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**ASSESSMENT OF THE LEAKAGE AT ECHO CANYON RESERVOIR,
ECHO CANYON STATE PARK, LINCOLN COUNTY, NEVADA**

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ABSTRACT: Echo Canyon Reservoir was sited in the late 1960s along Meadow Valley Wash where it entered Dry Valley. After completion of the dam and initial filling, the reservoir was found to experience significant leakage. Over the years, water levels in the reservoir could not be maintained, especially at higher levels, rendering the facility underutilized and below its full potential as a recreational site. From our review of available documents for the project, it appeared failure of the facility to reach its full potential probably resulted from a combination of things. First, considering the adverse geologic conditions present at the site, engineering design level investigations were probably insufficient or lacking. Second and more notably, quality control during construction were apparently not performed. Ultimately, the failure of the project can probably be traced back to the a lack of engineering and construction practices needed for this challenging site, and corresponding inadequate funding and support for such a project.

Our field and laboratory investigations have concluded that in order to mitigate the excessive leakage at the reservoir, an engineered liner will need to be properly installed over the entire reservoir area. Assuming mitigation measures make sense economically, additional concerns would arise with the filling of the reservoir and long-term maintenance of high water levels. These include issues pertaining to dam stability, capacity of existing outlet structures, the unlined condition of the spillway, and roadway embankment stability and affected stream hydraulics in the Narrows area (upstream of the reservoir).