AIR QUALITY EFFECTS ANALYSIS
FOR
PERMIT TO CONSTRUCT
ACP-18297 v1.0

Applicant:

Dakota Yeast, LLC
18175 Red River Road West
Wahpeton, ND

Facility Location:

Dakota Yeast, LLC
18175 Red River Road West
Wahpeton, ND
Richland County

Introduction and Background:

Dakota Yeast, LLC (Dakota Yeast) submitted a permit to construct application to the North Dakota Department of Environmental Quality – Division of Air Quality (Department) on March 28, 2025. The facility is a yeast production facility currently operating under synthetic minor Permit to Operate No. AOP-28039 v 2.0 that expires on January 31, 2029. The application (Project) requested removal of the 9.95 ton per year (tpy) synthetic minor limits for the hazardous air pollutant (HAP) acetaldehyde, replacement of the 95 tpy volatile organic compound (VOC) emission limit with a new VOC limit of 240 tpy and construct an additional fermenter (EU 5). Collectively, this is referred to as the Project. Upon Project completion, the facility will be reclassified as a major source of HAPs and a Title V major source.

ACP-18297 v1.0 Table 1-1 lists the emissions units associated with the Dakota Yeast upon Project completion.

Facility Wide Emissions Profile

Table 1 – Potential To Emit (PTE) (tons per year)

Emission Unit Description	EU	VOCs	Acetaldehyde (HAP)
Fermenter 1	1	75.56	23.74
Fermenter 2	2	75.56	23.74
Fermenter 3	3	75.56	23.74
Fermenter 4	4	16.47	2.98
Fermenter 5	5	16.47	2.98

Emission Unit Description	EU	VOCs	Acetaldehyde (HAP)
	Total:	**259.60**	**77.18**
	Total Limited Emissions:	**240**	**77.18**

Table 2 – Projected Actual Emissions (PAE)(tons per year) [A]

Emission Unit Description	EU	VOCs	Acetaldehyde (HAP)
Fermenter 1	1	40.72	5.85
Fermenter 2	2	45.82	14.40
Fermenter 3	3	16.29	2.33
Fermenter 4	4	10.00	1.80
Fermenter 5	5	10.00	1.80
	Total:	**122.82**	**26.19**

[A] Emission rates are derived from the February 2024 stack test, and the operating hours assumes a removal of minimum 7.25 hours/day to account for time in which active fermentation steps do not occur (empty cream yeast, separation of the yeast solids, CIP the fermenter, and refill time). 365 days x (24 – 7.25 hours) = 6,113.75 hours per year

As shown in *Table 2 – Projected Actual Emissions (PAE)(tons per year)* [A], the facility wide projected actual emissions (PAE) is above 100 tons per year (tpy) for VOCs and above 10 tpy for any single hazardous air pollutant (HAP) and 25 tpy for the combined HAP emissions. Dakota Yeast requested enforceable emissions restrictions put in place, limiting the facility wide allowable number of VOCs to 240 tpy to stay below Prevention of Significant Deterioration (PSD) major source levels. Detailed calculations have been provided in the permit application received on March 28, 2025. The Department has reviewed these calculations and believes they accurately represent the proposed facility operations. With this permit action the exiting synthetic minor facility will become a major Title V source.

Rules Analysis
Potentially Applicable Rules and Expected Compliance Status

A. NDAC 33.1-15-01 – General Provisions:

Multiple topics are included in the General Provisions chapter: entry onto premises - authority, variances, circumvention, severability, land use plans and zoning regulations (only to provide air quality information), measurement of air contaminants, shutdown and malfunction of an installation - requirements for notification, time schedule for compliance, prohibition of air pollution, confidentiality of records, enforcement, and compliance certifications.

Applicability and Expected Compliance

Based on the review of the information provided, the facility will comply with all applicable sections of this rule.

