Located on the border of Idaho and Utah, Bear Lake is an extremely unique and valuable resource. The lake is at least 28,000 years old, and for 8,000 years was permanently isolated from the Bear River by earthquake activity. This isolation has resulted in a unique water chemistry, as well as rare forms of plant and animal life, among which are four species of fish found nowhere else in the world.

Water is now being diverted into and out of the lake in relationship to the Bear River management system. The Bear River is heavily laden with nutrients from the surrounding area, partially as a result of grazing and other agricultural activities. Summer home owners and sportsmen have been using Bear Lake in increasing numbers since 1975. Greatly used by recreationalists, at least 100,000 people visit Bear Lake each month during the summer.

As a result of these multiple uses, nutrient loading is changing this unique lake system. Lakes, ponds, and other bodies of water undergo gradual nutrient enrichment, producing an aquatic aging process called eutrophication. Studies of water quality funded by the E.P.A. have indicated that the "cultural" eutrophication of Bear Lake needs to be checked. The natural sequence of low nutrient to high nutrient conditions has been speeded up by human activity, and unless modified will lead to greater plant productivity and depleted oxygen levels in the bottom waters of the lake.
No one person, industry, or action is causing Bear Lake's deterioration; rather, it is a cumulative, complex, and slowly increasing problem. Recognizing this, the Bear Lake Preservation Project has proposed feasible actions to assure preservation of the lake as it exists today, and to manage the lake in such a fashion as to maintain the integrity of the total system and its multiple uses.

As you read this brochure, keep in mind that a critical link in the preservation project is public awareness and the realization that each person who uses Bear Lake can be a part of the solution.
Bear Lake is 20 miles long and 8 miles wide. The shoreline measures 48 miles, with a surface area of 112 square miles. The deepest point is 209 feet. The volume of Bear Lake is 6½ million acre-feet, and its unique aquamarine color is the result of limestone particles suspended in the lake.

The protection of Bear Lake will be more cost-effective the sooner it is undertaken. Maintenance and preservation of Bear Lake as it exists today can be accomplished with a cooperative effort between lake users, no matter how large or small. By implementing preventative measures now, the future of Bear Lake as a multiple use and resource will be aided. This will also have a positive impact on the future economy of the region.

FOR FURTHER INFORMATION CONTACT:
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Bear Lake Regional Commission
Hwy 89 at Stateline
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1-208-945-2333

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S. J. AND JESSIE E. QUINNEY
NATURAL RESOURCES RESEARCH LIBRARY

Bear River Basin
Water Quality
Task Force
Bear River Collection
1 PROBLEM:
UPPER BEAR RIVER IMPACTS

SOLUTION:

**Upriver Storage**

During spring runoff, Bear River water could be stored above Bear Lake, to be released later in the year when the Bear River is not being diverted into the lake. One potential dam site that has generated interest locally is on the Smiths Fork, above Bear Lake.

**Optimum Use of Dingle Marsh**

The 314 Clean Lakes study noted that the nutrients, phosphorus, and nitrogen were removed from Bear River water during its diversion through Dingle Marsh. The U.S. Fish and Wildlife Service is undertaking further research and evaluation of the marsh's role in improving the water quality of the Bear River and Bear Lake.
Lake is 20 miles long and 8 miles wide. The shoreline measures 48 miles, with a surface area of 711 square miles. The highest point is 806 feet. The volume of the lake is 65,000 acre-feet, and its aquamarine color is the result of the suspended sediments in the lake. Protection of Bear Lake will be effective the sooner it is undertaken and preserved. As it exists today can be improved with a cooperative effort by conservationists, no matter how large or small, or by implementing preventative measures now, the future of Bear Lake as a use and resource will be aided. Also, have a positive impact on the economy of the region.

**PROBLEM:**
EXISTING WATERSHED AND LAND USE IMPACTS

**SOLUTION:**

**Livestock Feeding Areas**
Cattle wastes produce nitrogen and phosphorus, and grazing areas should not be close to stream or lake access. Rerouting water around feeding areas, building containment berms, and channelling runoff from intensive feeding areas through siltation ponds are a few ways of controlling this impact. Overgrazing of the land surrounding Bear Lake creates first-hand problems of low cattle productivity and loss of abundant feed, and as a consequence affects the lake through resulting erosion and runoff laden with sediment and nutrients.

