



State of Utah

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OK

September 30, 2002

TO: Internal File

FROM: Dana Dean, P.E., Reclamation Specialist/Hydrology 

RE: Sedimentation Pond Calculations, Lodestar Energy, Inc. Horizon Mine, C/007/020-AM02C-1

SUMMARY:

In response to a Notice of Violation (NOV) for discharging water that exceeded the daily maximum allowance of total suspended solids (TSS) from the Horizon mine into Jewkes creek, Lodestar Energy Inc. resubmitted an amendment application on September 10, 2002. The amendment proposes to discharge mine water to the sedimentation pond in the case of emergency. This would allow water with high levels of suspended solids to be held for a sufficient period of time so that the effluent would meet permit limitations.

Information found in the proposal is considered adequate to meet the minimum requirements of the regulations.

The amendment should be approved and incorporated into the current MRP.

TECHNICAL ANALYSIS:

OPERATION PLAN

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

TECHNICAL MEMO

Analysis:

Siltation Structures: Sedimentation Ponds

There is one sedimentation pond at the Horizon Mine. Located in the southwest corner of the disturbed area, it functions individually. The application states that the total pond capacity is 2.95 acre-feet, with a sediment storage capacity of 1.65 acre-feet (7569.8 ft. elevation). The 60% sediment clean-out volume is 0.99 acre-feet (7566.9 ft. elevation).

The operator has presented two different analyses of the pond. The first is an as-built calculation done by EarthFax to demonstrate that the pond can hold the 10 yr, 24-hour event of 1.11 acre-feet. The second was performed by Summit Engineering to demonstrate that the pond can hold the design event, plus 750 gpm from the mine. The Earthfax calculation was done by hand and uses very conservative reasoning. Summit Engineering used SEDCAD, with its built-in safety factors, which is sufficient to meet the minimum requirements of the regulations.

The as-built calculations are sufficient to demonstrate that the pond can hold the design event safely.

The calculation to prove that mine water can also be held is also sufficient. The worst-case scenario was considered; the mine is discharging continuously at 750 gpm in the hours leading up to the design storm, the pond remaining full at discharge level. Even without the decant pipe in operation, the maximum water/sediment level reached after the design event is 7573.9 feet. This leaves more than one foot of freeboard to the top of the pond embankment at 7575 feet. The calculated 24-hour arithmetic average concentration of suspended solids leaving the pond is 0.00 ml/l; the limit is 0.5 ml/l. Therefore, holding times should be sufficient to meet effluent limitations.

Findings:

Information provided in the application is adequate to meet the minimum requirements of this section of the regulations.

RECOMMENDATIONS:

It is recommended that this application be approved and incorporated into the MRP.