CHARLESTON

10500023

~~#4~~

~~Item 14~~

Potential low-grade gold mineralization

WILDHORSE AREA

Elko County, Nevada

By

Anthony L. Payne

June 21, 1971

Potential low-grade gold mineralization

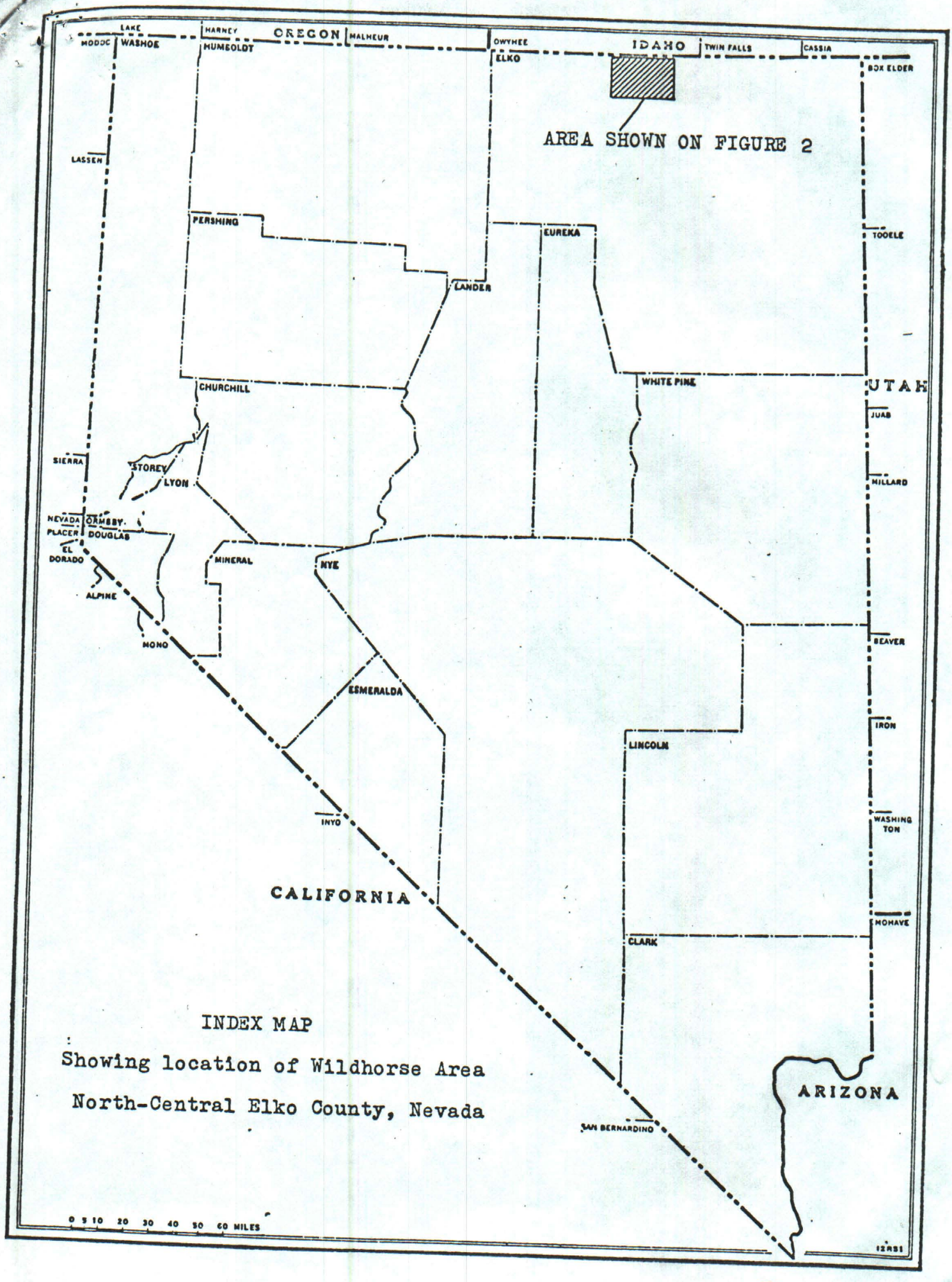
WILDHORSE AREA

Elko County, Nevada

During the week June 14-18, 1971, a helicopter reconnaissance of north-central Elko County was conducted by Messrs. Alan R. Jager and D. L. Stevens of Humble Oil and Refining Company's Mineral Department, accompanied by the writer acting as consulting geologist. The reconnaissance was a field check of color anomalies and prospects on the ground in interesting geologic situations, as photo-interpreted by Mr. Stevens on 1:24,000 colored photographs flown by Mark Hurd Associates especially for this purpose. The general area of the reconnaissance is shown on Figure 1, page 2.

During the course of the work, a well-defined belt of gold placers was observed trending northwestward through the area just north of Wildhorse Reservoir, south of Mountain City (see Figure 2, page 3). This belt is here named Wildhorse and is in an incompletely mapped area of windows eroded through the Cenozoic volcanics, exposing Paleozoic sediments (of both eastern and western assemblages) which have been intruded by Laramide plutons and younger porphyries.

Although there is some suggestion that the erosional windows through the volcanics are domal in structure, photointerpretation is difficult, and would require almost as much time as ground reconnaissance mapping. The area is easily accessible and exposures are good. The most recent detailed published geologic maps within the area (particularly the Mt. Velma quadrangle by Coash) lack feeling for current regional stratigraphic-structural concepts, and are not detailed enough to answer the many questions concerning bedrock gold prospecting potential.

