

# SOLUTION MINING RESEARCH INSTITUTE

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MEETING  
PAPER



BRINE STORAGE RESERVOIR  
25MMB CAPACITY  
DESIGN AND CONSTRUCTION

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LOOP INC.

PRESENTED AT THE SMRI ALBUQUERQUE MEETING

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## Scope of Design Studies

The scope of the design studies included:

1. Inspecting the site and reviewing available data pertaining to the geologic, meteorologic, and oceanographic aspects of the site.
2. Making a total of 189 borings at the site to obtain samples of foundation and borrow soils for laboratory testing.
3. Field and laboratory tests to determine the engineering characteristics of the foundation and borrow soils relating to design of the dike, construction methods, and water-tightness of the reservoir.
4. Making engineering analyses of various dike and spoil arrangements.
5. Constructing, monitoring, and analyzing two pre-load fills to obtain information regarding excavation and placement of soils at the site, stability of the test fills, and the rate and amount of settlement of the foundation soils under the test fills.
6. Laboratory tests on various bentonites and slurry mixes to determine the amount of bentonite to produce the required viscosity and density of slurry for construction of the cut-off through the dike, penetration of various slurry mixes (with sand and various "choking" materials) into reef (oyster) shell fill, and the effect of brackish water on slurry mixes.

The laboratory studies also included permeability tests on slurry "cake" and slurry trench backfill, and strength and durability tests on soil-cement for slope protection.

7. A material survey for sand, reef shell, filter sand, and backfill for the cutoff.
8. Measurement of the chemical characteristics and level of the water in the Exxon Canal, Bayous Raphael and L'Ours, and in the swamp south of the reservoir, and groundwater in the Recent and Delta sand aquifers beneath the reservoir.
9. Designing the dike, excavation slopes, slope protection, and computing the settlement and stability of the dike and seepage loss from the reservoir.
10. Developing procedures with knowledgeable contractors, experienced in marsh work, for construction of the storage facility.
11. Estimating the cost of the reservoir.
12. Preparation of technical specifications and contract drawings for construction of the storage reservoir.
13. Developing a procedure and schedule for constructing the dike and reservoir within the time frame required for the project.
14. Making a limited logistic study of movement and storage of materials to the site in order to accomplish the above.