In the Matter Of:

Department of Natural Resources & Environmental Control

DENALI WATER SOLUTIONS DOCKET 2022-P-W-0007

May 18, 2022



Denali Water Solutions Docket 2022-P-W-0007 - May 18, 2022

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               MS. NEWMAN: Good evening.
     believe everyone is now connected and ready
 2
     to begin the virtual public hearing.
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 4
               I want to first thank you all for
     taking your time to connect with us today.
 5
     The date is Wednesday, May 18, 2022.
 6
               We are here this evening to provide
 7
8
     a virtual hearing platform for the State of
     Delaware's Department of Natural Resources
9
10
     and Environmental Control to conduct its
11
     public hearing on the application submitted
12
     by Denali Water Solutions to renew their
13
     existing agricultural utilization permit.
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               My name is Theresa Newman, and
     Secretary Garvin has appointed me to serve as
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     the hearing officer for tonight's public
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17
     hearing.
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               This hearing is being conducted
     virtually. Staff is not all together in the
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20
     same room. Everyone is participating
21
     independently at their own respective
22
     locations.
23
               While there is no sign-in sheet to
24
     document attendance tonight, WebEx does
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4
 1
     generate a list of those that are virtually
     present so that the Department can have a
 2
     record of those who have electronically
 3
     joined this event.
 4
 5
               At the conclusion of my
     introductory remarks, I will be turning the
 6
 7
     hearing over to Department staff and then to
8
     the Applicant to provide formal presentations
9
     for the benefit of the hearing record being
10
     generated in this matter before us tonight.
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               Once the presentations conclude, if
12
     there are any commenters that registered to
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     provide public comment prior to 12:00 p.m.
14
     today, I will acknowledge those names, and
     they will be provided an opportunity to offer
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     a verbal comment on the proposed application
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17
     in alignment with DNREC standard comment
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     protocols.
               There is a court reporter virtually
19
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     present who will prepare a verbatim
21
     transcript of the hearing pursuant to the
22
     statutory requirement for DNREC to have the
23
     same prepared. And, as always, that
24
     transcript will be posted on the hearing
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5 1 webpage dedicated to this matter as soon as 2 it is received. In addition, I would encourage 3 4 those who are attending tonight's hearing to also visit the hearing webpage dedicated to 5 this matter for additional details concerning 6 the proposed application submitted by Denali 7 8 Water Solutions. The hearing webpage can be 9 found online under the Administrative Law 10 Section of DNREC's website that will be 11 listed at the conclusion of tonight's 12 hearing. 13 Before we finish the presentations, please be advised of the following protocols 14 that remain in place for all DNREC public 15 hearings: 16 17 All comments received must be solely limited to the subject matter for 18 tonight's hearing. All comments pertinent to 19 the subject matter of this virtual hearing 20 21 will be incorporated into the record being 22 generated in this matter. 23 In order to ensure that everyone who wishes to offer comment for the 24

6 1 Secretary's consideration is accommodated, the record in this matter shall remain open 2 following tonight's proceeding through 3 Thursday, June 2, 2022. 4 There is only one authentic record 5 of this formal proceeding tonight, and it is 6 the official court reporter's verbatim 7 8 transcript. 9 The statutory purpose of tonight's hearing is to build a record with regard to 10 the proposed application before us tonight, a 11 12 record consisting of tonight's hearing, all 13 comments, written comments, and all exhibits, 14 and eventually the Hearing Officer's Report will be reviewed by Secretary Garvin. 15 The Secretary will ultimately issue 16 17 an order following that review process 18 containing his decision on this matter and 19 the reasons therefor. 20 Per DNREC's standard hearing 21 protocols, there will be no Q and A or chat 22 sessions permitted during the hearing. 23 Those who preregistered to offer 24 verbal comment will be acknowledged to speak

7 1 after the conclusion of the presentation portion of tonight's hearing. Additional 2 instructions with regard to the offering of 3 verbal comment tonight will be provided at 4 5 that time. It is important to note that no 6 7 decision has already been made by the 8 Department, nor will any decision be made 9 tonight with regard to the proposed 10 application. 11 As previously stated, DNREC wishes 12 to ensure that everyone is enabled to offer their comments for inclusion into the record 13 14 being generated in this matter. Therefore, the record will remain open through Thursday, 15 June 2, 2022, so that the public may offer a 16 written comment, should they wish to do so. 17 18 Comments may be submitted through a 19 comment form link on the hearing webpage, via e-mail to DNRECHearingComments@Delaware.gov, 20 or via the U.S. Postal Services at the 21 22 physical address for DNREC indicated on the 23 hearing page and/or the public notices 24 previously issued in this matter.