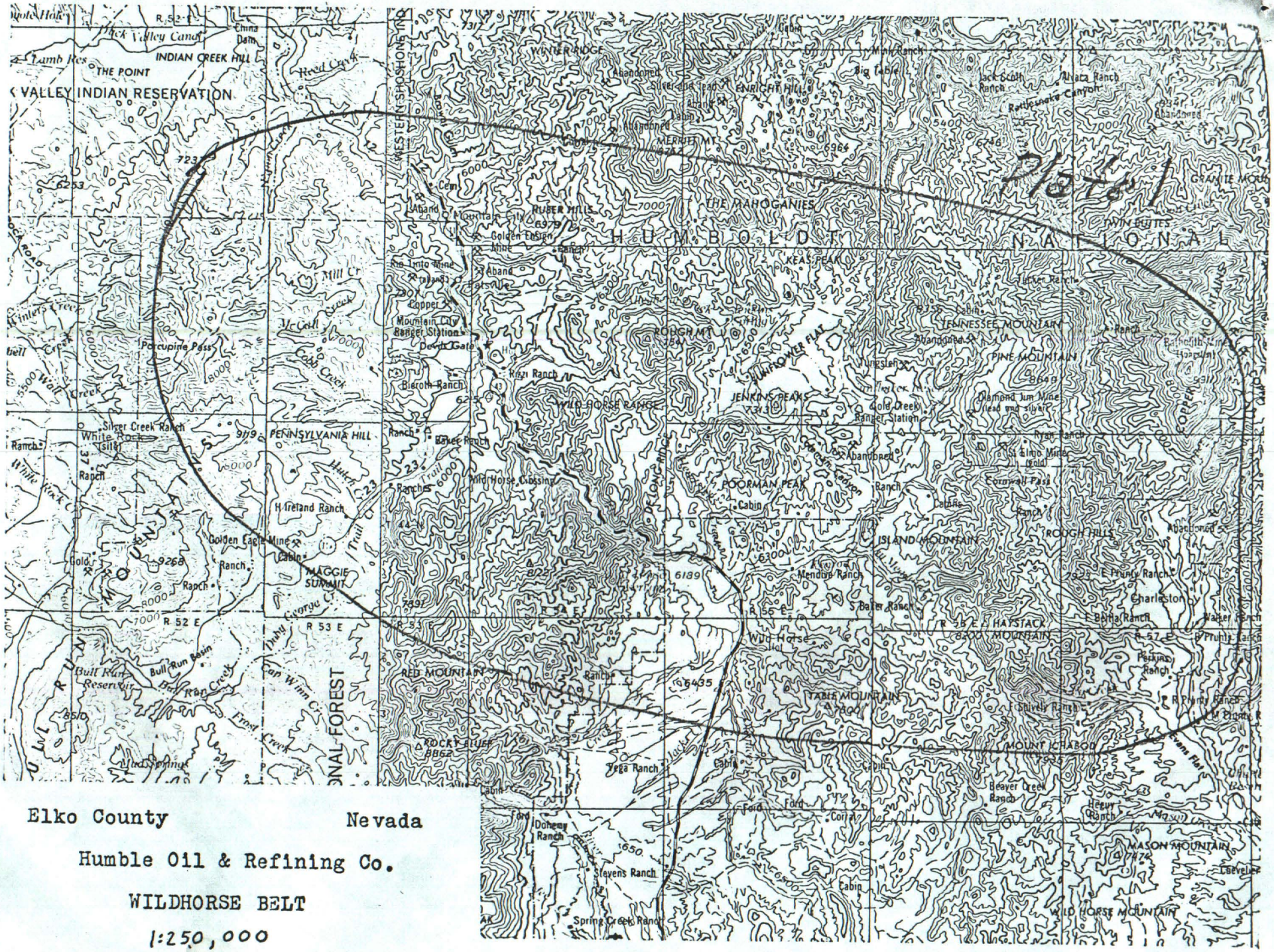


INDEX MAP

Showing location of Wildhorse Area

North-Central Elko County, Nevada

Figure 1



Elko County Nevada

Humble Oil & Refining Co.

WILDHORSE BELT

1:250,000

Anthony L. Payne June 21, 1971

To the northeast of the area of Plate I, on strike projection the belt disappears beneath the alluvium of the Duck Valley Indian Reservation and young volcanics of the Columbia Plateau. To the southeast, it passes beneath young Tertiary cover rocks of the Humboldt formation.

The gold placers of the belt are the result of recent re-working of Tertiary gravels. These older gravels were accumulated in pre-glacial topographic basins which are quite well preserved because of the slight amount of basin-and-range faulting in the area. Exterior drainage of the two tributaries of the Columbia, the Owyhee and Bruneau Rivers, is eroding into the fill of the earlier basins, removing the material from the area. In a similar situation in central Nevada, the old placers would be buried even more deeply under the alluvial fill of the bolson between basin ranges. The original source of the placer gold is presumed to be bedrock mineralization, the exact location has never been clearly proven for most of the deposits. It is probable that most of the coarse placer was developed in a regolith formed during pre-glacial quiescent stillstands or even intravolcanic episodes of weathering under warm, humid conditions more favorable for development of nugget gold in the soil zones.

A number of antimony-gold-mercury quartz veins have been prospected whereever they have been observed (see detailed descriptions below), but it is possible that bulk mineable gold mineralization of the Carlin type may exist at one or more localities within the belt.