B. NDAC 33.1-15-02 – Ambient Air Quality Standards:

The facility must comply with the North Dakota and Federal Ambient Air Quality Standards (AAQS). In addition to these standards, compliance with the "Criteria Pollutant Modeling Requirements for a Permit to Construct" guidelines[1].

Applicability and Expected Compliance

The facility is not subject to PSD, nor does the facility's PTE trigger the modeling thresholds listed in the "Criteria Pollutant Modeling Requirements for a Permit to Construct", therefore, preconstruction modeling for this facility was not required. Based on the Project emissions increase, compliance with the ambient air quality standards is expected to be maintained.

C. NDAC 33.1-15-03 – Restriction of Emission of Visible Air Contaminants:

This chapter requires all non-flare sources from new facilities to comply with an opacity limit of 20% except for one six-minute period per hour when 40% opacity is permissible. This chapter also requires facility flares to comply with an opacity limit of 20% except for one six-minute period per hour when 60% opacity is permissible. Lastly, this chapter restricts the opacity of fugitive emissions transported off property to 40% except for one six-minute period per hour when 60% opacity is permissible. This chapter also contains exceptions under certain circumstances and provides the method of measurement to determine compliance with the referenced limits.

Applicability and Expected Compliance

Based on Department experience with the existing units onsite, the facility is expected to continue to comply with the 20% opacity limit upon Project completion.

D. NDAC 33.1-15-04 – Open Burning:

No person may dispose of refuse and other combustible material by open burning, or cause, allow, or permit open burning of refuse and other combustible material, except as provided for in Section 33.1-15-04-02 or 33.1-15-10-02, and no person may conduct, cause, or permit the conduct of a salvage operation by open burning.

Applicability and Expected Compliance

The facility is subject to this chapter and will comply with all open burning regulations.

---

[1] See October 6, 2014, Criteria Pollutant Modeling Requirements for a Permit to Construct. Available at: https://www.deq.nd.gov/publications/AQ/policy/Modeling/Criteria_Modeling_Memo.pdf

E. NDAC 33.1-15-05 – Emissions of Particulates Matter Restricted:

This chapter establishes particulate matter emission limits and restrictions for industrial process equipment and fuel burning equipment used for indirect heating.

Applicability and Expected Compliance

The facility will not emit any particulate matter which results from industrial process equipment, nor will the facility operate any fuel burning equipment used for indirect heating.

F. NDAC 33.1-15-06 – Emissions of Sulfur Compounds Restricted:

This chapter applies to any installation in which fuel is burned and the SO_2 emissions are substantially due to the sulfur content of the fuel; and in which the fuel is burned primarily to produce heat. This chapter is not applicable to installations which are subject to an SO_2 emission limit under Chapter 33.1-15-12, Standards for Performance for New Stationary Sources, or installations which burn pipeline quality natural gas.

Applicability and Expected Compliance

The facility will not emit any sulfur compounds which result from industrial process equipment, nor will the facility operate any fuel burning equipment used for indirect heating.

G. NDAC 33.1-15-07 – Control of Organic Compounds Emissions:

This chapter establishes requirements for the construction of organic compound facilities and the disposal of organic compounds gas and vapor generated as waste resulting from storage, refining, or processing operations at the facility.

Applicability and Expected Compliance

The facility primarily emits organic compounds (VOCs and HAPs) which are generated during the fermentation process and are subject to the requirements of this chapter. The facility will comply with the requirements of 40 CFR Part 63, Subpart CCCC (MACT CCCC) upon Project completion. MACT CCCC restricts VOC emissions and requires operation of a VOC continuous emissions monitor system (CEMS). The facility currently operates VOC CEMS on Fermenters 1-4 and will install additional VOC CEMS on Fermenter 5. Consistent with the general requirements of MACT CCCC which states, in part "*The general duty to minimize emissions does not require you to make any further efforts to reduce emissions if levels required by the applicable standard have been achieved.*"[2], the Department has determined that compliance with MACT CCCC is sufficient to demonstrate compliance with this chapter's requirements. Table 2 shows the facility's projected actual VOC emissions are 122.82 tpy and HAP (acetaldehyde) emissions are 26.17 tpy. The facility will have enforceable emissions restrictions put in

[2] See 40 CFR 63.2150(d). Available at: https://www.ecfr.gov/current/title-40/part-63/subpart-CCCC#p-63.2150(d)

place, limiting the facility wide allowable amount of VOCs to 240 tpy to stay below PSD levels.

