

THE HIGH PLATEAU CHROMITE DEPOSIT,  
DEL NORTE COUNTY, CALIFORNIA

By D. E. Flint

The Geological Survey has examined and mapped the High Plateau chromite deposit, about 48 miles in a direct line southwest of Grants Pass, Oreg. Several brief examinations of the deposit were made during the years 1939-42 by F. G. Wells of the Geological Survey. In December 1942, under Wells' supervision, D. E. Flint made a more detailed study and prepared a large-scale geologic map of the deposit.

The High Plateau mine is located in sec. 28, T. 18 N., R. 2 E., at an altitude of about 2,600 feet above sea level in the Siskiyou Mountains, Del Norte County, Calif. It is 28 miles by dirt road from O'Brien, Oreg., which is 40 miles by the Redwood Highway from Grants Pass, Oreg., the shipping point on the Southern Pacific Railroad.

The property consists of two located claims held by Eugene Brown of O'Brien, Oreg. The mine produced 1,780 tons of chromite ore during the first World War, after which it was abandoned. Mr. Brown restaked the property in 1933, and, according to information supplied by him, has made the following shipments:

Shipments of chromite ore from the High Plateau mine

Year	Long tons
1937.....	996
1941.....	1,844
1942.....	2,000*

\*Part of this had not yet been shipped to Grants Pass in early December 1942.

The predominant country rock of the area is saxonite, a variety of peridotite composed of olivine and enstatite. The entire mass is slightly serpentinized throughout, and completely converted to serpentine along contacts and shears. The equigranular olivine groundmass weathers to a smooth-textured, ochreous brown surface from which angular resistant crystals of enstatite stand out in relief, giving the weathered rock a characteristic rough surface. Enclosed in the saxonite are lenses of dunite, a rock that consists predominantly of olivine, and contains no enstatite. This rock is readily recognized by its smooth weathered surface. All the chromite is found associated with the dunite.

The High Plateau chromite deposit appears to have been originally a tabular deposit of massive chromite which has been broken by a large fault into two ore bodies, connected by a lead of chromite rubble from 1 to 5 feet thick. The south ore body has been mined out by open pit, only a thin coating of chromite being left on the footwall. The chromite of this block seems to have had a northwesterly strike and a dip of about 11° E., and it is said to have had a thickness of from 8 to 16 feet. It contained about 2,750 tons of lump ore, which was mined between 1917 and 1937. The north ore body has been worked since its discovery in 1940. It is a thin tabular body, striking approximately N. 20° W. with a dip of from 10° to 15° E. It is known to extend from 100 to 120 feet along the strike and for 100 feet down the dip. Its average thickness is 6 feet. The ore breaks clean from the hanging wall and footwall throughout most of the mine, because the contacts are marked by slickensiding and serpentinization which apparently resulted from localization of shearing stresses in the contact zone.

The chromite is unusually high in chromium and low in iron. The ore is of the very highest metallurgical grade, assaying from 50 to 54 percent  $\text{Cr}_2\text{O}_3$ , with a chromium-iron ratio of better than 3:1. It occurs as massive, fine-grained chromite with no noticeable gangue minerals, and as very coarse-grained chromite with noticeable amounts of carbonate gangue.