An older erosional cycle of placer gold development, as at Carlin, is therefore suggested to explain the coarse visible gold of the placers in response to the Tertiary weathering conditions, where today's harsh climate and rapid erosion might yield only clastic particles containing the micron gold distributed through the matrix of the rock.

There is a fairly close genetic tie in time and space between gold-antimony-mercury mineralization and the "micron" gold deposits of the Carlin type.

Total production of the gold placers is not known, for Chinese labor was used on the hydraulicking and ground sluicing operations, and it may be presumed that output is in the million dollar range for the entire belt. Metal production from lode occurrences (antimony, gold) is negligible.

At Wildhorse, the antimony deposits form a belt that is coincident with the zone of gold placering. Although both belts might be more apparent than real, as a result of accident of erosion, there is a strong suggestion of a time-space relationship of bedrock mineralization and placers. Both are aligned in a northwesterly trend, more or less parallel to the other important mineral lineaments of this portion of the Cordillera, including the Carlin zone just to the south.

In addition to the antimony-gold-mercury mineralization apparently related to the younger porphyries, the contacts of the earlier granitic plutons typically develop a scheelite-molybdenite mineralization with minor chalcopyrite.

There is a close relationship between the younger, smaller intrusives and the antimony-gold-quartz mineralization, and age relationships are good for Carlin-type gold mineralization, as the geochronology is now understood. The occurrence of antimony with gold and mercury, along with arsenic (arsenopyrite) and tungsten (apparently as scheelite) is favorable.

Autochthonous Paleozoic and Mesozoic carbonates of the Miogeosyncline underlie the entire region. The Silurian is represented, rocks of this age having acted as host to most of the important bulk mineable gold ore

developed to date in Nevada. Allochthonous western assemblage lower Paleozoics are also seen in the windows, suggesting major Devonian-Mississippian gravity sliding. The Trail Creek thrust of Decker may be the Roberts Mountains thrust, and is so shown by Coats in his recent open file map of the SW portion of the Mountain City quadrangle.

Therefore, all geologic conditions are favorable for a bulk mineable gold occurrence, and four areas (erosional windows through the volcanics) are particularly inviting because of the combination of favorable wall rock, structure, igneous activity, known mineralization, photodiscoloration, etc.:

1) Charleston District (3 mi^2)
2) Dolly Creek (9 mi^2)
3) Island Mountain (14 mi^2)
4) Van Duzer Creek (16 mi^2)

It is recommended that geologic mapping and reconnaissance geochemical sampling of these four areas be undertaken. Geologic mapping should be done on 1" = 1,000' black and white enlargements of the Mark Hurd photography, and should emphasize structure, stratigraphy, igneous rocks, and mineralization. The geologic work should be used to guide the lay-out of the sample patterns, and in interpretation of the analytical results.

Each of the four areas is described separately as follows:

CHARLESTON DISTRICT - Charleston is a former gold placer camp that has more recently been prospected for antimony. Gold was discovered in 1876, and the deposits are clearly the result of several cycles of reworking of the gravel over long periods of erosion (Vanderburg, 1936, p. 71-72). It is estimated that considerable gold remains in deposits along the Bruenau River, too low grade to have been mined by hand methods.

In the area of interest outlined on Plate I, five antimony veins have been explored; Roscoe, Bounty, Prunty, Graham, and Black Warrior (Lawrence, 1963, p. 43-45). The veins contain stibnite, aresenopyrite, pyrite, tetrahedrite, and chalcopyrite in a gangue of quartz and calcite. Gold values are important and silver values are low.

It is suggested that this relatively small area be mapped on 1" = 1,000' scale and that 100 ridge-and-spur rock chip samples be collected and analyzed for gold and arsenic.

DOLLY CREEK - This area is described by Coash as primarily Triassic lithology. There appears to be no major prospect workings within the area outlined. Structural complexity of the area, together with the general discoloration, invites mapping on 1" = 1,000' scale and collection of 200 ridge and spur rock chip samples to be run for gold and arsenic.

ISLAND MOUNTAIN - Several old gold placers were worked in this area of complex geology and cover rock relationships. The placers were discovered in 1873 and "soon became one of the most prominent placer areas in the state and attained a large production" (Vanderburg, 1936, p. 73). Two antimony prospects, the Foss and the Gribble, have been developed on brecciated dike zones containing stibnite and scheelite in calcite and quartz.

It is proposed that the area be mapped on a scale of 1" = 1,000', and that 300 rock chip samples be taken on a ridge-and-spur pattern to be run for gold and arsenic.

VAN DUZER CREEK - Placer gold was discovered in the district in 1893. The gold varies from fine dust to nuggets weighing five or six ounces, with an average fineness of 820. (Vanderburg, 1936, p. 75-75). Several antimony veins have been developed on Pennsylvania Hill at the

head of Silver, Van Duzer, and Lime Creeks. Grab samples indicate high gold values. At the Blue Ribbon prospect, stibnite, antimony oxides, cinnabar, and pyrite occur in milky and drusy quartz veins.

It is proposed that the area be mapped on a scale of 1" = 1,000', and that 300 rock chip samples be taken on a ridge and spur pattern, running them for gold and arsenic.

The geologic and geochemical results should be interpreted using the criteria outlined in my report of May 20, 1970, and in the light of experience gained from the Maggie Creek exploration now underway.