H. NDAC 33.1-15-08 – Control of Air Pollution from Vehicles and Other Internal Combustion Engines:

This chapter restricts the operation of internal combustion engines which emit from any source unreasonable and excessive smoke, obnoxious or noxious gas, fumes or vapor. This chapter also prohibits the removal or disabling of motor vehicle pollution control devices.

Applicability and Expected Compliance

The facility is subject to this chapter and is expected to comply with all applicable requirements should vehicles or other internal combustion engines be used.

I. NDAC 33.1-15-09 – [repealed]

J. NDAC 33.1-15-10 – Control of Pesticides:

This chapter provides restrictions on pesticide use and restrictions on the disposal of surplus pesticides and empty pesticide containers.

Applicability and Expected Compliance

The facility is subject to this chapter and is expected to comply with all applicable requirements should pesticides be used.

K. NDAC 33.1-15-11 – Prevention of Air Pollution Emergency Episodes:

When an air pollution emergency episode is declared by the Department, the facility shall comply with the requirements in Chapter 33.1-15-11 of the North Dakota Air Pollution Control (NDAPC) rules.

L. NDAC 33.1-15-12 – Standards of Performance for New Stationary Sources [40 Code of Federal Regulations Part 60 (40 CFR Part 60)]:

This chapter adopts most of the Standards of Performance for New Stationary Sources (NSPS) under 40 CFR Part 60. Dakota Yeast is subject to the following subparts under 40 CFR Part 60 which have been adopted by North Dakota as of July 1, 2019:

Applicability and Expected Compliance

The facility does not appear to have any applicable requirements under this chapter.

M. NDAC 33.1-15-13 – Emission Standards for Hazardous Air Pollutants [40 Code of Federal Regulations Part 61 (40 CFR Part 61)]:

This chapter discusses emission standards for hazardous air pollutants (HAPs). It specifically incorporates a majority of the subparts and appendices of the National Emission Standards for Hazardous Air Pollutants (NESHAP) under 40 CFR Part 61 as of July 2, 2010.

Applicability and Expected Compliance

The facility does not appear to have any applicable requirements under this chapter.

N. NDAC 33.1-15-14 – Designated Air Contaminant Sources, Permit to Construct, Minor Source Permit to Operate, Title V Permit to Operate:

This chapter designates that federally regulated sources are required to obtain a Permit to Construct and a Permit to Operate and comply with specific emission control and air quality standards.

Applicability and Expected Compliance

The facility has submitted an application for a permit to construct and has met all requirements necessary to obtain a permit to construct. The facility is currently a synthetic minor source and will become a Title V major source upon completion of this Project.

The permit must undergo a thirty-day public comment required per NDAC 33.1-15-14-06.5. a.

Once the facility completes construction of the Project and meets the permit to construct requirements, a facility inspection will be performed by the Department. The facility will be required to apply for a Title V permit to operate within one year of permit issuance.[3]

O. NDAC 33.1-15-15 – Prevention of Significant Deterioration of Air Quality [40 CFR 52.21]:

This chapter adopts the federal provisions of the Prevention of Significant Deterioration of air quality (PSD) program (40 CFR 52.21). A facility is subject to PSD review if it is classified as a "major stationary source" under Chapter 33.1-15-15.

