

**APPENDIX 3**

**PUBLIC LAND SURVEY SYSTEM**

**PRINCIPAL MERIDIANS AND BASE LINES**

**LAND DESCRIPTION DIAGRAM**

**GLO PLATS**

**Prepared by the  
Mapping and Marking Committee**

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## PUBLIC LAND SURVEY SYSTEM

The Public Land Survey System (PLSS) is a way of subdividing and describing land in most of the United States. All lands in the public domain are subject to subdivision by this rectangular system of surveys, which is regulated by the Bureau of Land Management (BLM).



**Historical Background.** The PLSS began shortly after the Revolutionary War, when the Federal government became responsible for large areas west of the thirteen original colonies. The government desired both to distribute land to Revolutionary War soldiers in reward for their service, as well as to sell land as a way of raising money for the new nation. Before this could happen, the land had to be surveyed which led to the Land Ordinance of 1785 and the Northwest Ordinance of 1787.

These Ordinances led to the establishment of the rectangular survey system and cadastral surveys (GLO plats are cadastral surveys). The extension of this rectangular system of surveys of public lands since 1785-87 has formed the basis for most land transfers and ownership right up to the present. These land surveys encompass major portions of 30 southern and western States, excluding Texas. Since the early PLSS surveys were completed, much of the land that was part of the public domain has been transferred to private ownership.

**Base Line and Principal Meridian.** The first step in implementing this rectangular survey system in a given area was the establishment of an initial point. This point became the basis for all government surveys in the area it controlled, and its latitude and longitude were fixed by astronomical observations. From this initial point, a Principal Meridian runs north and south on a line that would intersect the poles, and a Base Line runs east and west on a parallel of latitude. The Principal Meridian controls survey lines east and west, and the Base Line is the north and south control. There are 37 Principal Meridians, each is named, and these names are used to distinguish the various surveys. See the Principle Meridians and Base Lines map below.



**Guide Meridians and Standard Parallels.** Because of the curvature of the earth, additional lines called Guide Meridians are run every 24 miles east and west of the principal Meridian. Other lines, called Standard Parallels, are run every 24 miles north and south of the Base Line. The parallels north of the Base Line are designated First Standard Parallel North, Second Standard Parallel North, and so forth, and those south as the First Standard Parallel South, Second Standard Parallel, and so on. Standard Parallels are also called correction lines.

**Ranges and Townships.** North and south lines are next run on true meridian from Standard Parallels and 6 miles apart, marking the survey area into strips 6 miles wide called **ranges** which are numbered east and west from the Principal Meridian. Similar lines are run at every 6 mile point north and south of the Base Line, and parallel with the Base Line, dividing the ranges into 6 mile squares called **townships**. The first township north of the Base Line and east of the Principal Meridian is identified as Township 1 North, Range 1 East, the second township north of the Base Line as Township 2 North, Range 1 East, and so on.

Meridians converge toward the poles, hence townships cannot be perfectly regular. Because of this and surveying errors, irregularity occurs and the sections along the north boundary and the west boundary of each township contain these discrepancies. Quarter sections along the north and west boundary take up the excess or shortage in the township. Their quarter sections do not contain the standard 40 acres and are known as “fractional lots” or “government lots”. They are assigned unique lot numbers at the time of the survey. See the Land Description Diagram below.

**Sections.** Townships are subdivided into 36 parts, each one mile square, called **sections**. This is accomplished by running each way through the township lines which are parallel to the south and east township boundaries. The 36 sections into which the township is divided are numbered from 1 to 36, beginning with the northeast corner and proceeding west and east alternately through the township. Such a section contains 640 acres.

**Further subdivisions** are made by the division of the sections into quarters containing 160 acres, and named the northeast quarter, northwest quarter, southeast quarter, and southwest quarter. The quarter sections may be divided into quarter-quarter sections of 40 acres and these quarter-quarter sections further divided into quarter quarter-quarter sections of 10 acres. While sections may be divided into even smaller units of 2.5 acres, 10 acre portions are usually the smallest.