Anthony L. Payne

Anthony L. Payne
Exploration Geologist

Reno, Nevada
June 21, 1971

References

Bushnell, K. O., 1967, Geology of the Rowland Quadrangle, Elko County, Nevada, Nevada Bureau of Mines Bulletin 67, 38 p.

Coash, J. R., 1967, Geology of the Mount Velma Quadrangle, Elko County, Nevada, Nevada Bureau of Mines Bulletin 68, 20 p.

Coats, R. R., 1970, Preliminary Geologic Map of the Southwestern Part of the Mountain City Quadrangle, Scale 1:20,000, U.S.G.S. Open File Map.

Couch, B. F., and Carpenter, J. A., 1943, Nevada's Metal and Mineral Production (1859-1940, Inclusive), Nevada Bureau of Mines Bulletin 38, 159 p.

Decker, R. W., 1962, Geology of the Bull Run Quadrangle, Elko County, Nevada, Nevada Bureau of Mines Bulletin 60, 65 p.

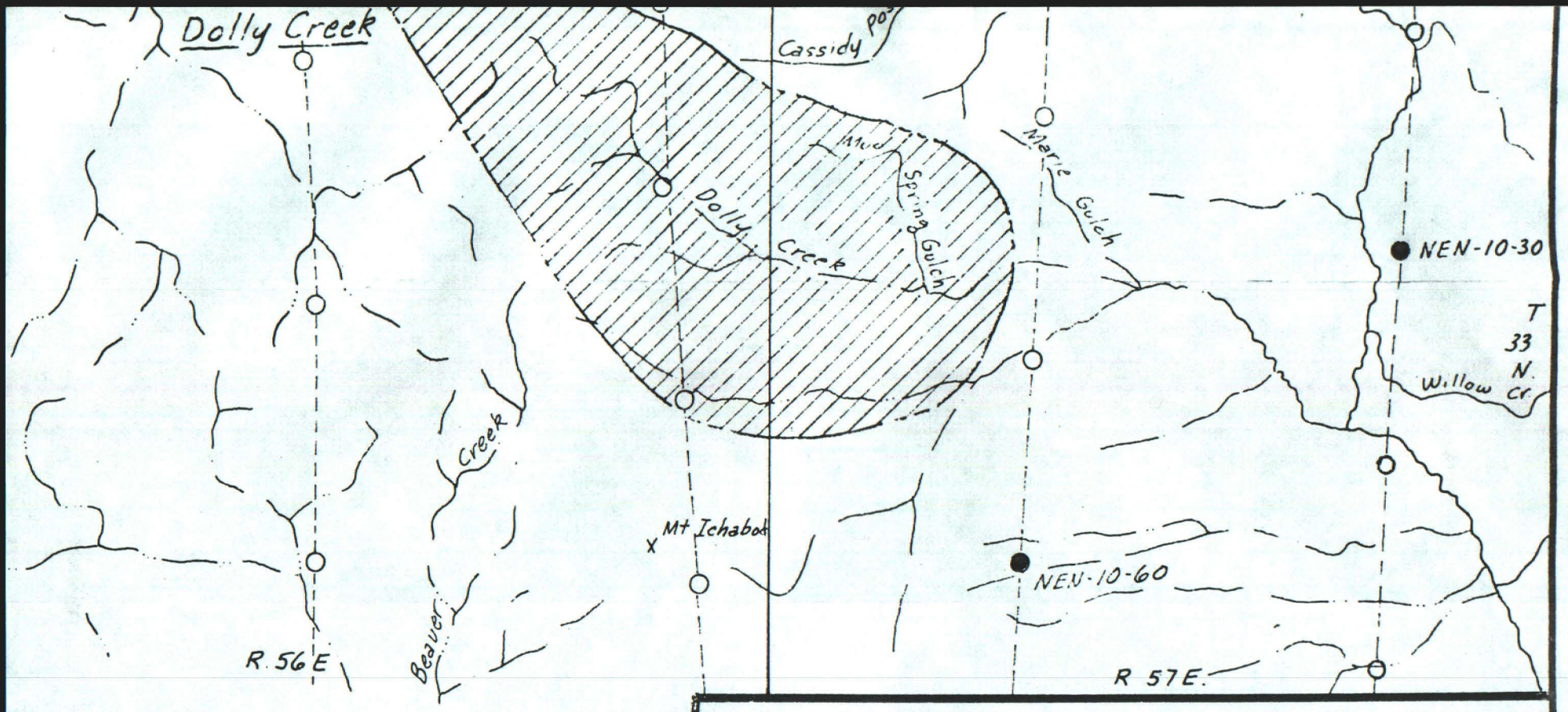
Emmons, W. H., 1910, A Reconnaissance of some Mining Camps in Elko, Lander, and Eureka Counties, Nevada, U.S. Geol. Surv. Bulletin 408, 130 p.

Granger, A. E., Bell, M. M., Simmons, G. C., and Lee, Florence, 1957, Geology and Mineral Resources of Elko County, Nevada, Nevada Bureau of Mines Bulletin 54, 190 p.

Lawrence, E. F., 1963, Antimony Deposits of Nevada, Nevada Bureau of Mines Bulletin 61, 248 p.

Payne, A. L., 1970, Bulk Mineable Gold in Central Nevada, private report to Humble Oil and Refining Company, Minerals Department, 21 p.

Vanderburg, W. O., 1936, Placer Mining in Nevada, Nevada Bureau of Mines Bulletin 27, 178 p.



map traced from U.S.G.S. 15-minute
hic quadrangles (Owyhee, Bull Run,
City, Wild Horse, Rowland, Mt. Velma).

eology interpreted on colored
f aeroneg photography flown
k Hurd 1969 (project NEN).

