
    - **Response:** Page 6 of the draft operations permit contains a Process Flow Diagram provided in the April 24, 2020 submittal. Though, the Department is unable to manipulate this engineering drawing, the Department does acknowledge Mountaire does not intend to construct a future dryer for Class A solids disposal. The Department recommends Mountaire submit a revised Process Flow Diagram with the Drawings required in Part I C.1 Page 8 of the draft construction permit.

- **Page 25 - Part III A.4.g forage crops shall be harvested and removed from the irrigation field(s) at least twice a year. Crops harvested shall be removed from the irrigation site within six (6) months of harvest. – applicant indicated crop rotation years including soybeans are only harvested one time.**
    - **Response:** The Department acknowledges that typical farming practices require soybeans to be harvested only once per year. The draft operation permit will be revised accordingly to require crops to be harvested as appropriate. The permit will continue to require harvested crops to be removed from the irrigation site within six months of harvest (Exhibit 7).

- **Part I D.10 Application of Fertilizer – can this be amended to say the application of nitrogen and phosphorus? Can applications of pot ash and lime be added without permission?**

    - **Response:** The intent of the requirements regarding the application of fertilizer iterated in Part I D.10 of the draft operations permit is to limit the application of Nitrogen and Phosphorus. The Department acknowledges that typical farming practices, at times, requires the addition of pot ash and lime. Therefore, the draft operations permit has been revised accordingly to specify the prohibition of fertilizer containing Nitrogen and Phosphorus (Exhibit 7).

Draft Construction Permit #359191-05

- **Page 4 – Future dryer and Class A solids should be removed.**

    - **Response:** Page 4 of the draft construction permit contains a Process Flow Diagram provided by Mountaire in the April 24, 2020 application submittal. Though, the Department is unable to manipulate this engineering drawing, the Department does acknowledge Mountaire does not intend to construct a future dryer for Class A solids disposal. The Department recommends Mountaire submit a revised Process Flow Diagram with the Drawings required in Part I C.1 Page 8 of the Draft Construction Permit.

- **Page 5 #2 – DAF Cell 1B – should be 2400 gpm, not 1800 gpm. DAF Cell 1B can operate either in parallel or independently. The DAFs will operate 24 hours/day 6 to 7 days a week.**

    - **Response:** The draft construction permit appears to have taken information from an April 15, 2020 preliminary submittal requesting revisions to Mountaire's application. The April 25, 2020 finalized submittal contains verbiage consistent with the above requested change. Therefore, the draft construction permit will be revised as requested (Exhibit 8).

- **Page 7 – There is no mention of the UV system which is included in both the process flow diagram on Page 4 and the Final Design Report.**

    - **Response:** The draft construction permit does include mention of the UV contact channel on Page 7 in Item 15. This information was taken from the April 24, 2020 FDS Page 5 item 'o' *"15) One New RAS/Filter Equipment Building #4 is provided for enclosure of the new RAS pumps, WAS pumps, Filter Influent Pumps, chemical storage and mix tanks, chemical solution pumps, Tertiary Filters, UV contact channel and Electrical Motor Controls."*

- **Page 7 #11 – There will be two (2) or three (3) screw presses installed for sludge dewatering depending on size and brand chosen.**

    - **Response:** The verbiage included in the draft construction permit on Page 7 as Item 11 was taken directly from the April 24, 2020 FDS. Any modifications to the number of screw presses to be installed for sludge dewatering based on size and or brand chosen should be included with the Drawings and Technical Specifications required in Part I.C.1 Page 8 of the draft construction permit. The draft permit will be revised to indicate the minimum number (Exhibit 8)

- **Page 9 #3 – There is only one (1) new lagoon and it will be synthetically lined.**

    - **Response:** The requirement of two synthetically lined storage lagoons in Part I C.3 on Page 9 of the draft construction permit appears to have been drafted in error. Page 2 of the April 24, 2020 FDS iterates in Item 3.e that "a new spray storage lagoon will be installed to expand the final effluent storage volume." Part I C.3 on Page 9 of the draft construction permit will be revised to reflect the requirement of only one new, synthetically lined storage lagoon. Part I A on Page 8 of the draft construction permit has also been revised to include the required new, synthetically lined storage lagoon in the list of authorized construction items as Item Number 23 (Exhibit 8).

Groundwater Discharges Section Recommendation

The GWDS recommends the approval of the On-Site Wastewater Treatment and Disposal System Construction Permit and Operations Modification and Renewal Permit for Mountaire Farms of Delaware Inc.'s Poultry Processing Complex in Millsboro, DE.

The Construction Permit will authorize significant upgrades to the existing wastewater treatment system providing enhanced effluent treatment capabilities ultimately allowing the system to treat wastewater to a total nitrogen concentration of 10 mg/L or less. This nitrogen concentration is in-line with Federal Drinking Water Standards. Additional upgrades include the installation of a new tertiary sand filtration system for final effluent polishing, a new screw press sludge dewatering system designed to increase waste activated sludge handling capacity, and a new spray storage lagoon expanding the system's final effluent storage volume.

The Construction Permit authorizes the construction and/or installation of the proposed upgrades and equipment. The permit also includes a schedule of compliance, construction requirements, monitoring equipment installation requirements, and project completion requirements designed to eliminate poorly constructed systems, reduce treatment system malfunctions, ensure the retention of construction documents, and ultimately resulting in wastewater treatment systems that are protective of water resources and the public's health, safety, and welfare.

The Operations Modification and Renewal Permit will require the wastewater treatment system to achieve a maximum total nitrogen concentration of 10 mg/L within four (4) months of completing wastewater treatment system upgrades. This enhanced water quality is in-line with Federal Drinking Water Standards and therefore protective of human health and environment. In addition, effluent total nitrogen concentrations will be further reduced by plant uptake during disposal via spray irrigation.

The Operations Modification and Renewal Permit will include effluent limitations, operational, and reporting requirements designed to protect human health and the environment. The permit governs the volume and manner that treated wastewater (effluent) may be used for spray irrigation prohibiting spray during periods of high winds, saturated or frozen soil conditions, or when effluent ponding or runoff is observed. In addition, the permit will require extensive water quality monitoring through spray effluent monitoring, the use of lysimeters (in-field), monitoring wells (in-field, up-gradient, and down-gradient), and surface water monitoring allowing the GWDS to assess what impact the spray irrigation activities are having on the spray fields, groundwater, and surface waters within and adjacent to the spray fields. In the event trends of increasing concentrations and/or impacts are observed, the permittee will be required take all necessary actions to eliminate and correct any adverse impact on public health or the environment resulting from permit non-compliance. This includes the addition of nitrogen and fecal coliform contingency plans for poor water quality.

Given this, the GWDS has a high degree of confidence that the On-Site Wastewater Treatment and Disposal System Construction Permit and Operations Modification and Renewal Permit proposed for Mountaire Farms of Delaware Inc.'s Poultry Processing Complex in Millsboro, DE will be protective of public health and the environment. As such, the GWDS recommends the issuance of the permits.

Exhibit 1

Exhibit 2

Exhibit 3

Exhibit 4

Exhibit 5

Exhibit 6

Exhibit 7

Exhibit 8