

NRPP PROPOSAL

1. **Project Number:** LAME-N-105

Project Title:

**Erosion Control in Horse Valley Meadow and Pleasant Valley
Meadow on the Shivwits Plateau**

Park Project Statements Incorporated: LAME-N-092, LAME-N-010, LAME-N-094

2. **Service-wide Issues:**

N-12 Water Flow - Hydrology
N-24 Other

3. **R-MAP Program:**

Q00 Water Resources Management
Q01 Water Resources Management

4. **Problem Statement**

Meadows are a rare community on the Shivwits Plateau within Lake Mead National Recreation Area. The Shivwits Plateau has been grazed by cattle for nearly a century. Heavy cattle grazing and roads, used by ranchers to access their allotments and recreationists to reach destinations, have had detrimental impacts to the resources on the Shivwits Plateau and in-particular to Horse Valley meadow and Pleasant Valley meadow. The base of these old ranch roads that traverse the meadows are now approximately 24 inches below the surface of the meadow allowing much of the water that would saturate the meadow to drain away, thus reducing soil moisture to the diverse plant community that inhabits the meadow. With the roadbed being considerably lower than the meadow surface, headcutting began occurring adjacent to the roads promoting a network of gullies to develop in the meadow over the years. These gullies allow more of the water from the meadow to be drained thus exacerbating the problem.

Lake Mead National Recreation Area Range Conservationist, John Cook, developed a drainage basin map of the Shivwits area as part of a plateau wide park planning effort. The map defines the hydrologic area that affects these two meadows. As part of the planning effort he recommended the Horse Valley - Pleasant Valley area as the number one priority for management actions. Lake Mead NRA has expended over the past 5 years approximately \$16,000 on related projects to restore the area to more natural conditions.

At a request from the park for consultation in correcting the erosion problem before the impacts to the meadows became irreversible, hydrologist Rick Inglis, NPS Water Quality Division, conducted on-site investigations of the hydrologic conditions of these two meadows. Two visits were made to the sites to assess the current condition and make recommendations for management actions to mitigate the erosional damage. His recommendations were as follows.

1. Close the downcut roads and restrict motorists from driving across the meadows.
2. Design flow retarding structures for the entrenched portion of the roads.
3. Place erosion control devices in the gully network.
4. Encourage recovery of the grass and sod forming species native to the meadow and improve grazing management.

5. Description of Recommended project or Activity

Objective

The primary objective of this project is to restore hydrologic conditions in the Horse Valley and Pleasant Valley meadows to natural regimes. These meadows are an important part of the diverse communities on the Shivwits Plateau. Without mitigative actions, the natural process of moving from meadow to forest will be greatly accelerated and we will lose the diversity that these meadows provide.

Procedure/Methods

As recommended by the WRD hydrologist, four actions will be undertaken.

Roads across the meadows will be closed and using the expertise of resource management personnel and roads maintenance personnel an alternative route will be selected outside the boundaries of the meadow. Care will be taken to route the

road in locations that will minimize hydrologic changes to the forest and /or meadows.

Using heavy equipment the downcut roads across the meadows will be filled with soil to slightly above the meadow surface at selected sites to slow water and build up soil behind them.

Several large brush mats will be installed throughout the gully network. The brush mats will disperse the runoff over a wider area allowing more infiltration and deposition of sediments. The intent is not to let the runoff concentrate into a single channel and increase its erosive power. These mats should assure more moisture, shading and protection for new shoots in order to increase vegetative cover to provide long term protection against erosive forces of the runoff.

As sediment builds behind erosion structures, seeding with native species will be accomplished to encourage the reestablishment of grasses and sod forming species native to the meadow.

6. Budget and FTE's

The project will be coordinated by the Resources Management Division and will require \$20,500 during the 1998 fiscal year to support one-fifth FTE for project supervision, heavy equipment operation, erosion control device installation, and seeding. Itemized costs are as follows:

Budget Category

Personnel (1/5 FTE)	\$16,700
Heavy Equipment	9,000
Vehicles	300
<u>Supplies and materials</u>	<u>500</u>
Total Costs	\$26,500

7. Compliance

An environmental assessment will be completed prior to initiation of this project.