8 1 Written comments to DNREC may not 2 be submitted using social media platform such as Twitter, Facebook, YouTube, or text 3 4 messaging. Please remember that all comment 5 received either through USPS or via the 6 electronic mechanisms noted just now, as long 7 8 as they are received by the Department on or 9 before June 2nd, will bear the exact same 10 weight and will all be considered equally by 11 the Secretary prior to making his final 12 decision in this matter. 13 Lastly, the ultimate decision 14 regarding this matter is made by DNREC Secretary Garvin. This formal proceeding 15 tonight acts as a mechanism to enable the 16 17 Department to thoroughly vet the application 18 matter to the public and to let the public know the various ways which comment may be 19 submitted for the Secretary's consideration, 20 21 if so desired. 22 I will now hand it over to 23 Mr. Churchill with the Division of Water to 24 provide the Department's presentation.

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 1
               MR. CHURCHILL: Thank you. Good
     evening. Again, my name is Brian Churchill,
 2
     and I'm an environmental scientist with DNREC
 3
     Surface Water Discharges Section, and I write
 4
     permits for the biosolids and residuals
 5
 6
     program.
               I want to start off this evening
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8
     with an overview of Denali's land application
     business. Denali applies dissolved air
9
10
     flotation solids, or DAF, as fertilizer to
11
     permitted land at a nitrogen loading rate.
12
               Current sources of DAV include pet
13
     poultry products in Bridgeville, Delaware;
14
     the Allen Harim Harbeson in Milton, Delaware
     facility; Amick Farms, Hurlock, Maryland
15
     facility; the Tyson Temperanceville, Virginia
16
17
     facility; Valley Proteins Inc., Linkwood,
18
     Maryland; Mountaire, Selbyville, Delaware
     facility; Perdue's Georgetown and Milford,
19
     Delaware facilities; and the Salisbury,
20
21
     Maryland facility, as well.
22
               The initial Agricultural
23
     Utilization Permit, or AGU permit, State
24
     Permit Number AGU1703-K-05 for the Schiff's
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10 1 Farm Inc. farm location was issued in late 2017 to Enviro Organic Technologies 2 Incorporated and was transferred to Denali 3 later in 2017. Currently, there are nine 4 land application sites under this permit. 5 A second separate AGU permit, State 6 Permit Number AGU2103-05-05 issued to Denali 7 8 for the Collier Farm, which is located 9 approximately 7 miles west of Harrington and 10 consists of approximately 350 acres of land. And this permit is not part of tonight's 11 12 public hearing. 13 There are currently again nine land application sites under Denali's Schiff Farm 14 permit, the permit we are talking about 15 tonight. I'm not going to go through all 16 nine of those. However, this Power Point is 17 available online on the hearing page, should 18 19 anyone want to peruse the information and view all nine of the existing facilities. 20 21 In addition to the nine existing 22 facilities, a tenth proposed new site is part 23 of the permit application. And this 24 application site consists of approximately