Applicability and Expected Compliance

This facility is not classified as a "major stationary source" under 40 CFR 52.21(b)(1)(i)(a) and is therefore only subject to PSD review if emissions of a regulated new source review (NSR) pollutant[4] exceed 250 tpy (excluding fugitive emissions). The PTE for this facility, as shown in Table 1, is greater than 250 tpy for VOCs. The facility requested an enforceable emission limit of 240 tpy of VOCs to stay below the 250 tpy threshold and therefore not subject to PSD review. To maintain PSD minor source status, Condition 2.C and Table 3-1 of ACP-18297 v1.0 have been incorporated.

---

[3] See 40 CFR 70.5(a)(1)(i). Available at: https://www.ecfr.gov/current/title-40/part-70#p-70.5(a)(1)(i)

[4] See 40 CFR 52.21(b)(50). Available at: https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-52/subpart-A/section-52.21#p-52.21(b)(50)

P. NDAC 33.1-15-16 – Restriction of Odorous Air Contaminants:

This chapter restricts the discharge of objectionable odorous air contaminants which measure seven odor concentration units or greater outside the property boundary. The emission of hydrogen sulfide is also addressed with strict concentration limitations. The chapter also establishes the method of measurement using certified inspectors, scentometers, and other approved instruments.

Applicability and Expected Compliance

Based on Department experience with sources having similar emission units, processes, and low hydrogen sulfide concentrations, the facility is expected to comply with this chapter.

Q. NDAC 33.1-15-17 – Restriction of Fugitive Emissions:

This Chapter restricts fugitive emissions from particulate matter or other visible air contaminates and gaseous emissions that would violate Chapter 2 (ambient air quality standards), Chapter 15 (PSD), Chapter 16 (odor), or Chapter 19 (visibility).

Applicability and Expected Compliance

The facility will be required to take reasonable precautions to prevent fugitive emissions in violation of the above reference NDAC chapters.

R. NDAC 33.1-15-18 – Stack Heights:

This chapter restricts the use of stack heights above good engineering practices (GEP). The chapter primarily adopts federal regulations listed under 40 CFR 51.100(ii). This chapter also restricts the use of dispersion techniques to affect the concentration of a pollutant in the ambient air. Demonstrations of good engineering practice stack heights must be made available for review.

Applicability and Expected Compliance

The facility does not appear to have any applicable requirements under this chapter.

S. NDAC 33.1-15-19 – Visibility Protection:

This chapter outlines regulations regarding visibility protection and applies to new major stationary sources as defined in Section 33.1-15-15-01. It contains provisions regarding visibility impact analysis, visibility models, notification requirements for permit applications, review by federal land managers, permit issuance criteria, and visibility monitoring.

Applicability and Expected Compliance

The facility is an existing synthetic minor source and will become a Title V major stationary source upon completion of this permit action. Given the insignificant levels of the visibility impairing air pollutants, such as NO_X, SO_2, and $PM_{2.5}$, it is expected that the facility will not adversely contribute to visibility impairment within the three units of the Theodore Roosevelt National Park, the Lostwood National Wildlife Refuge, Boundary Waters Canoe Area in Minnesota, or Voyageurs National Park in Minnesota (nearest federal Class I areas).

T. NDAC 33.1-15-20 – Control of Emissions from Oil and Gas Well Production Facilities:

The facility is not an oil or gas well facility and is therefore not subject to the requirements of this chapter.

U. NDAC 33.1-15-21 – Acid Rain Program:

This chapter adopts the acid rain provisions of the Clean Air Act specified under 40 CFR Parts 72-78. The facility is not subject to the acid rain provision as they are not an electric utility.

V. NDAC 33.1-15-22 – Emissions Standards for Hazardous Air Pollutants for Source Categories [40 Code of Federal Regulations Part 63 (40 CFR Part 63)]:

This chapter adopts most of the NESHAP for Source Categories under 40 CFR Part 63. These standards typically apply to major sources of air pollution that are in a regulated source category. In addition to the major source requirements, some of the regulations have "area source" standards (for non-major sources). Some of the area source standards have not been adopted by the Department and compliance will be determined by the United States Environmental Protection Agency (USEPA) (i.e. 40 CFR 63, Subpart ZZZZ area source provisions have not been adopted by the Department).

