

**INTRADEPARTMENTAL MEMORANDUM**

FILE: Little Missouri Special Inc (0357)

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SUBJECT: Permit Application Review

DATE: April 9, 2025

**Introduction**

The North Dakota Department of Environmental Quality (Department) received a permit application for a renewal for the Little Missouri Special, Inc. (Little Missouri) special waste landfill.

Little Missouri currently owns and operates a special waste landfill, regulated under Permit 0357 on approximately 320 acres located in a portion of the N1/2 of Section 8, Township 130 North, Range 106 West in Bowman County, ND. Little Missouri is proposing to renew their permit to continue operations and proposing minor modifications to abandon and install the groundwater monitoring wells. The facility was first permitted in 2010.

**Design**

Little Missouri disposes of special waste including exploration and production (E&P) waste and industrial waste but does not accept municipal solid waste or hazardous waste. The design includes a phased expansion plan, increasing the landfill's total capacity from 125,000 cubic yards to 850,000 cubic yards across Cells 1 and 2. The engineering report estimates a future capacity of 1,110,000 cubic yards. Cell 1 is currently nearing capacity, and future development will include Cell 2, divided into four phases (2A–2D), to ensure sustained operations over a projected lifespan of up to 22 years.

The landfill uses a composite liner system comprising compacted clay and a 60-mil high-density polyethylene (HDPE) geomembrane, designed to prevent leachate leakage. Leachate is managed through a system of pumps, which transfer it to two evaporation ponds, ensuring that head levels in the landfill remain below 12 inches (1 foot). The design also incorporates a 12-

inch sand layer for gentler slopes. Intermediate cover will be applied to areas awaiting final closure to minimize leachate formation.

The final cover system includes a 5-foot-thick soil layer, composed of 12 inches of clay, 12 inches of subsoil, and 6 inches of topsoil, promoting vegetation and controlling erosion. Stormwater management features include sedimentation ponds, rock check trenches, and perimeter berms, designed to handle 25-year and 100-year storm events without causing runoff or erosion.

Little Missouri has an Environmental Monitoring Network Work Plan that manages the existing network of groundwater wells and piezometers which monitor for any potential groundwater impact. As the landfill expands, new wells will be installed to maintain compliance, while other wells will be properly sealed.

### **Operation**

The operations follow plans including a Waste Acceptance Plan and a Plan of Operation. The Waste Acceptance Plan outlines the waste coming into the site. The Plan of Operation outlines general operations, waste handling and disposal procedures, environmental control and monitoring, and emergency response.

The facility handles various waste types, including E&P waste, non-hazardous industrial waste, and inert materials like wood and concrete. Waste is unloaded near designated points to protect the liner, with a three-foot layer of waste laid before using heavy equipment for compaction. Areas that are inactive for over 120 days receive an intermediate cover of eight inches of compacted soil. Temporary stockpiling is allowed on a holding pad with a clay liner, and solidification processes stabilize sludge waste by mixing it with dry waste or fly ash in the bins before final disposal.

The facility also has routine maintenance and monitoring throughout the operations. Dust control uses water trucks on roads and active cells, with leachate water applied within lined areas. Intermediate covers minimize erosion on inactive waste areas, while final cover is applied as areas reach their final grade. Litter control ensures debris is managed effectively, while vector control is minimal due to the nature of the waste handled. Regular inspections are performed weekly and monthly, focusing on site infrastructure, waste placement, and environmental systems such as fences, stormwater controls, and monitoring wells.

Annual groundwater monitoring reports are submitted to the Department, with groundwater and surface water sampling conducted semi-annually. Detailed emergency response plans cover contingencies like fires, spills, vandalism, and weather-related disruptions.

### **Closure**

The closure plan outlines a sequential partial closure for Cell 2 in four phases, moving northward from Cell 1. Areas will be closed as they reach the correct grade. The landfill expansion will use an alternative cover system with 3.5 feet of clay-like soil, 12 inches of rooting zone soil, and 6 inches of topsoil. These depths meet or exceed special waste landfill requirement.

The permit application specifies slopes up to twenty-five percent with erosion calculations showing soil loss below two tons per acre per year. The closure plan follows the quality

assurance/quality control (QA/QC) procedures in the Guideline 5. Grass seeding will use the mix from the Department's Guideline 24 for native grass, which establishes both warm and cool season grasses.