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11
 1
     91 acres of land suitable for land
     application and is located approximately
 2
     6 miles southwest of Harrington, Delaware.
 3
 4
               All the existing nine sites are
     also generally around Harrington within
 5
     approximately 8 miles of Harrington, itself.
 6
               The newly proposed Luff Farm
 7
8
     application site, again it's located
9
     approximately 6 miles southwest of
10
     Harrington. You can see the pushpin at the
11
     bottom left hand corner of the map. And for
12
     reference, there is Harrington up at the top
13
     right of the map.
               Outlined in red in this aerial
14
     image is the perimeter of the Luff Farm
15
     application site. And, again, it consists of
16
17
     approximately 91 acres of land suitable for
     land application, and it's located southwest
18
     of the intersection of High Stump Road and
19
     Greenville Road.
20
21
               At the top of this aerial image,
22
     you can also see Route 14, which it's
23
     immediately south of that, as well.
24
               The next thing I want to cover is
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12 1 what exactly is DAF and how is it generated? Water is used to process chickens and pet 2 food. During the processing, very small bits 3 of meat, fat, and other particles become 4 mixed into the process water, and the process 5 water becomes wastewater. 6 7 Early in the wastewater treatment 8 process, the wastewater goes through screens 9 that capture many of the particles in the 10 wastewater stream; however, the smallest particles pass through the screens and remain 11 12 suspended in the wastewater. 13 The next step in the wastewater 14 treatment process is typically a DAF, or dissolved air flotation solid unit, which is 15 utilized to remove additional particles from 16 17 the wastewater. 18 DAF treatment involves floating off 19 many of the remaining tiny particles with air bubbles and then concentrating and 20 21 temporarily storing the dewatered particles. 22 The partially treated water that is 23 separated from the DAF solids passes through the DAF unit for additional treatment later 24

13 1 in the wastewater treatment plan. 2 I have a brief video I'm going to share from You Tube. If the quality is poor 3 over the Internet connection, again all this 4 information is available online on the 5 hearing website, so you could view it after 6 the hearing if you cannot see it well this 7 8 evening. 9 (Playing video) And this is a 10 typical DAF unit where you can see the air 11 bubbles are floating up the DAF, and the 12 material is concentrated and ultimately removed from the DAF unit where it's 13 14 consolidated for later disposal. (Stops 15 playing) 16 Okay. The concentrated and 17 dewatered DAF solids are placed into a tanker 18 truck and can be beneficially reused as fertilizer. 19 20 DAF land applied under Denali's AGU 21 permits does not contain sanitary waste. So what this means is there is no human waste 22 23 component to the DAF or the waste stream 24 that's processed at the various wastewater

14 1 treatment plants that Denali receives DAF 2 from. The next thing I want to cover is 3 why is DAF land applied. Like animal manure, 4 DAF contains nitrogen and phosphorous which 5 is essential for plant growth and optimum 6 7 crop yields. 8 Most of the nitrogen in DAF is in the organic form, thus is slow-release 9 10 nitrogen, which helps reduce the potential of 11 leaching of nitrogen to groundwater. 12 Over time, the application of DAF 13 increases the organic content of soil, 14 resulting in improved water-holding capacity and soil quality, and can help increase soil 15 16 productivity. 17 In Delaware, DAF is regulated under DNREC's guidance and regulations governing 18 19 the land treatment of waste, which is 7 Del Admin C Section 7103. And within 7103, Part 20 V specifically is the set of regulations that 21 22 DAF has regulated under for land application, 23 and that section is entitled "land treatment 24 of waste products."

15 Now I'm going to review some of the 1 2 key land application site requirements and restrictions in Denali's permit. 3 Sampling is required of the DAF 4 that will be land applied and the soil, so 5 the material itself, the DAF, and then 6 separate from that, the soil, both of those 7 8 are required to be sampled. Many parameters, 9 including nutrients, metals, percent solids, 10 pH, et cetera. 11 A soil report is required before 12 any site is approved. This is done to 13 determine site suitability for land application and to delineate areas not 14 suitable for land application. 15 16 A 20-inch separation from the depth 17 of tillage -- and that depth of tillage means 18 the deepest depth that the DAF would be injected into the soil -- which is typically 19 about 10 inches beneath the soil surface. So 20 21 20 inches from the depth of tillage to the 22 seasonal high groundwater table is required. 23 Separation is checked utilizing temporary 24 auger soil borings prior to the commencement