Applicability

The facility's potential HAP emissions are greater than 10 tons/year of any single HAP and are greater than 25 tons/year of any combination of HAPs, so the facility is a major source of HAPs.

Subpart A – General Provisions

Subpart A contains general requirements for prohibited activities and circumvention, preconstruction review and notification, standards and maintenance requirements, performance tests, monitoring, recordkeeping, reporting, and control device work practice requirements.

Applicability and Expected Compliance

The facility will comply with the general provisions of Subpart A through submission of timely notifications, performance testing, monitoring, recordkeeping, reporting, and following the control device work practice requirements under Subpart A.

Subpart CCCC – National Emission Standards for Hazardous Air Pollutants: Manufacturing of Nutritional Yeast

The provisions of this subpart apply to owners or operators of a nutritional yeast manufacturing facility that is, is located at, or is part of a major source of HAP emissions. This subpart applies to each new, reconstructed, or existing "affected source" that produces *Saccharomyces cerevisiae* at a nutritional yeast manufacturing facility.

Applicability and Expected Compliance

Dakota Yeast produces a variety of yeast strains including baker's yeast, a nutritional yeast. The facility's fermenters (EU 1 through 5) will be subject to the requirements under this subpart when manufacturing baker's yeast or other nutritional yeasts. The facility will comply with the requirements of Subpart CCCC through tracking the types of yeast produced on a batch-by-batch basis and reporting on compliance when the manufactured yeast is a nutritional yeast. The facility currently operates VOC CEMS on fermenters 1-4 and will install an additional VOC CEMS on fermenter 5. Table 3-2 of ACP-18297 v1.0 provides the emissions limits associated with the manufacturing of nutritional yeast.

The facility will demonstrate compliance with MACT CCCC no later than one year after the issuance of this permit. Dakota Yeast elects to follow the more stringent new facilities emission limits for all fermenters (EU 1 through 5).

W. NDAC 33.1-15-23 – Fees:

This chapter requires a filing fee of $325 for permits to construct applications, plus any additional fees based on actual processing costs. The additional fees based on processing costs will be assessed upon issuance of the draft permit to construct. The annual operating permit fee is also applicable.

The applicant has paid the $325 filing fee and may be required to pay the additional fees associated with the permit processing.

X. NDAC 33.1-15-24 – Standards for Lead-Based Paint Activities:

The facility will not perform any lead-based painting and is therefore not subject to this chapter.

Y. NDAC 33.1-15-25 – Regional Haze Requirements:

This chapter is specific to existing stationary sources or groups of sources which have the potential to "contribute to visibility impairment" as defined in Section 33.1-15-25-01.2.

Existing stationary sources or groups of sources determined to contribute to visibility impairment may be required to implement emissions reduction measures to help the Department make reasonable progress toward North Dakota's reasonable progress goals established in accordance with 40 CFR 51.308.

Applicability and Expected Compliance

The facility is an existing synthetic minor source and will become a Title V major stationary source upon completion of this permit action. Given the insignificant levels of visibility impairing air pollutants, such as NO_X, SO_2, and $PM_{2.5}$, it is expected that the facility will not adversely contribute to visibility impairment. Therefore, the facility is not subject to the requirements of this chapter.

Summary:

A complete review of the proposed project indicates that the Project is expected to comply with the applicable federal and state air pollution rules and regulations. The Department will make a final recommendation on the issuance of a Permit to Construct for Dakota Yeast following completion of a 30-day public comment period. The public comment period will run from November 7, 2025, and end December 6, 2025.

Update post comment period:
[Reserved]

Date of Draft Analysis: November 03, 2025
Date of Final Analysis: [Reserved]

Analysis By:

Kari Thorsteinson
Environmental Scientist
Division of Air Quality

KT:tas