Elko County Nevada

HUMBLE OIL & REFINING CO.

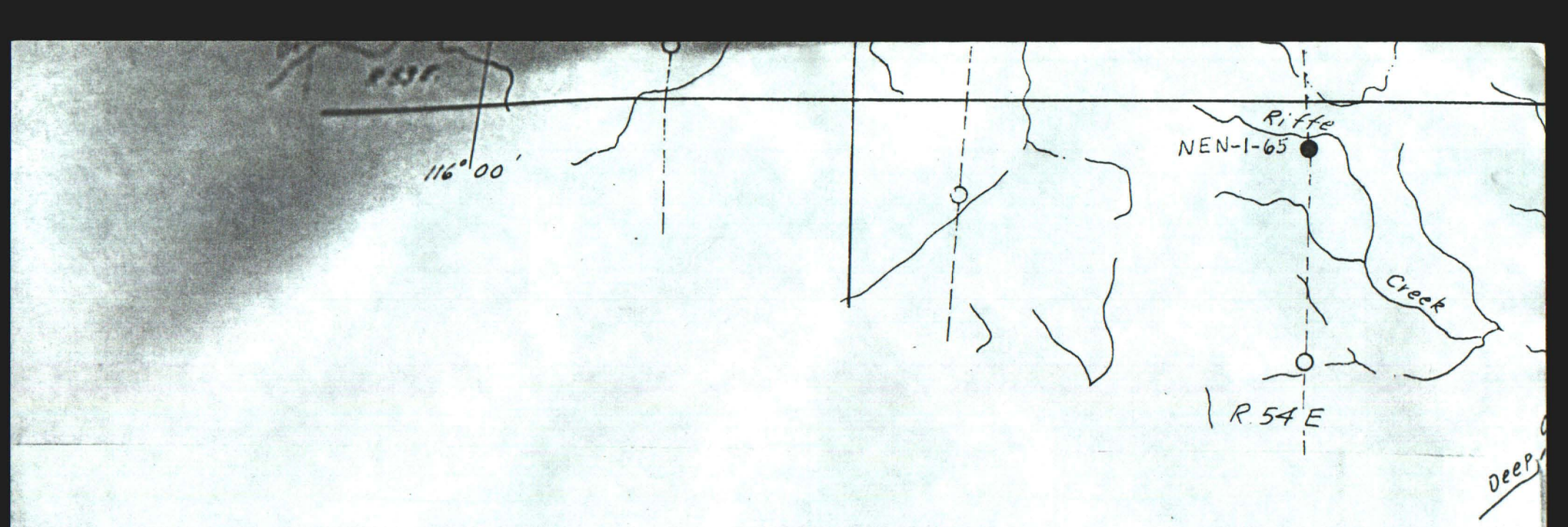
PHOTOINTERPRETATION

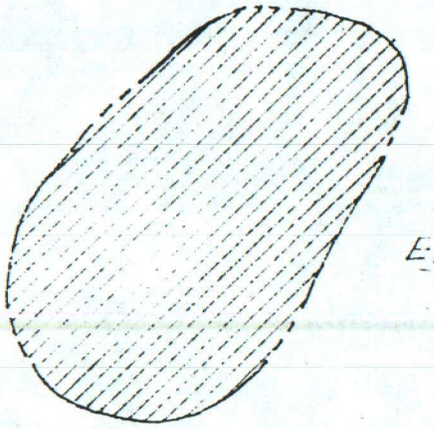
WILDHORSE AREA

Scale 1:62,500

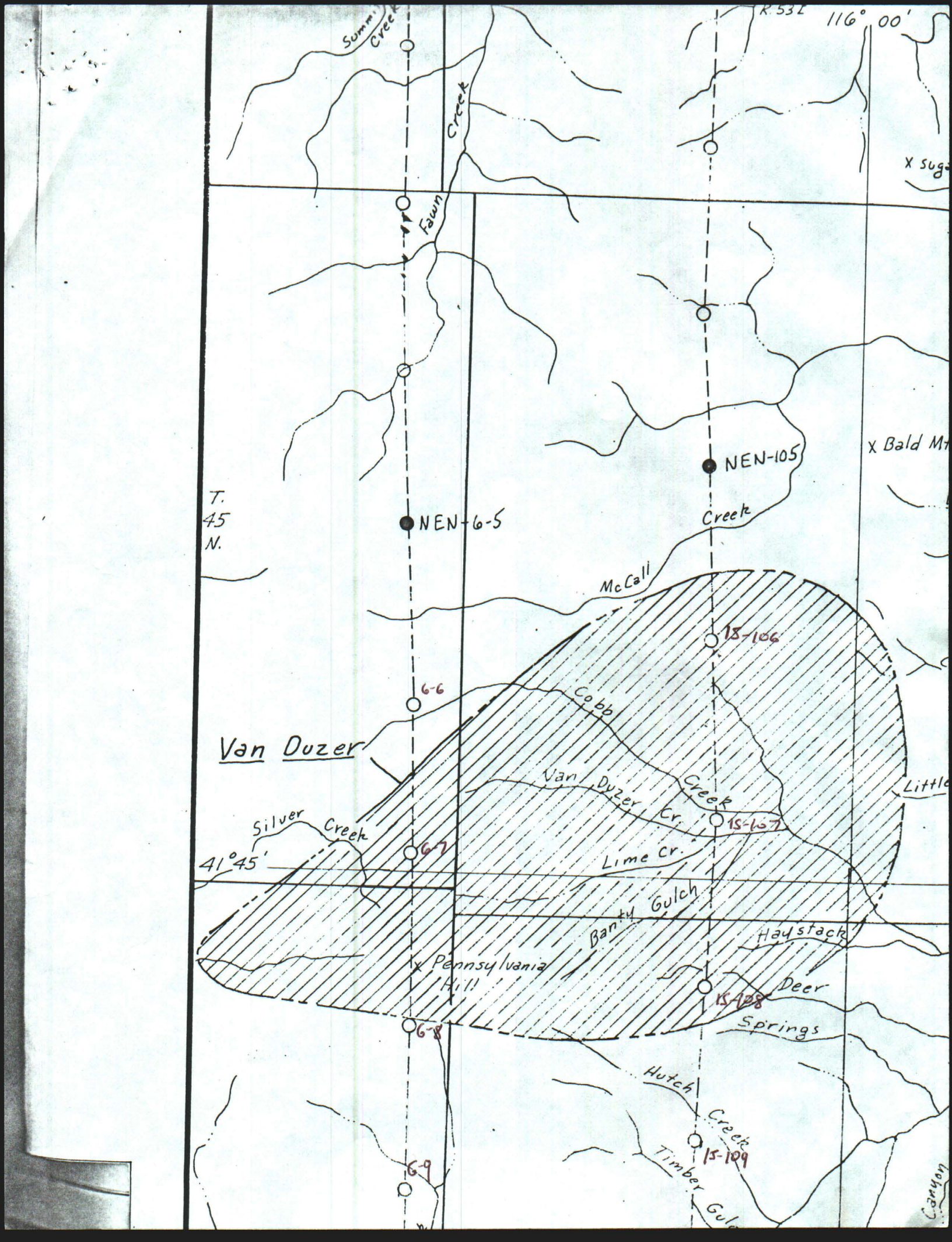
Anthony L Payne June 21, 1971

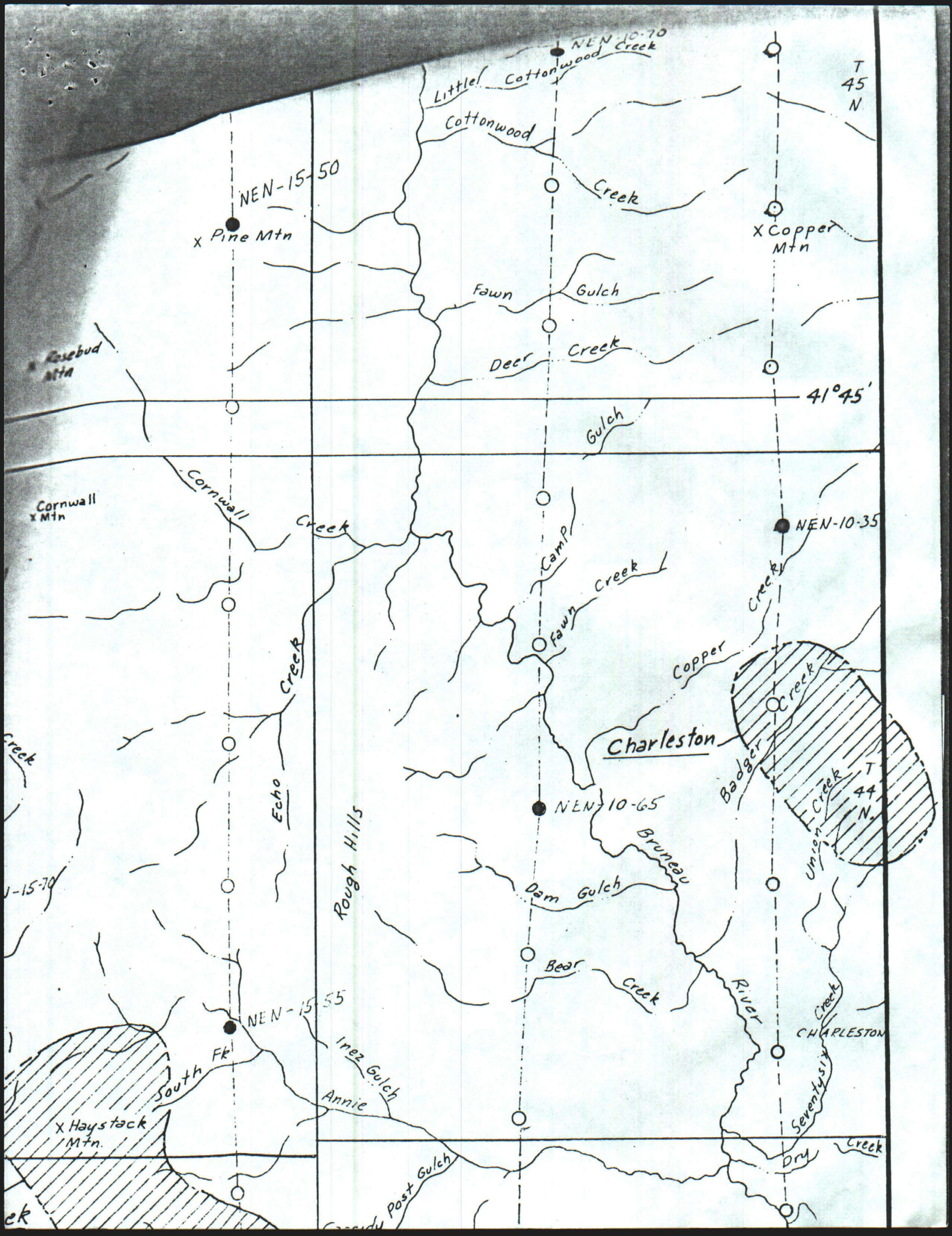
Plate I

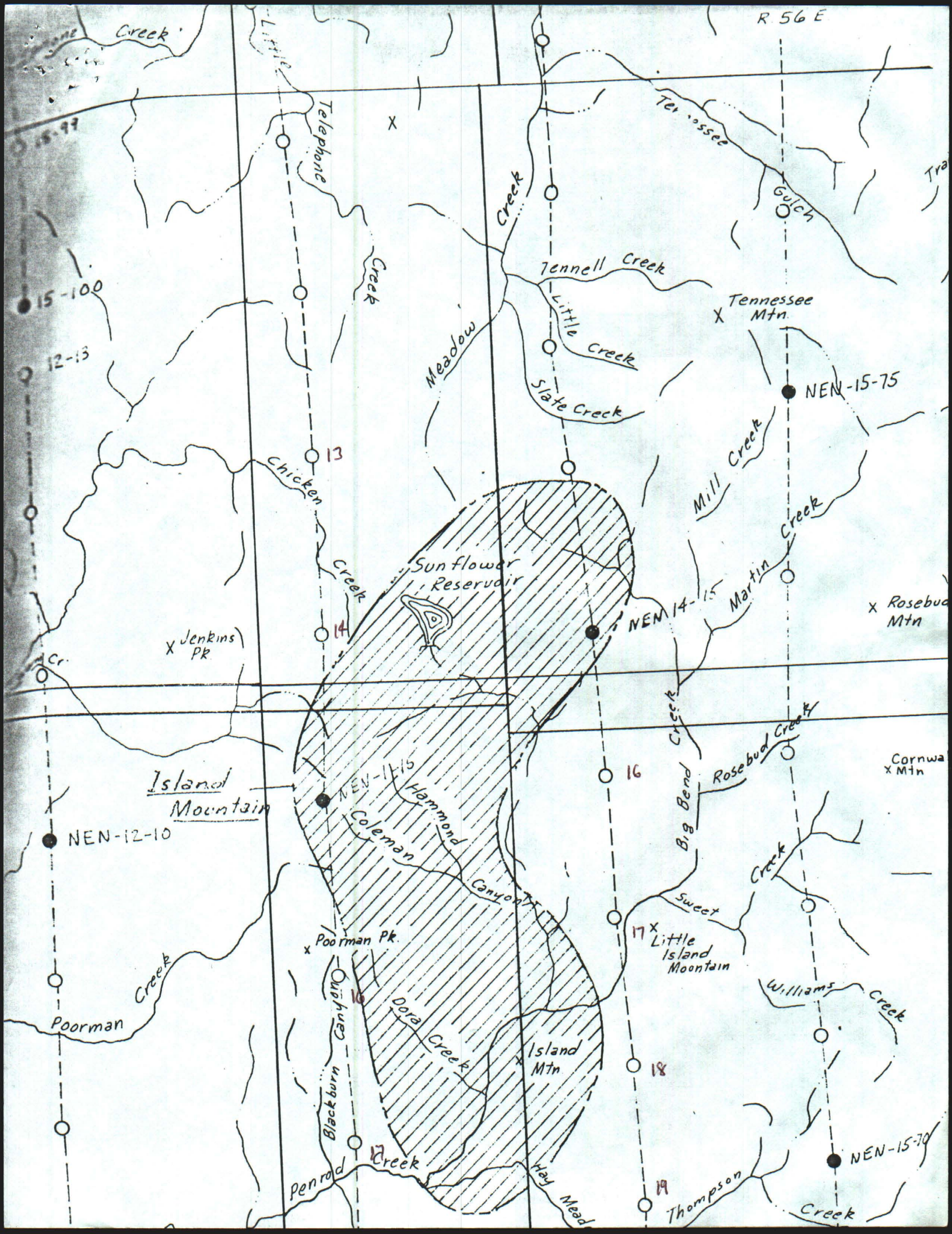


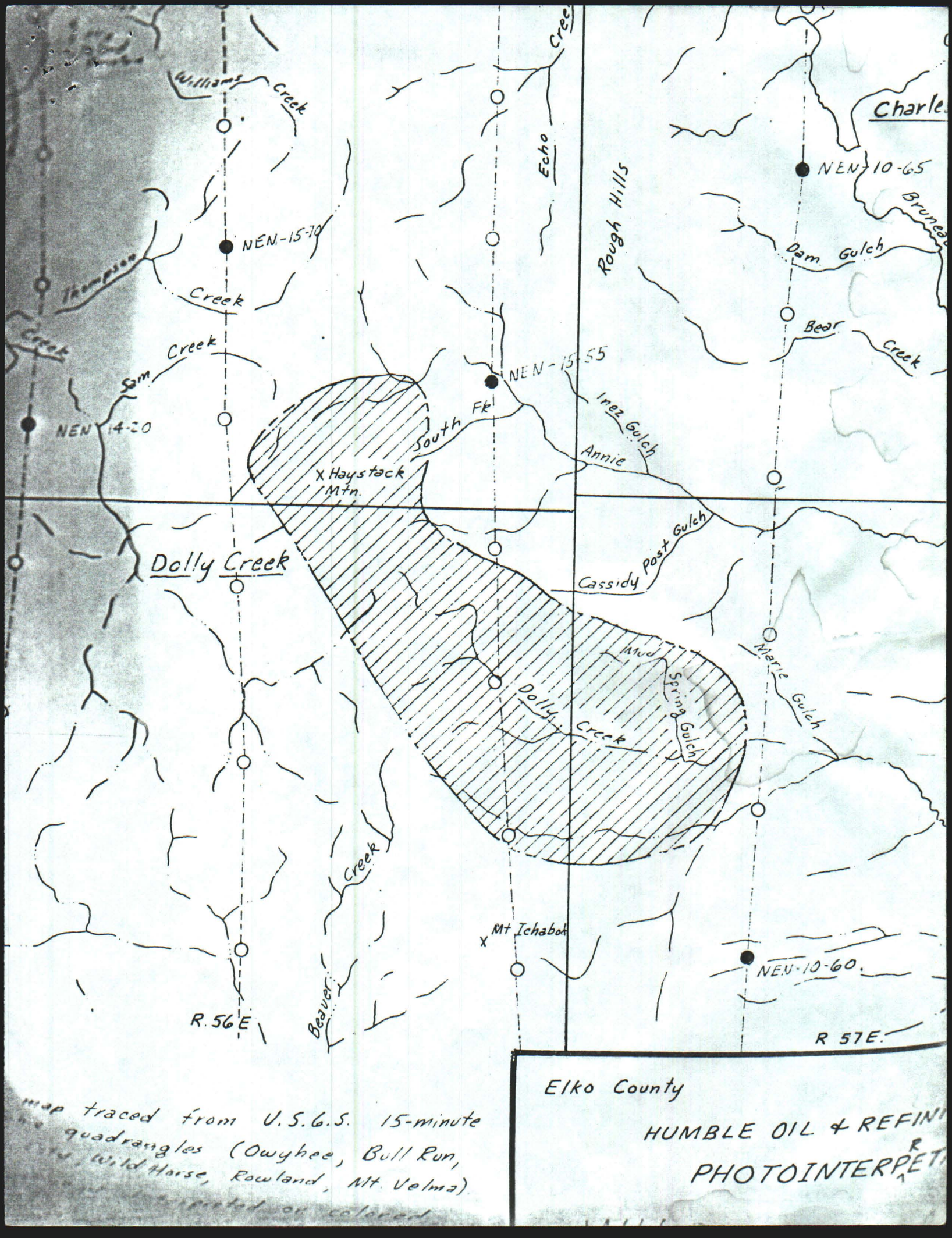


Erosional window exposing Paleozoic rocks, some Laramide igneous rocks and gold-antimony mineralization


R. 53E
116° 00'
Summit Creek
Creek
Fawn
X sug
