SECTION 2 - MONO BASIN PLANNING AREA

DESCRIPTION OF THE PLANNING AREA
PHYSICAL CHARACTERISTICS
CLIMATIC CONDITIONS
DIVERSION OF TRIBUTARY STREAMS (1941-PRESENT)

2.1 Description of the Planning Area

Mono Basin Planning Area is located in eastern California in the center of Mono County about 300 miles north of Los Angeles and 190 miles east of San Francisco (Figure 2-1). Immediately to the west is Yosemite National Park. The Planning Area has been defined by the EPA as the Mono County, California portion of hydrologic unit number 18090101 on the State of California Hydrologic Unit Map 1978. The area is approximately 35 miles long and 45 miles wide.

Mono Basin is walled in by the eastern escarpment of the Sierra Nevada to the west and by Great Basin ranges to the north, south, and east. The Sierra Nevada delineate the western boundary of the area from approximately Excelsior Mountain down to San Joaquin Mountain. The southern boundary extends just beneath the Mono Craters to Cowtrack Mountain, then the eastern edge runs northeast to the Anchorite Hills near the Nevada Stateline. At the Anchorite Hills, the northern boundary heads west crossing the Alkali Valley and the Bodie Hills to Conway Summit and on to the ridge line of the Sierra Nevada.

The Planning Area is rural in character with pockets of ranching activity and contains small, unincorporated communities, such as Lee Vining, Mono City, and June Lake. The permanent population of the Planning Area is approximately 2,600 people.[2] Most of the land is public land under the jurisdiction of U.S. Forest Service, the California State Lands Commission, the County of Mono, and the City of Los Angeles.

In order to preserve the natural, scenic, and cultural resources of the Mono Basin, the United States Congress established the Mono Basin National Forest Scenic Area. On September 28, 1984, the California Wilderness Act was signed into law, allotting the lake, the surrounding lands, and the land use administration to the Forest Service. The boundaries of the Scenic Area surround Mono Lake and includes some 76,703 acres of land and approximately 41,600 acres of Mono Lake. Prior to the establishment of the Scenic Area, the administration of the land was shared by the Bureau of Land Management (BLM), the Forest Service, and the State of California.

The Mono Basin National Forest Scenic Area Comprehensive Management Plan was developed, as directed by the California Wilderness Act, with the overall goal being to protect the geologic, ecologic, cultural, scenic, and other natural resources while allowing recreational, scientific, and other activities consistent with this goal to take place.[3]

2.2 Physical Characteristics

Mono Basin is typical of the complex of basins or sinks occurring throughout the Great Basin (Figure 2-2). The basin was once covered by a much larger body of water, Lake Russell, with its ancient terraces 600-700 feet above the present surface of Mono Lake. Historically, runoff was collected from the surrounding mountains, but no water naturally flowed out of the basin. The only water loss (prior to diversion activities) was from evaporation into the arid environment, which has resulted in the hypersaline and alkaline condition of the lake--giving rise to a unique ecological system of lake-dwelling invertebrates preyed on by large number of migrating and nesting birds.

Dozens of tufa towers are scattered on the south shore of the lake. These structures reach 15 feet or more in height occurring where freshwater seeps flow into the lake, and the calcium precipitates due to the action of calcareous algae.

The volcanic history of the area is evident everywhere. Lava and pumice floor the basin in many places, raising sections of it into tablelands often over 8,000 feet in elevation. Though the lake itself has two small island craters, the most notable remnant of vulcanism is the Mono Craters. Other craters, lava flows, hot springs, pumice flats, and cliffs of volcanic glass are indicative of activity in the last 1,000 years.[4]

2.3 Climatic Conditions

Mono Basin is semi-arid in nature with annual precipitation for most of the area ranging from six to 10 inches per year. The data available suggest that precipitation amounts along the west shore of Mono Lake are somewhat higher than precipitation amounts measured at Cain Ranch and that precipitation at the east side of the lake is lower.[5] The temperature is typical of the high desert with cold winters and cool summers. The annual mean temperature is about 48°F at Mono Lake and 43°F at Cain Ranch. Most of the difference in temperature patterns between Cain Ranch and Mono Lake is attributable to the moderating influence of the lake.[6]

Wind patterns vary at different locations around the lake. For example, wind directions at Lee Vining are seldom in phase with Simis Ranch. The differences in wind direction appear to be related to topographic features, with lake effects and upslope/downslope winds exerting strong influences. Lee Vining experiences higher peak wind speeds than does Simis Ranch, although average wind speeds at Lee Vining and Simis Ranch are similar.[7]

2.4 Diversion of Tributary Streams (1941-Present)

Since 1941, portions of the water from four of the major tributary streams, which flow from the eastern slopes of the Sierras, have been exported south from Mono Basin via the Los Angeles Department of Water and Power (LADWP) aqueduct system. Mono Basin water joins with other Eastern Sierra water in the double-barreled aqueduct which leads to Los Angeles. From 1974 through 1989, an average of 83,000 acre-feet of water was exported from the Mono Basin which accounted for approximately one-fifth of the water delivered through the aqueduct.

