

Technical Guideline III

Fluid Handling; Demand vs. Capacity Evaluation

This technical guideline specifies the information to be developed which is necessary to evaluate (1) whether there is sufficient fluid handling capacity to meet the proposed mine plan schedule and (2) what effects and alternatives are available if an emergency condition develops such as an excursion, disposal well failure, pond leak, excess rainfall, etc.

Comprehensive data and calculations must be provided for values entered to the example summary sheet.

I. General

It is necessary that an in situ mine operator provide capacity to properly handle both normal and emergency fluids that are generated or that occur during the life of the project for various reasons. To allow evaluation of the adequacy of the capacity provided or proposed, the operator must give careful, comprehensive consideration to the sources and the capacities over the life of the project. Periodic updates of the initial projections may be necessary. The operator must provide detailed calculations correlated with the project mine plan.

II. Fluid Sources

Routine fluid sources may include production bleed, restoration, hydraulic pump tests, average rainfall (direct and indirect), laboratory wastes, etc. Non-routine sources may include excursion corrections, excessive rainfall, etc.

1. Production Bleed

This is the fluid volume that is pumped from the production zone in excess of the fluid volume injected for the purpose of creating a hydrologic sink or relieve pressure in the production zone. This sink reduces the possibility of excursion. If an operator uses this procedure, volumes should be calculated using the best available information.

2. Rainfall Volumes

The operator should, using historical data project the volume of rain that will be expected to affect the fluid handling capacity at the site. This should include the rainfall directly into ponds and indirect sources such as rain runoff pumped from run-off control sumps. These volumes should be calculated for each month.

A. Direct: In calculating the volume of rain collected by a pond, the total area included by the internal diked perimeter of

the pond, should be used as the surface area that will receive the rainfall.

- B. Indirect: Uncovered areas used to store, load, unload, or generally handle chemicals, product, or other materials that have a pollution potential, should be surfaced with a material such as concrete that is not significantly deteriorated by traffic, weather, or contact with the chemicals. These areas should have dikes or curbing to cause rain falling outside these areas to flow around the area. The surface inside these areas should be graded to cause rainfall that falls inside the curbing to flow to a sump equipped with a pump that will automatically pump the fluids to an authorized fluid retention facility.

These calculations should be made for normal or average monthly rainfall amounts and for abnormal amounts to include one day maximums. Facilities should be designed, installed, operated and maintained to contain at least a ten year, 24-hour maximum rainfall event.

III. Fluid Handling Capacities - Recognized fluid disposal methods include disposal wells, evaporation, transport by truck or pipe, irrigation, discharge, etc.

1. Disposal Wells - The operator should provide information as to a well's permitted capacity. If the well is to be available in the future, a realistic estimate as to when the well will be available for use should be included in calculations.
2. Ponds - Ponds have two types of disposal or handling capacity: a normal disposal capacity by evaporation and an emergency holding or storage capacity.
 - A. Normal disposal capacity by evaporation should be calculated on a monthly basis using historical data. The surface area used for the calculation should be for the normal operating level for the pond. This normal level should be at least six - inches below the minimum freeboard requirement for the pond. The basis for calculation of evaporation from ponds that are operated as evaporation ponds with very shallow fluid levels or with spray systems to accelerate the evaporation, should be provided.
 - B. Emergency handling capacity should be calculated as the volume differences between normal operating levels and the minimum emergency freeboard requirement. During emergency periods, it is possible that evaporation would be at an accelerated rate due to a larger surface area unless the emergency condition occurs as a result of extreme rainfall when evaporation rates would be expected to be reduced by lower temperatures and high humidity.
3. Transport by Truck or Pipeline
 - A. If the operator proposes to haul fluids to off-site locations, the operator shall provide written authorization from those agencies or companies involved in the trucking activity. This may involve (1) the Texas Railroad Commission, where a