16 1 of application. 2 The permittee is required to track all DAF application and apply the material at 3 an agronomic rate consistent with rates in an 4 annual nutrient management plan developed by 5 a Delaware certified nutrient consultant. 6 7 Hydraulic loading rates are not 8 appropriate for DAF application, as nitrogen 9 dictates the application rate, not the 10 quantity of liquid applied. 11 If DAF was applied at a typical 12 hydraulic loading rate for wastewater, the 13 nitrogen would be grossly over applied. Buffer zones must be maintained 14 from wells, streams, ditches, property lines, 15 houses, et cetera. 16 17 Implementation of odor minimization best management practices are required 18 as well. 19 20 And the primary one is the injection of the DAF into the soil surface --21 22 I'm sorry -- beneath the soil surface and 23 disking in material that may have 24 incidentally spilled on the surface during

17 1 application activities. 2 Disking that material in the soil minimizes the amount that is on the soil 3 4 surface. There is also adverse weather 5 condition restrictions, no application in 6 rain or in snow exceeding two inches, and 7 8 there is no application from December 7th 9 through February 15th unless an emergency 10 situation arises which the Department could 11 approve on a case-by-case basis. 12 Cover crops are required in the 13 winter after application has occurred on a 14 field in a given year, as well. DAF is sampled prior to 15 application, so prior to commencement of land 16 17 application activities, DAF from various approved sources is mixed in storage tanks. 18 I reviewed the different sources of DAF 19 20 earlier, and each of those DAF waste may have a very different makeup, but they are mixed 21 22 together in a storage tank. And then 23 separate composite samples are collected from 24 each storage tank and analyzed for the

18 1 parameters in the AGU permit. 2 Loading rates are calculated based on the average plant available nitrogen 3 4 values from the mixture of DAF. 5 DAF is then applied up to an agronomic rate. In this case it would be the 6 required rate of nitrogen for optimum crop 7 8 yields, for the appropriate crop consistent 9 with recommendations of a Delaware certified 10 nutrient consultant. 11 This next slide has an image of the 12 equipment that's utilized by Denali typically 13 to land apply DAF. 14 In the background you can see there is a light blue tank. Tanker trucks will 15 haul the DAF from the concrete above-ground 16 17 storage tank located west of Harrington to 18 whichever field the equipment is temporarily 19 staged in, deposit the DAF into that light blue tank, and then from that tank it's 20 21 pumped into a piece of equipment called a 22 terragator, which is towed behind the 23 tractor. 24 The terragator typically has five

19 1 injection points, which you may be able to see on this slide, and that is what injects 2 the DAF approximately in the top 10 inches of 3 4 the soil column. There is a video. Again, this may 5 not display correctly over the Internet. 6 7 However, it is available on the hearing page. 8 (Playing video) 9 What this is showing is the actual application of DAF onto one of Denali's land 10 application fields. As you can see, the DAF 11 12 is injected below the soil, and very little of the material remains on the soil surface. 13 14 This picture shows active application of DAF. On the left side of the 15 screen you can see the application equipment 16 17 applying DAF. And then throughout the rest of the picture you can see where the 18 application has actually occurred. 19 20 After the DAF is applied, the soils 21 are worked up prior to being seeded. 22 then an appropriate crop is planted, and the 23 crop utilizes the nutrients that were applied from the DAF waste. 24

20 I will briefly go over some 1 2 nutrient management concepts that apply to the permit application. DAF contains 3 nitrogen and phosphorous and is utilized as a 4 5 fertilizer. Nitrogen may be applied up to an 6 agronomic rate, which is the crop nitrogen 7 8 requirement based on realistic crop yields. 9 So this will be previous crop yields at the various land application sites 10 are used to determine the expected crop yield 11 12 for the current year. And then based on 13 that, the appropriate nitrogen loading rate is calculated. 14 Supplemental commercial fertilizer 15 16 is frequently utilized to meet the crop 17 nitrogen requirement. So what this means is 18 say 250 pounds of nitrogen is the appropriate amount of nitrogen for a crop. Only 19 20 150 pounds of that total value may be applied 21 utilizing DAF in this example, and then 22 another 100 pounds of nitrogen will be needed 23 to obtain optimum crop yield. And that 24 additional fertilizer could be applied using