For over 50 years, the export of water has resulted in a lowering of the water level of Mono Lake by approximately 45 feet, causing the surface area of the lake to decrease by about 30 percent. The consequences of this diversion of stream flows have been manifold:

- Riparian and freshwater habitats along the tributary streams have been seriously degraded by stream incision and erosion, fragmentation, and draining of wetlands. Fishery and terrestrial wildlife have been seriously impacted.

- Salinity and alkalinity of Mono Lake water has increased, adversely affecting the aquatic ecosystem, notably the productivity of alkali flies and brine shrimp--a food source for birds.

- Islands providing nesting habitat for California gulls have become "landbridged" and lost their security from mainland predators.

- Loss of open water habitats and fresh water sites around the lake have coincided with the decline in migratory waterfowl populations to a small fraction of historic numbers.

- Occasional massive dust storms have been induced from salt efflorescence on exposed lake beds. These episodes have caused the Mono Basin to violate the federal PM-10 Standard and have detracted from the visual and recreational resources for which the area is known.

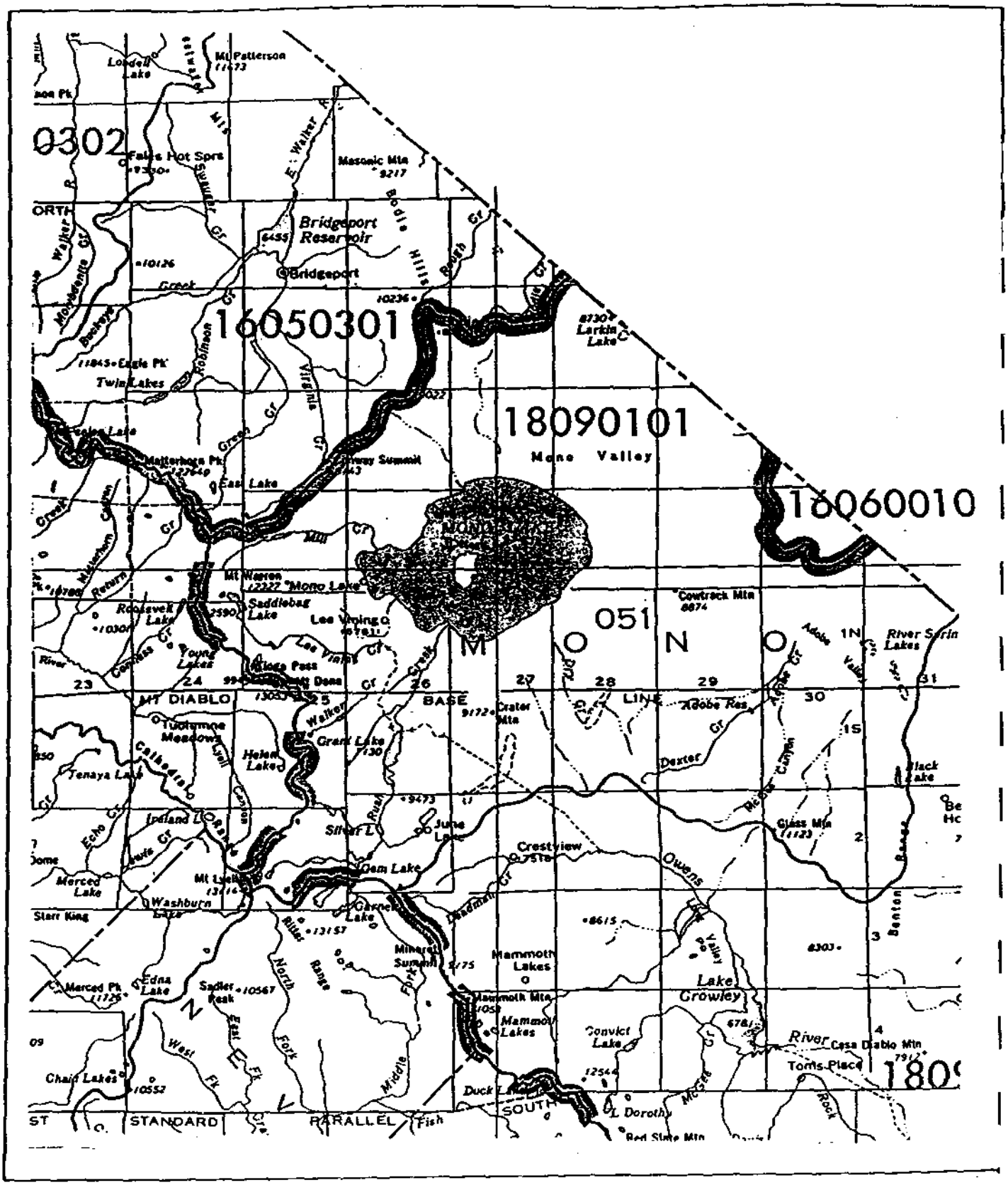

Figure 2-1 Vicinity Map

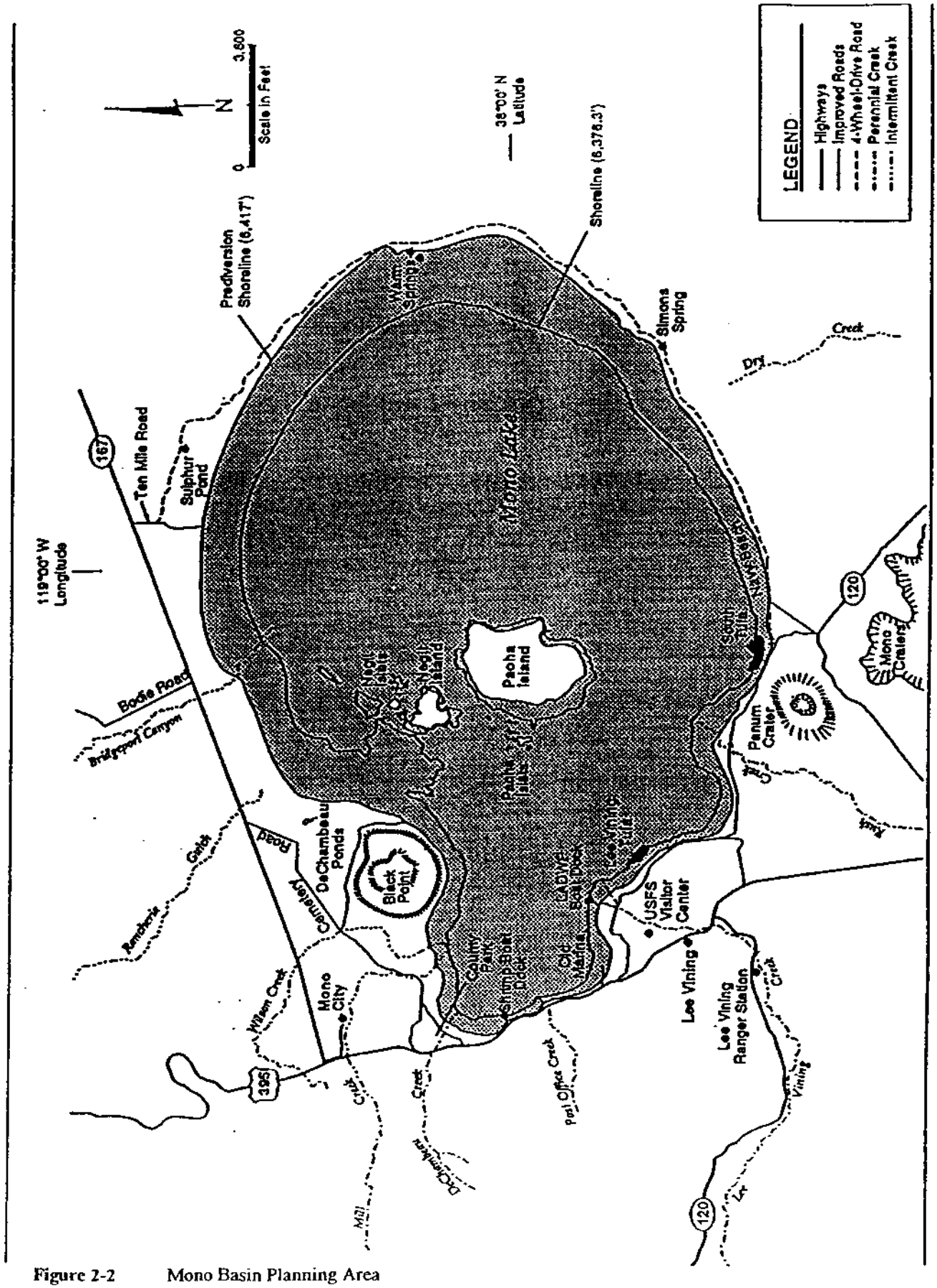

Figure 2-2 Mono Basin Planning Area