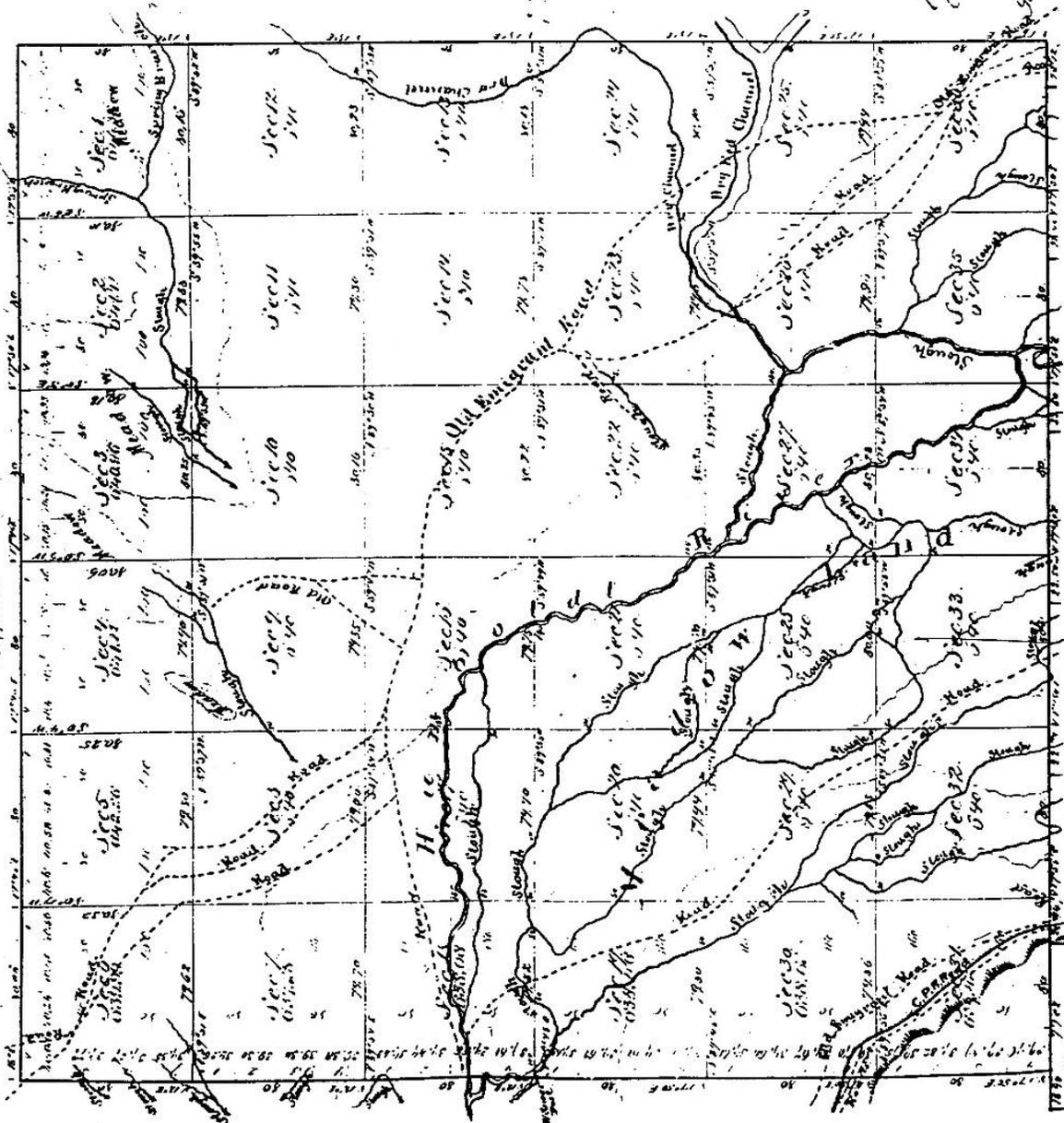
In some states, a township frequently will be occupied partially by Indian Lands or other types of land grants. The United States Government Surveys did not cover these lands, and an intersection with the boundaries of them resulted in fractional townships. Fractional quarters are also created by the meander line of a body of water.



GENERAL LAND OFFICE (GLO) PLATS

Township N°36 North. Range N°42 East. Mount Diablo Meridian.

GLO plat of 1863 showing the California Trail (as the "Old Emigrant Road") along the Humboldt River between Battle Mountain and Golconda in Nevada.

