

**SENATE  
STATE OF MINNESOTA  
NINETY-FIRST SESSION**

**S.F. No. 2873**

(SENATE AUTHORS: ANDERSON, P. and Eaton)

DATE	D-PG	OFFICIAL STATUS
05/09/2019	4245	Introduction and first reading
		Referred to Environment and Natural Resources Policy and Legacy Finance
05/14/2019	4285	Author stricken Abeler

1.1 A bill for an act

1.2 relating to mining; establishing requirements for nonferrous tailings storage

1.3 facilities; authorizing rulemaking; proposing coding for new law in Minnesota

1.4 Statutes, chapter 93.

1.5 BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF MINNESOTA:

1.6 Section 1. **[93.435] STORAGE FACILITIES FOR NONFERROUS TAILINGS.**

1.7 Subdivision 1. **Definitions.** (a) The definitions in this subdivision apply to this section.

1.8 (b) "Commissioner" means the commissioner of natural resources.

1.9 (c) "Constructor" means the company or companies constructing the built components

1.10 of a tailings storage facility, including but not limited to embankment dams, diversion

1.11 structures for surface water, tailings distribution systems, reclaim water systems, and

1.12 monitoring instrumentation.

1.13 (d) "Engineer of record" means a qualified engineer who is the lead designer for a tailings

1.14 storage facility.

1.15 (e) "Expansion" means a change in the size, height, or configuration of or a contiguous

1.16 addition to an existing tailings storage facility that increases or may increase the storage

1.17 capacity of the impoundment above the permitted capacity.

1.18 (f) "Nonferrous metallic mineral" means a metallic mineral from which iron is not the

1.19 predominant metal extracted.

1.20 (g) "Operator" means an owner or lessee of mineral rights engaged in or preparing to

1.21 engage in mining operations for a nonferrous metallic mineral.

2.1 (h) "Qualified engineer" means a professional engineer who has a minimum of ten years  
2.2 of direct experience with designing and constructing tailings storage facilities and has the  
2.3 appropriate professional and educational credentials to effectively determine appropriate  
2.4 parameters for the safe design, construction, operation, and closure of a tailings storage  
2.5 facility.

2.6 (i) "Tailings storage facility" means a facility that temporarily or permanently stores  
2.7 tailings, including the impoundment, embankment, tailings distribution works, reclaim water  
2.8 works, monitoring devices, diversions for storm water, and other ancillary structures. Tailings  
2.9 storage facility does not include a facility that:

2.10 (1) stores 50 acre-feet or less of free water or process solution;

2.11 (2) is wholly contained below surrounding grade with no man-made structures retaining  
2.12 tailings, water, or process solution or underground mines that use tailings as backfill; or

2.13 (3) stores dry stack or filtered tailings.

2.14 Subd. 2. **Design requirements.** The commissioner must not approve an application  
2.15 proposing a new tailings storage facility or an expansion of a tailings storage facility unless  
2.16 it is designed:

2.17 (1) with safety as the primary consideration;

2.18 (2) to withstand catastrophic events; and

2.19 (3) following the Canadian Dam Association Dam Safety Guidelines.

2.20 Subd. 3. **Design document required.** An operator proposing to construct a new tailings  
2.21 storage facility, an operator that is constructing a new tailings storage facility, or an operator  
2.22 proposing to expand an existing tailings storage facility must submit a design document for  
2.23 the tailings storage facility to the commissioner.

2.24 Subd. 4. **Independent review panel.** (a) An independent review panel must review the  
2.25 design document required under subdivision 3. The operator must select three qualified  
2.26 independent review engineers to serve on the panel and submit the names to the  
2.27 commissioner. The commissioner may reject any proposed panelist. If the commissioner  
2.28 rejects a proposed panelist, the operator must continue to select independent review engineers  
2.29 as panelists until three panelists are approved by the commissioner.

2.30 (b) An independent review engineer may not be an employee of:

2.31 (1) an operator; or

2.32 (2) the design consultant, the engineer of record, or the constructor.

3.1 (c) The operator must contract with panel members, process invoices, and pay costs.