Little Missouri also has a stormwater plan that ensures that rainwater is properly managed. The drainage system directs water away from the waste areas, while liners and covers prevent stormwater from creating leachate.

### **Compliance History**

The following item of noncompliance have been noted since 2023:

1. Annual report not being submitted on time.

The above items of noncompliance have been addressed by the facility, and no formal notices of violations have been issued to the facility.

### **Solid Waste Management Rules (NDAC Article 33.1-20)**

#### **NDAC Section 33.1-20-02.1-05. Record of notice.**

A copy of the record of notice, dated July 6, 2010, was provided to the Department as part of the permit application.

#### **NDAC Section 33.1-20-02.1-06. Property rights.**

A quit claim deed is in the Department's files. It states the entire north half of Section 8, Township 130 North, Range 106 West in Bowman County is owned by Little Missouri Special, Inc. The landfill Cell 2 expansion footprint is completely within this existing facility boundary.

#### **NDAC Section 33.1-20-03.1-01. Preapplication procedures.**

A preapplication was received by Department on September 1, 2015. The Department approved the preapplication in a letter, date June 29, 2018.

#### **NDAC Section 33.1-20-03.1-02. Permit application procedures.**

##### **NDAC Subsections 33.1-20-03.1-02(1) – (3)**

The Department received a permit application, supporting documents and an application fee of \$13,000. The permit application included the 'Application for a Solid Waste Management Facility Permit' form SFN 19269 which was prepared and signed by the applicant's authorized agent. A hardcopy and electronic copy of the application were provided to the Department.

##### **NDAC Subsection 33.1-20-03.1-02(4)**

A public notice by the facility is not required for a permit renewal and no major modifications are being proposed.

**NDAC Subsection 33.1-20-03.1-02(5)**

Notification to the North Dakota Public Service Commission is not required as the facility is not proposing to dispose of coal processing wastes in a mining permit area.

**NDAC Subsection 33.1-20-03.1-02(6)**

**Applications for a solid waste management unit or facility permit must include the following information where applicable:**

**a. A completed application form, subsection 1;**

The Department received a permit application, supporting documents and an application fee of \$13,000. The permit application included the 'Application for a Solid Waste Management Facility Permit' form SFN 19269 which was prepared and signed by the applicant's authorized agent. A hardcopy and electronic copy of the application were provided to the Department.

**b. A description of the anticipated physical and chemical characteristics, estimated amounts, and sources of solid waste to be accepted, including the demonstration required by North Dakota Century Code section 23.1-08-14;**

The Waste Acceptance Plan addresses this requirement. Little Missouri accepts special waste, non-hazardous industrial, and inert waste, with a capacity of 36,000 tons annually. Oilfield special waste is exempt from the hazardous waste regulations if the exemption requirements are met. Industrial waste includes refinery residues, ethanol by-products, and pipeline spills. Inert waste, such as construction debris, undergoes specific testing for radioactivity and hazardous characteristics.

The solidification process is applied to waste requiring stabilization before landfill disposal. Wastes, including sludge or semi-solid materials, are tested for pH compatibility and then placed in steel shale bins within designated landfill cells. Dry agents like fly ash or other firming materials are mixed with the waste to create a stable, solid matrix. This mixture is regularly checked to ensure no free liquids remain by using the EPA Paint Filter Test. Once fully solidified, the waste is compacted in the landfill, ensuring stable containment and compliance with disposal requirements.

**c. The site characterization of section 33.1-20-13-01 and a demonstration that the site fulfills the location standards of section 33.1-20-04.1-01;**

This was completed as part of previous permit applications. It is still valid with this application and current operation as the boundary remains unchanged. The facility also submitted a pre-application in 2015 to address steep topography and erosion prone soils. The pre-application was approved by the Department in 2018. This application includes drawings and discussion in the Engineering Report.

**d. Soil survey and segregation of suitable plant growth material;**

High intensity soil surveys were completed in 2007, 2008, and 2014. A reclamation plan was originally completed in 2012. A 2018 high intensity soil survey was included as part of the Engineering Report. To date, about 4,800 cubic yards of topsoil or suitable plant growth material (SPGM) and 18,000 cubic yards of subsoil have been stockpiled on-site. However, an additional 10,000 cubic yards of SPGM and 500 cubic yards of subsoil will need to be imported. The imported materials will come from Fallon County, Montana, and the agreement was included as part of the permit application.