21 1 commercial nitrogen fertilizer. 2 The permit allows for that, provided that the total amount of nitrogen 3 4 does not exceed an agronomic rate and the recommendations of a Delaware certified 5 nutrient consultant. 6 7 The crops roots take up and utilize 8 the nutrients from the land applied DAF, 9 minimizing any leaching of nitrogen to 10 groundwater. 11 The next thing I want to cover is 12 odors. DAF does have a moderate to strong 13 odor comparable to manure in strength. 14 An application event is typically completed in a few days. As injection only 15 leaves a small portion of DAF on the soil 16 17 surface and application is limited to once 18 every three years or less, odor complaints 19 are rare. There have not been any odor complaints in the past several years related 20 to Denali in Delaware. 21 22 The majority of odors subside over 23 the first few days after the conclusion of application activities. And typically after 24

22 1 a rainfall, the odors pretty much completely dissipate. 2 3 There are minimum application buffer distances that Denali has to comply 4 with. Buffers are required to be maintained 5 from dwellings, wells, roads, streams, ponds, 6 et cetera. And in the table on the right 7 8 side of the screen you can see what the 9 various buffer distances are. 10 Additionally, Denali flags each application field prior to an application 11 12 event occurs in a given year. 13 It may be difficult to see in this slide, but approximately down the middle of 14 the screen there are some orange flags. And 15 to the left of that, application occurred; to 16 the right of that, no application occurred, 17 18 because there is different sensitive areas, be it dwellings or drinking water wells or 19 whatever the case is that the setback 20 21 distances needed to be maintained from. 22 Next I want to talk about DNREC 23 inspections. DNREC routinely inspects 24 approved application sites during application

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 1
     activities to ensure compliance with permit
 2
     conditions.
               DNREC inspects fields after land
 3
     application activities to verify appropriate
 4
     crops are planted.
 5
               And DNREC's permit requirements are
 6
 7
     designed to protect human health and the
8
     environment.
 9
               This next slide has my contact
10
     information, should anyone need that. And
     with that, I have the following exhibits that
11
12
     I would like to officially place into the
13
     hearing record. This concludes my
14
    presentation. Thank you.
15
               MS. NEWMAN: Thank you,
     Mr. Churchill. The exhibits on the screen
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17
    now have been received electronically, and I
18
     do hereby mark Exhibits 1 through 8 as
    Department's exhibits.
19
20
               We are going to move on to
21
     Ms. Miller, and she is with -- she is going
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     to be representing on behalf of the
23
     application submitted by Denali Water
     Solutions. Ms. Miller, you may begin your
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24 1 presentation. MS. MILLER: I'm waiting for the 2 share to pop up so I can share my screen. 3 Can you guys see my Power Point? Okay. All 4 5 right. Thank you. My name is Lauren Miller. I'm the 6 Senior Environmental Director at Denali Water 7 8 Solutions for the northeast and the 9 southeast. 10 So just a little bit of background 11 on who we are. Denali is a leading specialty 12 waste management company. We are all over North America. And our main goal is to 13 14 replenish the earth by repurposing waste. And what that really means is to keep 15 beneficial products out of the landfill. 16 17 Every day we are losing more and more landfill space. So why put something 18 that has a reuse that's beneficial, whether 19 20 it be composting or land application of a 21 product, such as the poultry processing waste 22 that we apply in Delaware for farms, why 23 would we put that in a landfill? 24 So we do that in a variety of ways.

25 1 I will go over that really quickly next. 2 basically our goal is to work with different companies to offer them innovative and 3 economical solutions to the management of 4 their organic waste materials and also help 5 them meet their sustainability goals. 6 So here is a very extensive list of 7 8 what we do. We don't just do land 9 application. We handle a lot of food waste, 10 biosolids. We do composting. We run digestors, take packaging of food waste, so 11 12 that's staying out of the landfill. So this is just a, kind of a comprehensive list of 13 what we do and the different products that we 14 15 do work with. So at Denali, environmental 16 compliance is extremely important to us. 17 We 18 have an extensive staff of environmental 19 managers that oversee compliance in the fields, whether that be out in the farm 20 21 fields or at a compost facility or at a 22 digestor. 23 We have a lot of experience at 24 Denali combined, about 685 years across all