3.2 (d) A representative of the Department of Natural Resources and a representative of the  
3.3 operator may participate on the panel, but they are not members of the panel, and their  
3.4 participation is nonbinding on the review. The engineer of record is not a member of the  
3.5 panel but must participate in the panel review. The operator must provide each panel member  
3.6 with a copy of the design document and other information requested by the panel.

3.7 (e) The panel must review the design document, underlying analysis, and assumptions  
3.8 for consistency with this section. The panel must assess the practicable application of current  
3.9 technology in the proposed design.

3.10 (f) The panel must submit its review and any recommended modifications to the operator  
3.11 and the commissioner. The report must be signed by each panel member.

3.12 (g) The engineer of record must modify the design document for the tailings storage  
3.13 facility to address the recommendations of the panel and certify the completed design  
3.14 document. The operator must submit the final design document to the commissioner.

3.15 (h) For an expansion of a tailings storage facility for which the original design document  
3.16 was approved by the commissioner, the operator must make a reasonable effort to retain  
3.17 the previous panel members. To replace a panel member, the process in paragraph (a) must  
3.18 be followed.

3.19 Subd. 5. **Design document; requirements.** (a) The design document for a tailings  
3.20 storage facility must contain:

3.21 (1) the certification of the engineer of record;

3.22 (2) a detailed description of the proposed facility and site characteristics;

3.23 (3) maps, sections, and associated design drawings;

3.24 (4) the raw data for models used in developing and evaluating the design;

3.25 (5) an evaluation indicating that the proposed tailings storage facility will be designed,  
3.26 operated, monitored, and closed using the most-applicable, appropriate, and current  
3.27 technologies and techniques practicable given site-specific conditions and concerns;

3.28 (6) a site geotechnical investigation;

3.29 (7) a demonstration through site investigation, laboratory testing, geotechnical analyses,  
3.30 and other appropriate means that the tailings, embankment, and foundation materials  
3.31 controlling slope stability are not susceptible to liquefaction or to significant strain  
3.32 weakening;

- 4.1 (8) for a new tailings storage facility, design factors of safety against slope instability;
- 4.2 (9) for expansion of an existing tailings storage facility, either an analysis showing the  
4.3 proposed expansion meets the minimum design requirements for a new tailings storage  
4.4 facility under this section or an analysis showing the proposed expansion does not reduce  
4.5 the tailings storage facility's original design factors of safety;
- 4.6 (10) a dam-breach analysis, a failure modes and effects analysis or other appropriate  
4.7 detailed risk assessment, and an observational method plan addressing residual risk;
- 4.8 (11) a description of the chemical and physical properties of the materials and process  
4.9 solutions to be stored in the tailings storage facility;
- 4.10 (12) when appropriate, depending on the chemical and physical properties of the materials,  
4.11 a detailed description of how undesirable constituents contained in the impoundment will  
4.12 be isolated from the environment;
- 4.13 (13) a description of the tailings storage facility capacity over time and the estimated  
4.14 ultimate capacity;
- 4.15 (14) specifications for impoundment construction, including the specifications for the  
4.16 foundation, abutments, embankment, means of containment, and the borrow materials;
- 4.17 (15) a construction management plan;
- 4.18 (16) a list of quantitative performance parameters for constructing, operating, and closing  
4.19 the tailings storage facility;
- 4.20 (17) a list of the assumptions used during the analysis and design of the facility and a  
4.21 description justifying the validity of each assumption;
- 4.22 (18) a description of how the design integrates into a closure plan that facilitates, to the  
4.23 extent possible, dam decommissioning resulting in a maintenance-free closure;
- 4.24 (19) requirements for postclosure monitoring, inspection, and review, including the  
4.25 frequency of inspections by the engineer of record, independent panel reviews, and retention  
4.26 of an engineer of record;
- 4.27 (20) a description of proposed risk management measures for each facility life-cycle  
4.28 stage, including construction, operation, and closure;
- 4.29 (21) a detailed water balance; evidence of calibration, if available; and the raw data used  
4.30 to develop the water balance;

5.1 (22) a detailed description of how water, seepage, and process solutions are to be routed  
5.2 or managed during construction, operation, and closure;

5.3 (23) a detailed description of controls for storm water, including diversions, storage,  
5.4 and freeboard, and how extreme storm events will be managed;