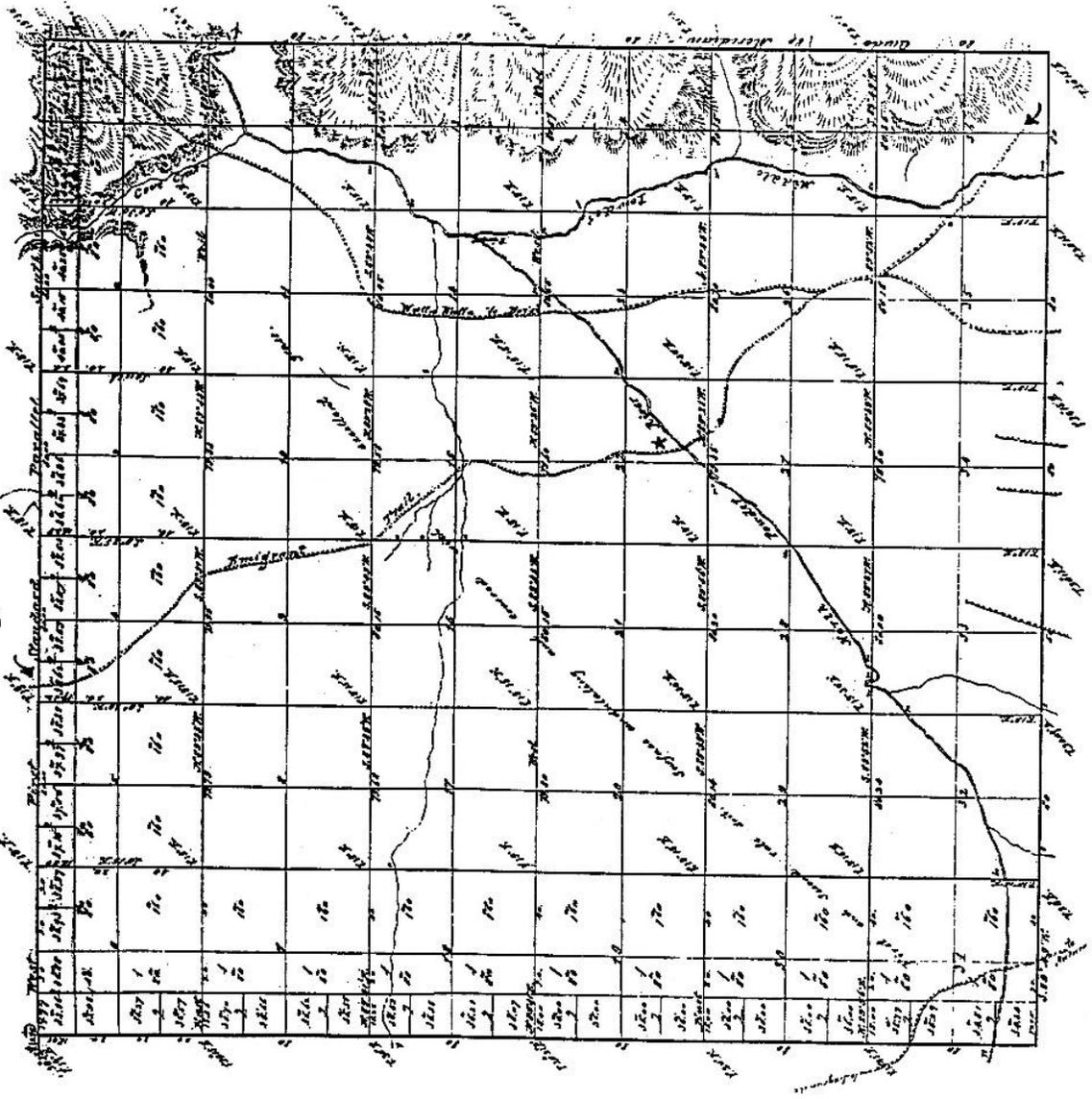


*Acquired by Public Land*

*Commenced September 20th 1863  
Completed December 5th 1863*

*Subsequent lines not otherwise shown  
in handwriting of 1863.*

*Township N<sup>o</sup> 6 South Range N<sup>o</sup> 29 East Willamette Meridian.*