26 1 of our environmental staff. We also participate in a variety of national 2 committees and boards. We have registered 3 soil scientists, certified agronomists on 4 staff. So we make sure that we know what we 5 are doing when we are handling different 6 types of wastes, and we are very experienced 7 8 in that. 9 So Brian touched on land 10 application. I'm just going to reiterate why it's something that we do in the State of 11 12 Delaware. 13 The Delmarva in general is a lot of poultry processing, and we kind of see it as 14 a closed-loop process. So these fields that 15 we are land applying are raising crops for 16 livestock feed. You know, once the livestock 17 goes and is processed, then we are reusing 18 19 that waste on these same fields, so trying to 20 keep a closed-loop system and keep the 21 nutrients that we are producing local. 22 And at Denali we feel that we are 23 very integral to the food production process.

A lot of people don't realize that there is a

24

27 1 wash-down water associated with pretty much everything that we eat and we drink; so if we 2 3 are not showing up to the plants, these plants cannot operate. This waste has got to 4 5 go somewhere. So once again, you know, we are 6 trying to keep these beneficial products out 7 8 of the landfill. There is a nitrogen, 9 phosphorous, and organic matter value to 10 these materials, so they are providing 11 farmers with all three of these things. 12 And also, you know, it's a great alternative to commercial fertilizer. Right 13 14 now we are seeing the highest fertilizer prices ever, which can really impact farmers' 15 bottom lines, so we are able to come in and 16 17 help with that. 18 And also it reduces our country's 19 reliance on commercial fertilizer, and I think that can help with overall 20 environmental sustainability. 21 22 Commercial fertilizer is typically 23 available right when you put it down. 24 nutrients are available. And if they are not

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1
     used up by the crop right away, they can
     volatilize, they can run off, they can seep
 2
     into the soil.
 3
               But a product like DAF is organic,
 4
     and it's going to break down slowly and match
 5
     up with cropping cycles a lot more closely,
 6
 7
     so not all that nitrogen is available at
8
     first; so it will break down over the period
     of a couple years, actually, and, you know,
9
10
     slowly be used by the crops instead of being
     available up front. So it's a really great
11
12
     fertilizer in that respect.
               And once again, Brian touched on
13
     this a little bit, but the DNREC permit that
14
     we are renewing is extremely protective of
15
     the environment. There are buffers.
16
17
     is also depth to water table measurements
18
     that we do to ensure that once we're
     injecting the material, it's not percolating
19
     down into the water table.
20
21
               DNREC staff is regularly out
22
     checking to make sure that we are doing those
23
     measurements, not applying in areas of the
24
     field where that water table is too high.
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29 1 Also, application once every three years, that makes sure there is not a buildup 2 of materials in the soil and giving it time 3 to break down adequately before we do another 4 5 application. We are also required to follow 6 agronomic rates, so the idea is we are 7 8 putting out the amount of nutrients required 9 for that crop, and those are being taken up 10 by that crop and are not available to, once 11 again, run off or leach into the water table. 12 And Denali took over this permit in 13 2017. We have plenty of inspections and 14 reporting requirements that we work with DNREC through, and we have been in compliance 15 with all those requirements since we took 16 17 over this permit in 2017. 18 And that is all I have. Thank you. MS. NEWMAN: Thank you, Ms. Miller. 19 The Department did receive your presentation 20 as you have provided electronically. Would 21 22 you like to submit this presentation as an 23 exhibit?

MS. MILLER: Yes. I will resend

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30
     it. I changed a couple slides around, so I
1
     will resend that. But, yes, we will submit
 2
 3
     it.
 4
               MS. NEWMAN: Okay. Once you submit
     it, then we will get it re-posted as the
 5
     Applicant's Exhibit Number 1. And I do
 6
     hereby mark that as Applicant's Exhibit
7
8
     Number 1.
9
               So now that we have concluded our
10
     presentations from the Department and the
11
     Applicant, we would now go into the public
12
     comment portion of tonight's hearing.
13
     However, the Department did not receive any
14
     public comment registration by 12:00 p.m.
     today, so there will not be a verbal public
15
     comment portion of tonight's hearing.
16
17
               I want to thank everyone who has
     joined. And, again, those who wish to offer
18
     written comment must do so no later than
19
     June 2, 2022, to which the hearing matter
20
21
     will remain open.
22
               The hearing is now concluded at
23
     6:30 p.m. Thank you all for joining.
24
          (Concluded at 6:30 p.m.)
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CERTIFICATE

I, Lorena J. Hartnett, a Notary Public and Registered Professional Reporter, do hereby certify that the foregoing is an accurate and complete transcription of the proceeding held at the time and place stated herein, and that the said proceeding was recorded by me and then reduced to typewriting under my direction, and constitutes a true record of the testimony given by said witnesses.