5.5 (24) a design storm event for operation and closure conforming to engineering best  
5.6 practices at the time the design document is prepared for the type of facility proposed;

5.7 (25) for a new tailings storage facility, design sufficient to store:

5.8 (i) the probable maximum flood event plus maximum operating water or solution volume  
5.9 plus sufficient freeboard for wave action; or

5.10 (ii) a design criterion for a flood event less than the probable maximum flood but greater  
5.11 than the 1-in-500-year, 24-hour event if the panel agrees that site-specific conditions justify  
5.12 that design to the probable maximum flood standard is unnecessary;

5.13 (26) for an expansion of an existing tailings storage facility, either an analysis that the  
5.14 proposed expansion meets the minimum requirements in this section to manage storm or  
5.15 flood events or an analysis that the expansion does not reduce the tailings storage facility's  
5.16 ability to store or otherwise manage the storm or flood events of the original facility design;

5.17 (27) quantitative estimates of the potential impacts of climate change over the facility's  
5.18 design life;

5.19 (28) an operation manual as described in subdivision 6;

5.20 (29) any other information, drawings, maps, detailed descriptions, or data to assist the  
5.21 panel in determining whether the new or expanded tailings storage facility protects human  
5.22 health and the environment; and

5.23 (30) any other information required by rule adopted by the commissioner under this  
5.24 section.

5.25 (b) The design document must be submitted before the draft permit to mine is issued.

5.26 Subd. 6. **Operation manual.** (a) The operator must prepare and submit to the  
5.27 commissioner an operation, maintenance, and surveillance manual for a tailings storage  
5.28 facility. The operator must develop the manual, which must:

5.29 (1) identify the roles and responsibilities of the agents of the operator of the tailings  
5.30 storage facility, including identifying the senior organizational role with ultimate  
5.31 responsibility for the tailings storage facility;

6.1 (2) identify necessary maintenance and frequency of maintenance to safely operate the  
6.2 tailings storage facility;

6.3 (3) identify training needs and training plans for persons with responsibilities identified  
6.4 in the manual;

6.5 (4) identify operational aspects employed to facilitate, to the extent possible, a  
6.6 maintenance-free closure;

6.7 (5) identify all inspections and monitoring and the frequency of inspections and  
6.8 monitoring to ensure that the tailings storage facility is performing as intended;

6.9 (6) identify monitoring and data collection necessary to maintain and calibrate the tailings  
6.10 storage facility's water balance;

6.11 (7) describe how issues identified by routine inspection or monitoring are resolved and  
6.12 how the progress toward resolution is tracked;

6.13 (8) list quantitative performance parameters for construction, operation, and closure;

6.14 (9) include an emergency preparedness and response plan based on the failure modes  
6.15 and effects analysis or other appropriate risk assessment;

6.16 (10) identify specific trigger levels or events when the commissioner and the engineer  
6.17 of record are immediately notified. When possible, trigger levels must be sufficiently  
6.18 conservative to allow time for corrective actions to be implemented; and

6.19 (11) include any other information necessary to ensure that the tailings storage facility  
6.20 is operated and maintained, is performing, and can be closed as intended.

6.21 (b) The engineer of record must certify that:

6.22 (1) the operation, maintenance, and surveillance manual for the tailings storage facility  
6.23 is consistent with the facility's design;

6.24 (2) the inspections and monitoring described in the operation, maintenance, and  
6.25 surveillance manual:

6.26 (i) are reasonably sufficient to ensure that the tailings storage facility will perform as  
6.27 intended; and

6.28 (ii) will reasonably be expected to detect deviations if they occur; and

6.29 (3) the emergency preparedness and response plan describes reasonable measures that  
6.30 can be taken to protect human health and the environment.

7.1 (c) The operator must annually review the operation, maintenance, and surveillance  
7.2 manual to ensure that the manual reflects current conditions. The engineer of record must  
7.3 certify any revision of the manual occurring during operation or at closure.