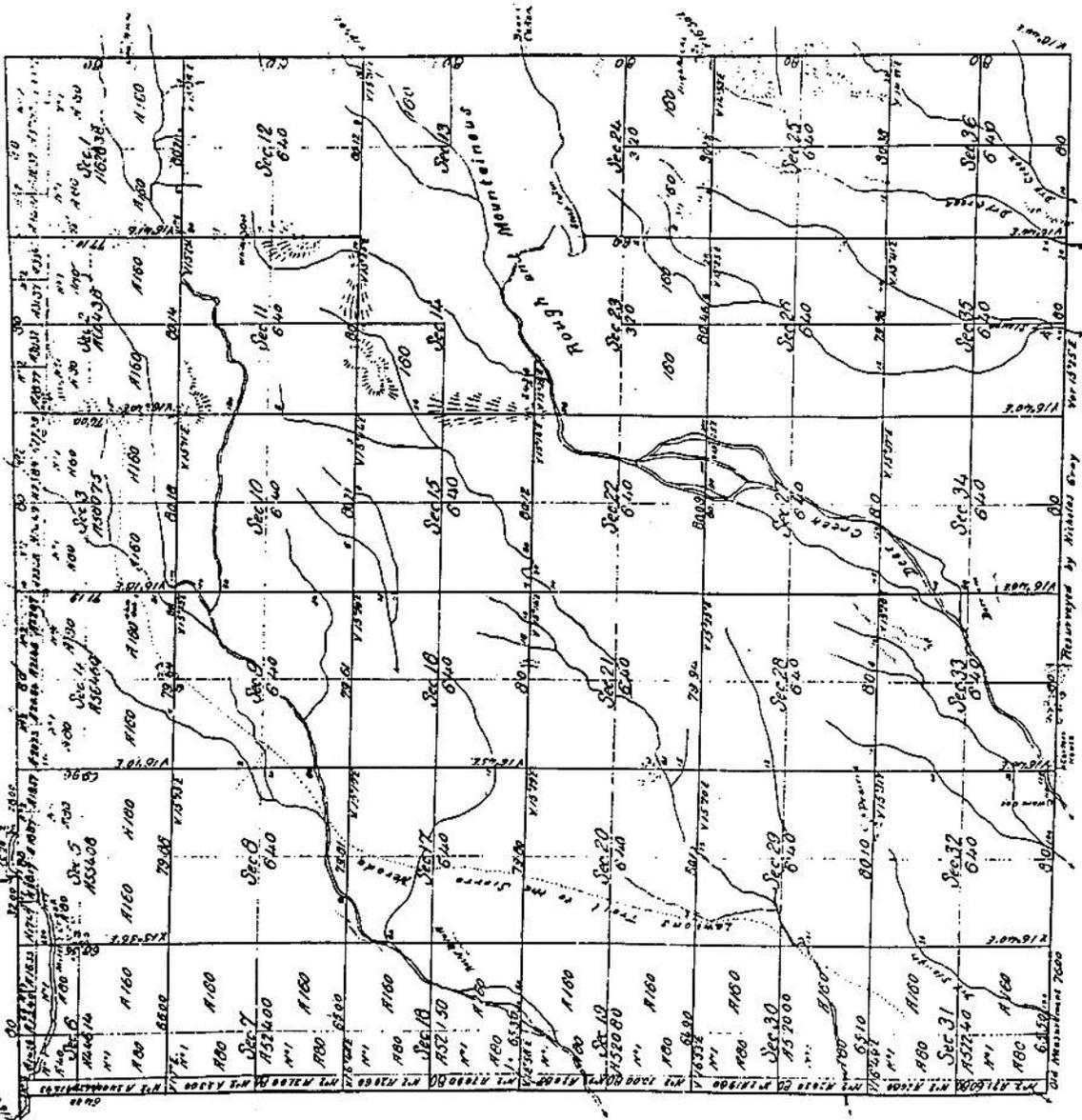


G.L.O. plat of 1863 showing the Oregon Trail (as the "Emigrant Trail") from North Powder to Clover Valley in eastern Oregon.