**Reeading and Revegetation**
Native shrubs, trees, and grasses should be restored on stabilized slopes using temporary soil stabilization techniques, such as straw mulch, woodchips, or gravel to prevent erosion.

**Runoff Control Structures**
Loss of topsoil can be prevented by building sediment basins or traps to keep soil on the site. Slopes should be stabilized by using temporary diversions, berms, bench terraces, or dikes to intercept and divert storm runoff.

**Excessive Irrigation**
Water used for irrigation should be used conservatively, and native vegetation should be restored as a “nutrient filter” for water runoff.

**Grazing Practices**
The water quality of the Saleratus drainage has been improving through proper grazing. Deseret Land & Livestock is responsible for the grazing practices in this drainage. Their approach to grazing is based on proper timing, which is key to plant growth. This type of grazing over the past five years has maximized the ground cover, which in turn facilitates water infiltration into the soil, thereby filling the natural soil reservoir with water. This soil reservoir purifies the water and slowly releases it into the Saleratus drainage. This clean year-round water creates a healthy resource for many downstream users while costing the tax-payer nothing.

**Animal Disposal**
Proper disposal of dead animals through county systems, rather than using the rivers and streams, can also help improve the water quality.

**Conservation in Tillage Practices**
By using plowing and harvesting methods approved by the Soil Conservation Service, runoff and erosion problems can be controlled.
3 PROBLEM: MISUSE OF RESOURCES

SOLUTION:

Proper Shoreline Practices
Natural shorelines and communities of plants have, in the past, provided "one last shot" at nutrient removal as water ran into the lake. These shorelines are gradually being destroyed and replaced by cement walls, fertilized lawns, and little or no vegetation. This can be altered by a "bioengineering" approach of restoring natural filters to the system.

Public Assistance
The lake has become less transparent as a result of increased sediments, nutrients, and the resulting stimulated microscopic plant growth. A Secchi disk can be lowered into the water, and the exact depth at which it disappears measures water transparency. A public Secchi disk program has been implemented. Anyone wishing to participate may contact the Bear Lake Regional Commission.

Information and Education of Users
Anyone using the lake should be aware of their impact.
- Boaters should not dump bilge and sewage water into the lake.
- R.V. owners should always use trailer disposal areas.
- Campers should camp in designated areas only, and properly dispose of solid and liquid wastes.

Sewage Construction
A recently completed 4½ million dollar sewage system on the Utah west shore is a major part of the Bear Lake Preservation project. This system serves existing recreational development and problems associated with individual septic tank and drainfield failures.

4 PROBLEM: ALTERATION OF AQUATIC HABITATS

SOLUTION:

Shoreline Vegetation
This is an effective and inexpensive way to stabilize the shoreline. Restoration of vegetation that has been removed from Bear Lake's shores may be one of the most important elements in the natural protection of the land.

Lakeshore:
Control of Shoreline Erosion
Property owners can implement control measures to stabilize the shoreline. These measures may include the installation of runoff control structures. Poorly-designed or improperly installed devices can be worse than nothing at all. Contact...

Riparian (Streamsie Land):
Encroachment on Stream
Building too close to streams and consequent removal of vegetation has been a growing problem. Water from development should not be directly diverted into the stream without first allowing for sediment and nutrient removal. Use of filters and sediment ponds are feasible alternatives.

Wetlands
Construction techniques need to be practiced which will not disrupt wetlands, and there is a need for the installation of facilities to handle any sediment and...
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Riparian (Streamside Land):
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Wetlands Alteration
Water polluted by agricultural fertilizer or sewage runoff can be absorbed by vegetation and detritus in surrounding wetlands. This filter is lost by filling wetlands for building sites, an action which also destroys important wildlife habitat.
Many factors affect the water quality of Bear Lake. The Bear Lake Preservation Project, which was initiated by the Bear Lake Regional Commission, has devised a five-year plan for monitoring these factors and lessening their impacts.

**Impact**

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