7.4 Subd. 7. **Periodic review and inspection.** (a) During mining, at least once every five  
7.5 years after the commissioner approves a design document for a tailings storage facility  
7.6 under this section or as required in a reclamation plan approved by the commissioner, the  
7.7 operator must assemble a panel according to subdivision 4. A reasonable effort must be  
7.8 made to retain previous panel members. The panel must:

7.9 (1) inspect the tailings storage facility;

7.10 (2) review the operation, maintenance, and surveillance manual and records collected  
7.11 in association with the manual;

7.12 (3) interview people with responsibilities identified in the operation, maintenance, and  
7.13 surveillance manual; and

7.14 (4) review annual engineer of record inspection reports, corrective action plans, records  
7.15 associated with construction, and any other aspect, plan, record, document, design, model,  
7.16 or report related to the tailings storage facility that the panel needs to review to ensure that  
7.17 the tailings storage facility is constructed, operated, and maintained as designed; is  
7.18 functioning; can be closed as intended; and meets acceptable engineering standards.

7.19 (b) The operator must provide documents and records necessary for the panel to complete  
7.20 a periodic review.

7.21 (c) The panel must prepare a report detailing the scope of review and include any  
7.22 recommendations resulting from the review. The panel must immediately notify the  
7.23 commissioner and the operator if there is an imminent threat to human health or the  
7.24 environment. The final report must be signed by each panel member and provided to the  
7.25 commissioner and the operator. If the commissioner determines that a corrective action plan  
7.26 is required to implement recommendations of the panel, the commissioner must notify the  
7.27 operator in writing.

7.28 Subd. 8. **Corrective action plan; compliance.** (a) When notified by the commissioner  
7.29 under subdivision 7, paragraph (c), the operator must prepare a corrective action plan and  
7.30 schedule to implement the recommendations included in the panel's report. The operator  
7.31 must submit the corrective action plan and schedule to the panel within 60 days after  
7.32 receiving the panel's report.

8.1 (b) The panel must review the corrective action plan and schedule to determine whether  
8.2 the corrective action plan and schedule proposed by the operator will effectively implement  
8.3 the recommendations included in the panel's report.

8.4 (c) Within 30 days after receiving approval from the panel, the operator must submit to  
8.5 the commissioner the approved corrective action plan with an implementation schedule.

8.6 (d) Failure to implement the approved corrective action plan according to the  
8.7 implementation schedule is subject to section 93.51.

8.8 Subd. 9. **Annual inspections; compliance.** (a) The engineer of record must annually  
8.9 inspect a tailings storage facility during operation or as required during closure.

8.10 (b) The engineer of record must prepare a report describing the scope of the inspection  
8.11 and actions recommended to ensure the tailings storage facility is properly operated and  
8.12 maintained. The engineer of record must submit the report to the operator and the  
8.13 commissioner and immediately notify the commissioner and the operator if the tailings  
8.14 impoundment presents an imminent threat or the potential for an imminent threat to human  
8.15 health or the environment.

8.16 (c) If the report contains recommendations, the operator must prepare a corrective action  
8.17 plan implementing the recommendations of the engineer of record and an implementation  
8.18 schedule. The operator must submit the corrective action plan and schedule to the engineer  
8.19 of record. The corrective actions proposed by the operator must reasonably be expected to  
8.20 effectively address the recommendations in the inspection report. The engineer of record  
8.21 must verify the proposed corrective actions. The operator must submit the corrective action  
8.22 plan verified by the engineer of record and the implementation schedule to the commissioner  
8.23 within 120 days after the inspection date. The operator must implement the verified corrective  
8.24 action plan according to the implementation schedule.

8.25 (d) The commissioner must conduct inspections, review records, and take other actions  
8.26 necessary to determine whether the tailings storage facility is being operated consistent with  
8.27 the approved design document and the operation, maintenance, and surveillance manual  
8.28 for the tailings storage facility.

8.29 (e) Failure to implement the verified corrective action plan and the implementation  
8.30 schedule or material deviations from the approved design document or the operation,  
8.31 maintenance, and surveillance manual for the tailings storage facility are subject to section  
8.32 93.51.

8.33 Subd. 10. **Rules.** The commissioner may adopt rules necessary to implement this section.

- 9.1 Subd. 11. **Application.** This section applies to applications for permits to mine and  
9.2 applications to amend a permit to mine submitted on or after the day following final  
9.3 enactment.