**e. Demonstrations of capability to fulfill the general facility standards of section 33.1-20-04.1-02;**

The "Plan of Operation" includes a description of facility operations, personnel, hours, waste handling, maintenance, monitoring, and reporting.

Operating procedures includes detailed processes for waste acceptance, handling, placement, and inclement weather operations are outlined to ensure an environmentally sound operation.

The facility follows inspection protocols (weekly, monthly, and post-event) to maintain operational integrity, and implements monitoring of groundwater, and leachate.

The permit application also outlines a contingency action plan, addressing potential issues such as fire, spills, vandalism, and inclement weather, to minimize hazards to human health and the environment. The plan will be reviewed and revised as necessary

**f. Facility engineering specifications adequate to demonstrate the capability to fulfill performance, design, and construction criteria provided by this article and enumerated in this subdivision;**

**1) Transfer stations and drop box facilities, section 33.1-20-04.1-06.**

The requirements of this section are not applicable as the facility is not proposing a transfer station or a drop box facility.

**2) Waste piles, section 33.1-20-04.1-07.**

The requirements of this section are not applicable as the facility is not proposing to manage any waste piles.

**3) Resource recovery, section 33.1-20-04.1-08.**

The requirements of this section are not applicable as the facility is not proposing any resource recovery activities.

**4) Land treatment, section 33.1-20-04.1-09 and chapter 33.1-20-09.**

In 2009, Little Missouri applied for the permit to build a compost treatment facility. By 2010, they completed a clay compost pad and Surface Impoundment 1, which was lined with a synthetic membrane that receive contact water runoff.

The compost treatment facility uses a biodegradation process to break down petroleum hydrocarbon and other organic contaminants. Though currently inactive, compost treatment may be resumed in the future.

**5) Non-CCR surface impoundments, section 33.1-20-04.1-09 and chapter 33.1-20-08.1.**

The facility features two lined surface impoundments on an 8.3-acre compacted clay pad originally built for composting petroleum-contaminated soils. Surface impoundment 1 collects runoff from the compost unit, while Surface Impoundment 2 serves as the main evaporation pond for the landfill leachate.

**6) Any disposal, section 33.1-20-04.1-09.**

The requirements of this section include construction and operation standards, drainage, leachate removal system, composite liners, closure standards, and post-closure standards. These items are discussed throughout this review.

**7) Inert waste landfill, chapter 33.1-20-05.1.**

The requirements of this section are not applicable as the facility is not proposing an inert waste landfill.

**8) Municipal waste landfill, chapter 33.1-20-06.1.**

The requirements of this section are not applicable as the facility is not proposing a municipal waste landfill.

**9) Industrial waste landfill, chapters 33.1-20-07.1 or 33.1-20-10.**

The requirements of this section are not applicable as the facility is not proposing an industrial waste landfill.

**10) TENORM waste landfill, chapters 33.1-20-07.1 or 33.1-20-10 and 33.1-20-11**

The requirements of this section are not applicable as the facility is not proposing a TENORM waste landfill.

**11) Special waste landfill, chapter 33.1-20-07.1;**

The requirements of this section have been met and are discussed throughout the **Design** section, **Operation** section, **Closure** section, and g. The **Plan of Operation** of section **33.1-20-04. 1-03** section of this memo.

**12) CCR unit, chapter 33.1-20-08;**

The requirements of this section are not applicable as the facility is not proposing a CCR unit.

**13) Municipal solid waste ash landfills, chapter 33.1-20-10;**

The requirements of this section are not applicable as the facility is not proposing a municipal solid waste ash landfill.

**14) Regulated infectious waste unit, chapter 33.1-20-12;**

The requirements of this section are not applicable as the facility is not proposing a regulated infectious waste unit.

**g. The plan of operation of section 33.1-20-04.1-03;**

The facility provided a Plan of Operation, dated February 2022, as part of the permit application.

The facility accepts E&P waste, non-hazardous industrial waste, and inert waste (e.g., wood, tires, demolition debris)

Access is controlled by fencing, traffic control measures, and a locked gate. A gravel road connects the site to 132<sup>nd</sup> Avenue SW for vehicle access.