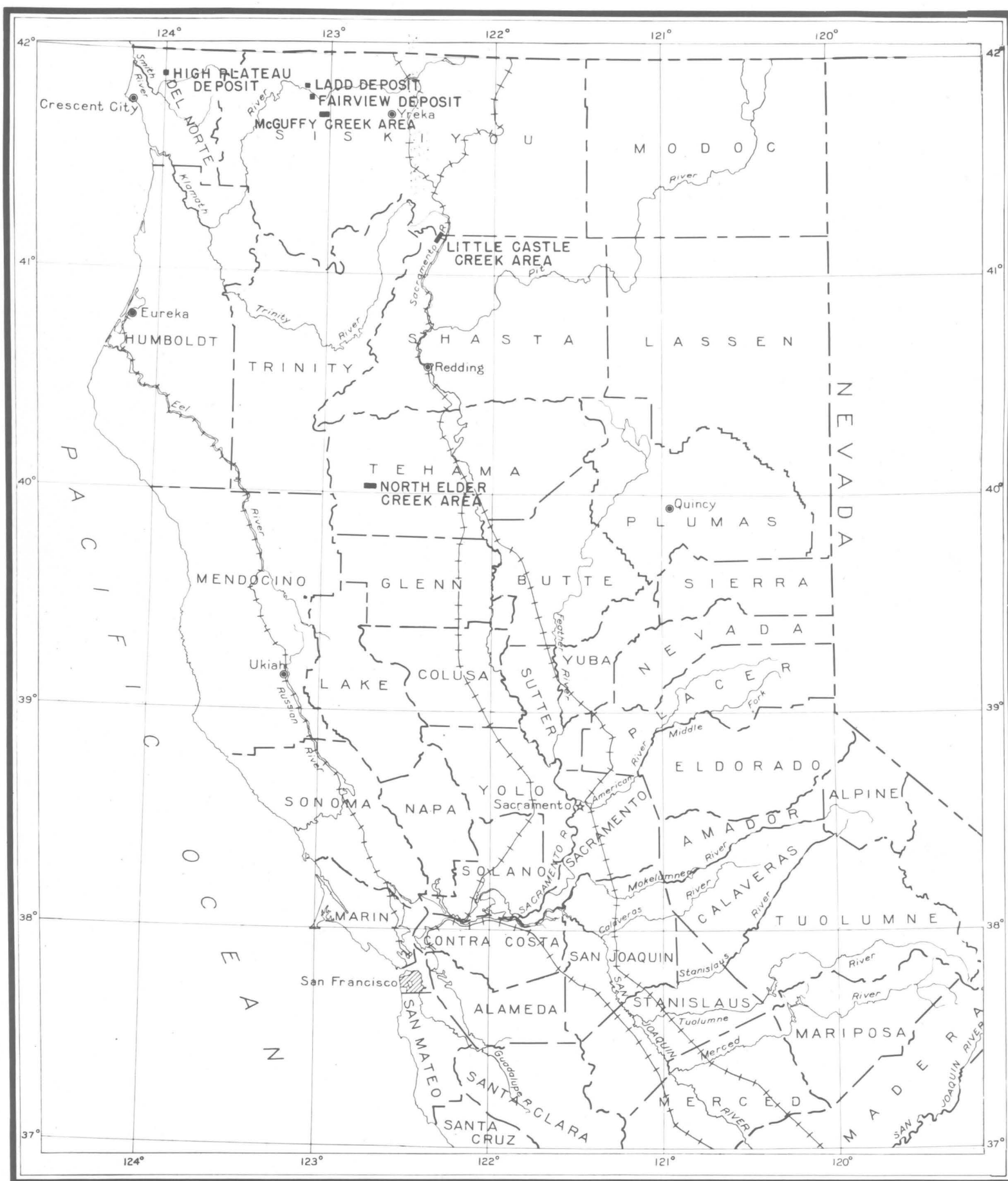
The north ore body is being worked entirely from drifts and crosscuts on three levels. Squaresetting has been used throughout the mine and wherever possible the mined area has been backfilled. From the eastern end of the lowest level an inclined winze has been sunk down the dip of the ore. A tunnel at the elevation of the main road is being driven to a point 30 feet below the foot of the winze, with which it will be connected by a raise. It is planned to handle all the remaining ore through the tunnel, developing any ore to the east by crosscuts and raises from the tunnel.

The ore reserves of the High Plateau deposit, as of December 1942, are estimated as follows:

	Long tons
Ore blocked out: exposed on 4 sides..	180
Ore exposed on 3 sides.....	1,000
Ore indicated by exposure on 2 sides..	875
Total.....	2,055

In addition, there is probably from 400 to 500 long tons of ore inferred from exposure in one face only. In estimating ore reserves, a factor of 9 cubic feet of ore, measured in place, to 1 long ton of ore has been used.

California (north). Chromite 1:250000  
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INDEX MAP OF NORTHERN CALIFORNIA SHOWING CHROMITE DEPOSITS ON WHICH  
PRELIMINARY MAPS HAVE BEEN PUBLISHED