NEN-105
X Bald Mt
T.
45
N.
NEN-6-5
Creek
McCall
15-106
6-6
Cobb
Van Duzer
Van Duzer Creek
Little
Silver Creek
15-107
6-7
41° 45'
Lime Cr.
Banty Gulch
Haystack
X Pennsylvania Hill
Deer
15-108
Springs
6-8
Hutch
Creek
15-109
6-9
Timber Gulch
Canyon


NEN-10-70
Little Cottonwood Creek
Cottonwood Creek
T 45 N
NEN-15-50
x Pine Mtn
x Copper Mtn
Fawn Gulch
Deer Creek
Rosebud Mtn
41°45'
Gulch
Cornwall Creek
Cornwall x Mtn
NEN-10-35
Camp Creek
Fawn Creek
Copper Creek
Creek
Charleston
Badger Creek
T 44 N.
Union
Echo Creek
Rough Hills
NEN-10-65
Bruneau
Dam Gulch
Bear Creek
River
Creek
CHARLESTON
NEN-15-55
South Fk
Inez Gulch
Annie
x Haystack Mtn.
Seventysix
Dry Creek
Post Gulch


R 56 E
Creek
Telephone
Creek
Tennessee
Gulch
Tennell Creek
Little
Creek
Meadow
Creek
Slate Creek
Tennessee
Mtn.
NEN-15-75
Mill
Creek
Martin
Creek
Chicken
Creek
Sunflower
Reservoir
NEN 14-15
Rosebud
Mtn
Jenkins
Pk
Island
Mountain
NEN-12-10
NEN-14-15
Hammond
Coleman
Canyon
Big Bend
Rosebud Creek
Cornwall
Mtn
Sweet
Creek
Poorman Pk.
Little
Island
Moontain
Williams
Creek
Poorman
Creek
Blackburn
Canyon
Dora
Creek
Island
Mtn
Penrod
Creek
Thompson
Creek
NEN-15-70
15-100
12-13
13
14
16
17
18
19


Williams Creek
Echo Creek
Charle
NEN-10-65
Rough Hills
Brunea
Dam Gulch
NEN-15-70
Thompson Creek
Bear Creek
Creek
Sam Creek
NEN-15-55
NEN 14-20
Inez Gulch
South Fk
Annie
X Haystack Mtn.
Dolly Creek
Cassidy Post Gulch
Mud Spring Gulch
Merle Gulch
Dolly Creek
Creek
X Mt Ichabod
NEN-10-60.
Beaver
R. 56 E
R 57 E.
Elko County
HUMBLE OIL & REFIN
PHOTOINTERPRET
map traced from U.S.G.S. 15-minute
quadrangles (Owyhee, Bull Run,
Wild Horse, Rowland, Mt. Velma)