

SOLUTIONS FOR AN EFFICIENT MINE CLOSURE PROCESS

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A substantial amount of planning and investment is required to permit and develop a new mine. While those challenges are a frequent topic of industry discussion, closing a mine presents its own challenges, which rarely receive attention. Mines are closed for several reasons: reserves are exhausted, previously unknown constraints prevent continued mining, markets no longer exist for the type or location of materials produced, or the operation has otherwise become unprofitable. In the following sections we explain how good planning before and during closure and active management of the closure process can prevent unanticipated tasks, costs, and delays (see photograph Examples 1 and 2).

UNDERSTANDING SMARA AND THE APPROVED RECLAMATION PLAN'S REQUIREMENTS

Closure Regulation

There is little guidance in the California Surface Mining and Reclamation Act (SMARA) on the steps to complete reclamation and close the site in a condition that is "readily adaptable for alternative land uses" (California Code of Regulations Section 2712[a]). The closure process is only discussed under "Modification or Release of Financial Assurance" (Public Resources Code Section 2805.5), where it is explained that before release of the financial assurance, the lead agency must submit to the California Division of Mine Reclamation (DMR):

- an inspection report stating that the mined land has been reclaimed in accordance with the approved reclamation plan,
- a financial assurance cost estimate indicating no further reclamation liabilities, and
- a recommendation that the financial assurance be released.

DMR then has 45 days to review and comment. During that time, DMR will typically visit the site and may either concur with the lead agency or determine that site conditions do not meet the reclamation plan requirements. In practice, these steps oversimplify the tasks and coordination needed to clarify ambiguities, complete the work, coordinate inspections, attend to discrepancies, obtain written concurrence, and release financial assurances.

Requirements in the Approved Reclamation Plan

Unlike many land use regulations, SMARA regulations largely exist for development of a reclamation plan that, once approved, effectively becomes the site regulation for reclamation. Meanwhile, approved reclamation plans vary widely in their level of detail; plans approved before 1991, when the performance standards were created, may be especially sparse.

Difficulties in closure are exacerbated when lead agency staff must interpret the requirements of a reclamation plan that is vague, is internally conflicting, or provides general

references to the reclamation regulations rather than providing specific, measurable requirements for the site. As a result, an operator may have different interpretation of reclamation requirements than the lead agency or DMR.

While the lead agency conducts SMARA inspections annually, closure is often the first time staff must comprehensively consider whether the site meets the goals and intent of the reclamation plan. Although annual inspections document whether the operation is being conducted in accordance with the plan, reclamation tasks often do not apply until production ceases. As a result, the inspection reports may not be a good indicator of potential issues at final reclamation.

To avoid last-minute surprises, meet with the lead agency and review the reclamation plan requirements and what has been done to comply well before initiating the administrative process and having everyone out for a closure inspection. Discuss unclear elements of the plan and your recommended approach to resolve them. Where a plan is not specific, consider whether the reclaimed site is adaptable to the postmining land use. For example, if the postmining land use is open space, what is the lead agency zoning definition, and would the site be adaptable to one or more of those allowed uses?

Sometimes a site simply cannot or should not be reclaimed according to the approved

[Continued on page 22]



Example 1. Scotch broom and pampas grass, state noxious weeds, established on this mine site during delays in final reclamation and closure. Eradication is a lengthy and expensive effort that is now further delaying closure. Location: Santa Cruz County.



Example 2. The reclamation plan for this site cited "productive agriculture," but provided no measurable performance standards. The operator was ready to close, but the lead agency determined one year of successful agriculture was necessary. Extensive grading and installation of a tile drainage network were needed, which were unforeseen costs for final reclamation. Location: Imperial County.



[Continued from page 20]

reclamation plan, such as when reclaimed conditions would be met (e.g., a lake) through mining that never happened. Regrading surfaces that have naturally reclaimed may be a less effective way to accomplish reclamation goals than closing in place. In such circumstances, consider amending the reclamation plan as part of the closure process.

ASSESSING SITE CONDITIONS AND DOCUMENTING COMPLETION

To avoid relying on agency staff to make decisions about your mine site, proactively document the site's compliance with reclamation plan requirements. Recognize that field observations at a final inspection may not be enough to determine that all reclamation plan requirements have been met. Consider preparing a closure report that compiles the reclamation criteria and provides the supporting technical data. Dig out those old photographs taken when progressive reclamation work was done. Historical aerial photography may be helpful to show premining conditions and, where necessary, to distinguish pre-SMARA mining. If the

reclamation plan requires placing a 6-inch layer of topsoil, document and photograph topsoil placement at the time such work is done. If specific vegetation types and densities are required, obtain the quantitative data to support this requirement has been met. If a reclamation plan specifies productive agricultural land, determine what evidence is needed. Provide technical data showing that cut and fill slopes meet stability and compaction requirements. Obtain written consent from the landowner for roads, wells, and other improvements to remain. The closure process is best facilitated by someone knowledgeable of SMARA, reclamation planning, and the treatment of mined lands (e.g., grading, resoiling, revegetation). Designate a closure manager with the authority to commission technical support and the time to orchestrate all the documentation and lead agency and DMR coordination.

CONCLUSION

Specific reclamation requirements and circumstances vary for every mine site, but one issue is common: it typically takes longer to close a site and obtain

financial assurance release than the operator and lead agency anticipate. However, if the closure process is managed like a project, with some planning and diligence, the operator can reduce the delays, costs, and liabilities.

About the Authors: Benchmark Resources has supported numerous operators and lead agencies through the final reclamation and closure process.

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