Waste profiling is mandatory before acceptance, using a Gate Acceptance Form. Solidification of sludge occurs in shale bins by mixing with dry waste (e.g., fly ash). A maximum of two bins are used at a time.

The composting operation is currently inactive, however, the facility retains the capacity to compost organic wastes through biodegradation, if necessary.

Temporary berms and drainage systems are used to mitigate wet weather impacts, and snow removal is conducted during winter. Dust control measures include water trucks and leachate for lined areas.

The facility includes lined cells, two surface impoundments, a mechanical evaporator, and berms to manage leachate and stormwater runoff. The Stormwater Pollution Prevention Plan (SWPPP) ensures appropriate erosion control and runoff management.

Inspections by the facility are conducted weekly, monthly, and following significant weather events. Findings and corrective actions are documented and stored on-site.

Groundwater monitoring is ongoing, with semi-annual sampling events. Monthly and annual reports are submitted to the Department, including waste volumes, leachate management, and operational summaries.

The Contingency Action Plan outlines responses to incidents such as fires, spills, vandalism, and severe weather. Emergency contact lists are maintained, and a copy of the plan will be located at the facility for staff reference.

**h. Demonstration of the treatment technology of section 33.1-20-01.1-12;**

The requirements of this section are not applicable as the facility is not proposing to treat waste.

**i. The place where the operating record is or will be kept, section 33.1-20-04.1-04;**

The operating record is kept at the facility's office.

**j. Demonstration of capability to fulfill the groundwater monitoring, sections 33.1-20-08-06 or 33.1-20-13-02;**

Little Missouri updated the 2016 groundwater monitoring plan with the 2024 addendum. The updated plan was modified to support the expansion of Cell 2. This includes installing two new monitoring wells, MW B22-1 and MW B22-2, and abandoning two existing monitoring wells, MW 28A and MW 7. The new wells will undergo four sampling events to establish baseline water quality prior to waste placement. The new wells will monitor groundwater levels, flow direction, and hydraulic conductivity. After installation, the Well Installation Report will be prepared to update the monitoring plan. Modifications will be addressed with coordination with the Department.

**k. Construction quality assurance and quality control;**

The QA/QC Plan follows the Department's Guideline 5 – Quality Assurance for Construction of Landfill and Surface impoundment liners, caps, and leachate collection systems. The plan outlines procedures for documenting construction activities, including backfill, liners, and drainage systems. It also specifies testing methods and frequencies to ensure compliance and provides the necessary data for the construction certification report, which must be submitted to the Department for approval.

**l. Demonstrations of capability to fulfill the closure standards, section 33.1-20.1-04.1-05 and otherwise provided by this article;**

The landfill will implement a final cover system designed to prevent erosion, settlement, and environmental degradation. The cover will be maintained to

ensure structural integrity and avoid runoff or erosion damage during and after closure.

Closure will commence within 30 days of receiving the final waste load and be completed within 180 days. Partial or phased closures will be implemented to reduce the working face size and ensure efficient final covering over time.

The Department will receive as-built drawings and certified closure documentation upon completion of closure activities.

**m. Demonstrations of capability to fulfill the postclosure standards, section 33.1-20-04.1-09 and otherwise provided by this article; and**

Little Missouri will conduct regular inspections of facility infrastructure, including gas control, leachate collection system and groundwater systems.

The leachate collection system will remain operational to manage leachate post-closure. Groundwater monitoring will continue throughout the 30-year post-closure period, ensuring early detection of contamination risks.

Little Missouri maintains the required closure financial assurance through a combination of Letter of Credit and Standby Trust mechanism which are adjusted annually for inflation and submitted to the Department each year. The facility has prepared financial assurance mechanisms to cover estimated closure and post-closure costs.

**n. A disclosure statement as required by North Dakota Century Code section 23.1-08-17.**

A disclosure statement that meets the requirements of this section was submitted to the Department as part of the permit application.

**Conclusion**

Based on the submitted application and items discussed above, Little Missouri Special, Inc. has shown that the renewal meets the requirements of the North Dakota Solid Waste Management Rules. It is proposed that the Department grant Little Missouri Special, Inc. a permit with the conditions listed in Permit 0357. The proposed permit length is for a period of 10 years because it is a renewal, and the facility has not had major compliance issues.

CRH:DAT:ZF  
Attachment