

Dam Safety Permit



What is a dam?

A dam is an artificial barrier designed to impound water and/or waste material containing water. A dam will normally have two major components: an embankment to control the storage of water and a control structure to control water levels within the impoundment. A dam can be constructed of many types of materials, including soil, concrete, steel, or rock. Minnesota Rules require DNR to regulate all non-federal dams that are greater than six feet in height or impound more than 15 acre-feet of water.

What do dam safety permits typically cover?

Dam safety permits cover the design, construction, operation, and maintenance of a dam. Dam safety permits are required prior to construction of a new dam or the enlargement of an existing dam in order to best provide for public health, safety, and welfare. Dams can remain in place for many decades and must be designed, built, and operated and maintained properly in order to remain safe and functional. The applicant must engage a professional engineer licensed in the State of Minnesota who is proficient in dam engineering. Minnesota Rules part 6115.0410 detail the requirements of the permit application.

During the permit application process, the DNR Dam Safety program reviews many aspects of the proposed dam, including the design of the dam, the material properties of the related soils and foundation layers, operational aspects, emergency procedures, and inspection programs.

Dam safety permits incorporate all significant engineering details within the permit application. However, because tailings basins are generally constructed over many years, new data are often collected that may lead to potential changes due to site-specific conditions. Dam safety permits remain active for the life of the impoundment. For mining-related dams, financial assurance is typically covered through the permit to mine process.

What criteria does DNR consider in deciding whether to approve a dam safety permit application?

The DNR considers a number of issues when making dam safety permitting decisions. As outlined in Minnesota Rules 6115.0410 subp. 8, criteria include the potential hazards to the health, safety, and welfare of the public and the environment, the availability of alternative sites, the structural stability of the dam, and the dam's ability to safely handle the design flood event.

How many draft PolyMet dam safety permits are there and what would they cover?

There are two draft dam safety permits for PolyMet's proposed NorthMet project. The first draft dam safety permit would cover the construction, operation, and maintenance of the tailings basin. This includes the modification of the existing tailings basin that is currently on the site of the historic LTV iron ore mine, and the construction of the PolyMet flotation tailings basin (FTB) on top of the historic basin to hold tailings from the proposed NorthMet project. Tailings are a finely ground waste rock and water.

The second draft dam safety permit would cover the proposed hydrometallurgical residue facility. The hydrometallurgical residue facility would be a separate basin near the tailings basin and would receive hydrometallurgical residue. The hydrometallurgical residue is the final waste product from the extraction of the desired metals and would consist of 70 percent gypsum and an assortment of other minerals. In addition to authorizing the construction of these two tailings basins, the permits would authorize the operations and maintenance of the two basins, as well as set standards for monitoring and inspections.

The NorthMet dam safety permits would require that prior to dam construction, the proposer has an approved permit to mine that includes a plan for financial assurance related to dam operation and maintenance.

What additional permits would be required?

In addition to the two dam safety permits, the project would need ten additional DNR permits, as well as several other state, federal and local permits and approvals in order to proceed. The DNR permits and approvals that are needed before the proposed NorthMet project could proceed, include the permit to mine (including financial assurance and wetlands replacement), water appropriation permits (6), dam safety permits (2), public waters work permit, burning permit, and an endangered species takings permit.

How did the DNR consider what happened at Mount Polley in its review?

The DNR fully considered and reviewed the technical investigation report on the Mount Polley failure, as part of its dam safety review of the permit applications. Together with its external consultant Emmons Olivier Resources, Inc. (EOR), and a team of top geotechnical dam safety experts, the DNR assessed the design, construction, operation, and maintenance of the proposed NorthMet dams. This team included experts in mining geotechnical engineering with both Minnesota and worldwide experience. The group included a member of the review panel that previously investigated the Mount Polley dam failure in British Columbia.

DNR and its team determined that the proposed NorthMet dams contain significant differences in design from the Mount Polley dam, including: the slopes of the proposed NorthMet dams are flatter (less steep and therefore more stable); the foundation conditions at the PolyMet site have been researched in greater depth and are much better understood; and long-term construction plans are better developed for dam raises and future operations.

Will there be a public meeting on these permits?

No, DNR will not hold a public meeting. The comment period itself is not required under state law, and we do not typically hold public comment periods on draft dam safety permits. However, DNR understands that there is great interest in this project. We chose to provide a 30-day public comment period to allow the public to review and comment on these draft dam safety permits. That comment period is now closed.