I further certify that I am not a relative, employee, or attorney of any of the parties or a relative or employee of either counsel, and that I am in no way interested directly or indirectly in this action.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my seal of office on this 23rd day of May 2022.

Lorena J. Hartnett Registered Professional Reporter

analyzed 17:24 1 9 and/or 7:23 animal 14:4 1 23:18 30:6,8 91 11:1,17 **annual** 16:5 10 15:20 19:3 Α **Applicant** 4:8 30:11 100 20:22 Applicant's 30:6,7 12:00 4:13 30:14 above-ground 18:16 **application** 3:11 4:16 5:7 6:11 7:10 **14** 11:22 accommodated 6:1 8:17 9:8 10:5,14,23,24 11:2,8,16,18 **150** 20:20 acknowledge 4:14 14:12,22 15:2,14,15 16:1,3,8,9 17:1, 6,8,13,16,17 19:10,11,15,16,19 20:3, 15th 17:9 acknowledged 6:24 10 21:14,17,24 22:3,11,16,17,24 **18** 3:6 acres 10:10 11:1,17 23:4,23 24:20 25:9 26:10 29:1,5 **active** 19:14 **applied** 13:20 14:4 15:5 16:10,11,13 2 18:5 19:20,23 20:6,20,24 21:8 activities 17:1,17 21:24 23:1,4 applies 9:9 2 6:4 7:16 30:20 acts 8:16 apply 16:3 18:13 20:2 24:22 20 15:21 actual 19:9 applying 19:17 26:16 28:23 20-inch 15:16 addition 5:3 10:21 appointed 3:15 **2017** 10:2,4 29:13,17 additional 5:6 7:2 12:16.24 20:24 approve 17:11 **2022** 3:6 6:4 7:16 30:20 Additionally 22:10 approved 15:12 17:18 22:24 **250** 20:18 address 7:22 approximately 10:9,10,24 11:2,6,9, 2nd 8:9 adequately 29:4 17 19:3 22:14 **Admin** 14:20 areas 15:14 22:18 28:23 3 Administrative 5:9 **arises** 17:10 adverse 17:5 **350** 10:10 attendance 3:24 advised 5:14 attending 5:4 6 aerial 11:14,21 auger 15:24 agricultural 3:13 9:22 6 11:3.9 authentic 6:5 agronomic 16:4 18:6 20:7 21:4 29:7 685 25:24 average 18:3 agronomists 26:4 6:30 30:23,24 AGU 9:23 10:6 13:20 18:1 В 7 AGU1703-K-05 9:24 background 18:14 24:10 **AGU2103-05-05** 10:7 7 10:9 14:19 based 18:2 20:8,12 air 9:9 12:15,19 13:10 **7103** 14:20 basically 25:2 alignment 4:17 7th 17:8 **basis** 17:11 **Allen** 9:14 bear 8:9 8 alternative 27:13 begin 3:3 23:24 America 24:13 **behalf** 23:22 **8** 11:6 23:18 **Amick** 9:15 beneath 15:20 16:22 amount 17:3 20:19 21:3 29:8

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beneficial 24:16,19 27:7

beneficially 13:18

benefit 4:9

biosolids 9:5 25:10

bit 24:10 28:14

bits 12:3

blue 18:15,20

boards 26:3

borings 15:24

bottom 11:11 27:16

break 28:5.8 29:4

Brian 9:2 26:9 28:13

Bridgeville 9:13

briefly 20:1

bubbles 12:20 13:11

buffer 16:14 22:4.9

buffers 22:5 28:16

build 6:10

buildup 29:2

business 9:9

C

calculated 18:2 20:14

called 18:21

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