Mount Diablo Meridian

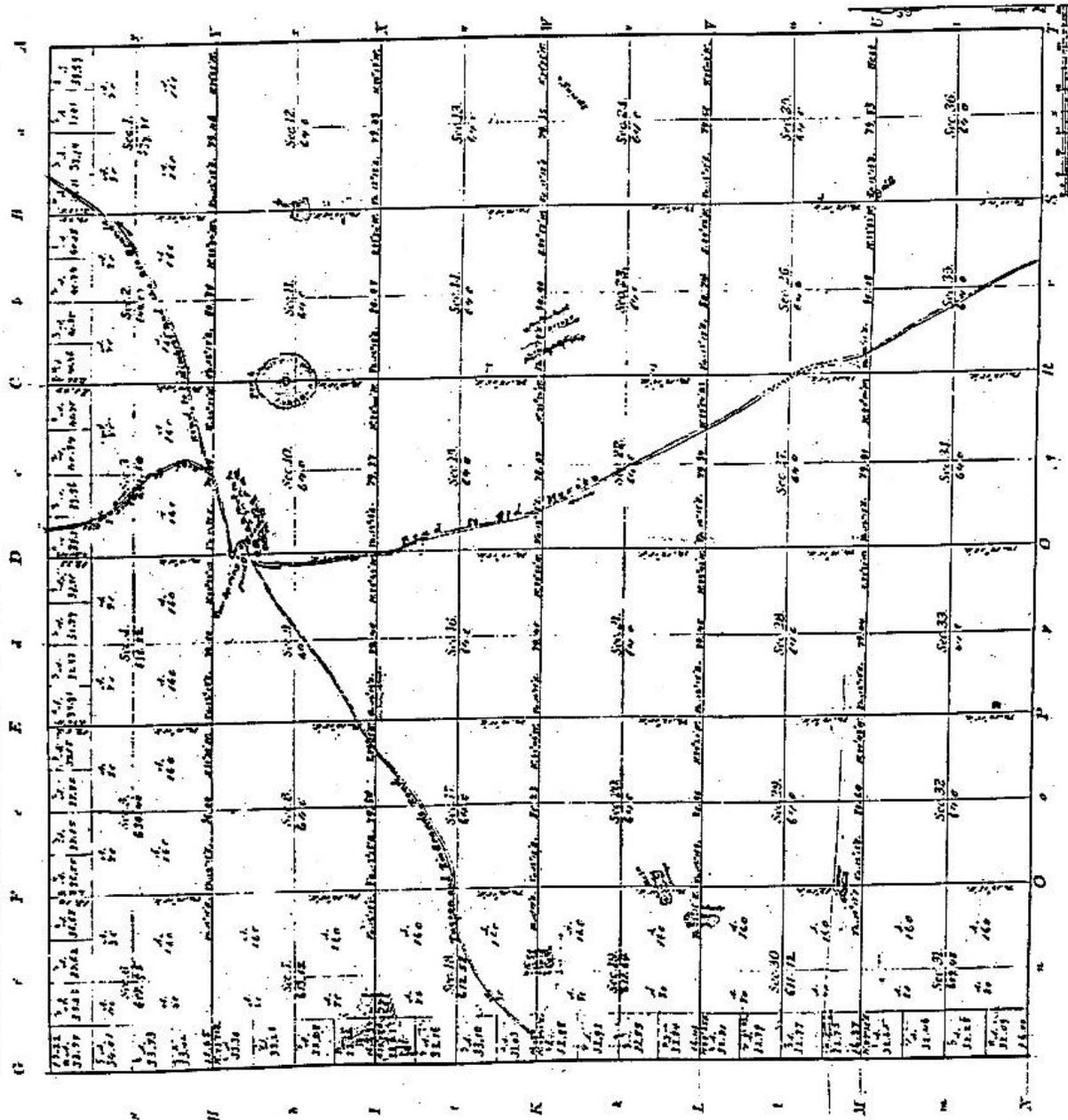
Range No 1 West.

Township No 25 North.



GLO plat of 1853 showing the Lassen Trail as "Lawsons Trail" heading Sierra Nevada" heading south after crossing Dry Creek to Lassen's Rancho in northern California. The trail is still visible in sections 8, 17, & 20.

TOWNSHIP N:22 SOUTH RANGE N:13 WEST OF THE NEW MEXICO PRINCIPAL MERIDIAN



GLO plat of 1876 showing the Southern Trail [as "Rio Grande Road"] in New Mexico from the Mimbres River to historic Cow Spring, an emigrant camp area, and then heading SW to Soldiers Farewell Hill. The trail is visible through this township. Also shown is the historic trail from Mexico to the Copper Mines north of Cow Spring [as "Road to Old Mexico"].