Book "G"

4—679

FIELD NOTES

OF THE SURVEY OF

Part of the Grand Canyon National Park Boundary

Formed by

Part of the Subdivision Lines of

Township 32 North, Range 3 West

Of the Gila & Salt River Base & *Meridian,*

In the State of ARIZONA

EXECUTED BY

Leroy R. Hanson, U.S. Transitman

In the capacity of U. S. Surveyor, under Special Instructions dated May 11, *19*27, *issued by the District Cadastral Engineer to govern surveys included in Group No.* 45, Arizona, *which were approved by the Commissioner of the General Land Office,* May 20, *19*27, *and Assignment Instructions dated* Oct. 15, *19*27.

Survey commenced November 8, *1927*

Survey completed November 9, *1927*

6—151

208

1A

Book "G"

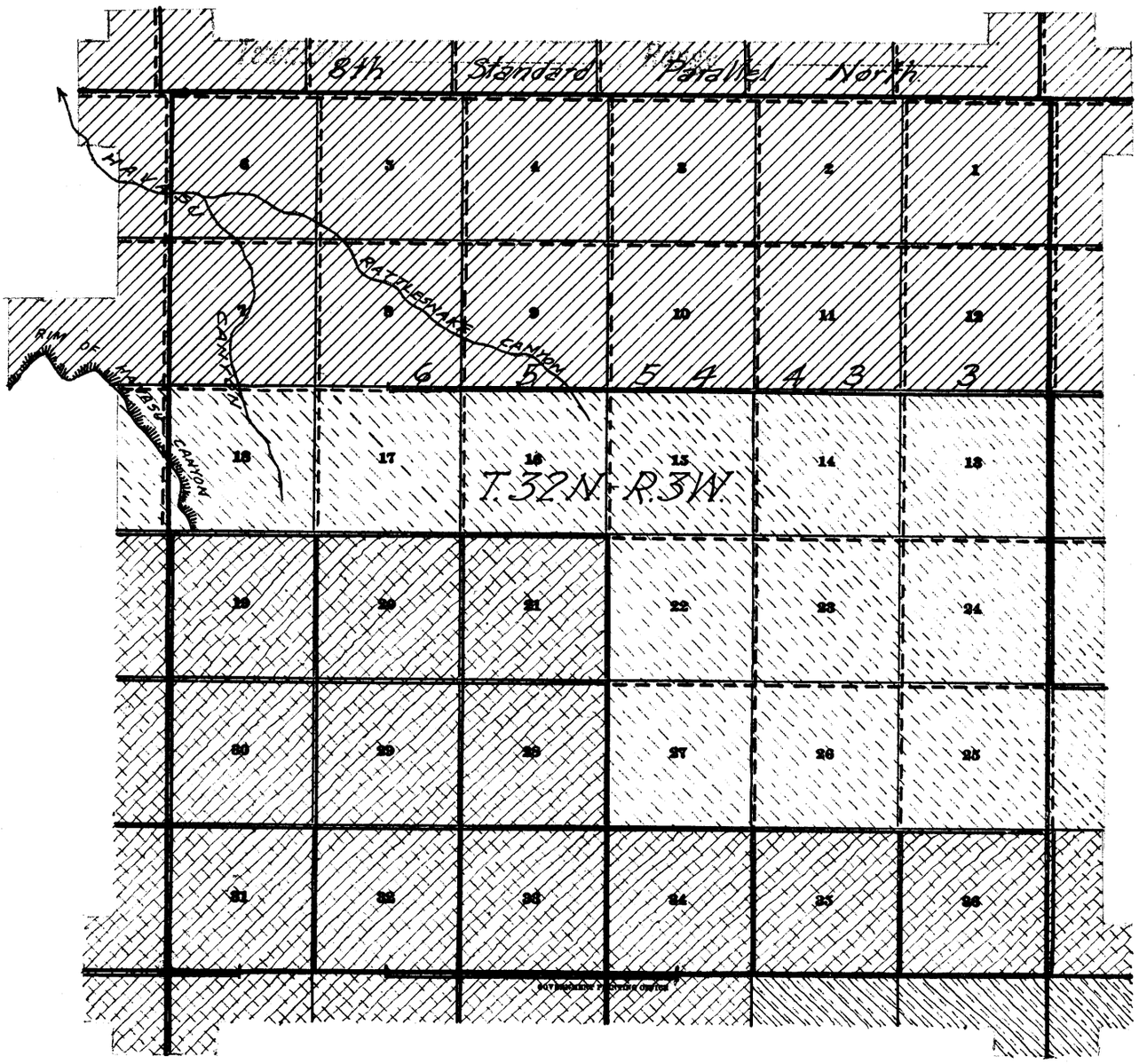
Group 145 - Arizona.

BOOK 3860

Land within Grand Canyon National Park.

Land within Tusayan National Forest.

INDEX DIAGRAM.



Lines surveyed under this group.

Lines shown protracted on accepted plats. (not actually surveyed.)

Unsurveyed.

Accepted surveyed lines.

Areas shown on accepted plats by protraction.

Areas shown on accepted plats by actual surveys.

1 B

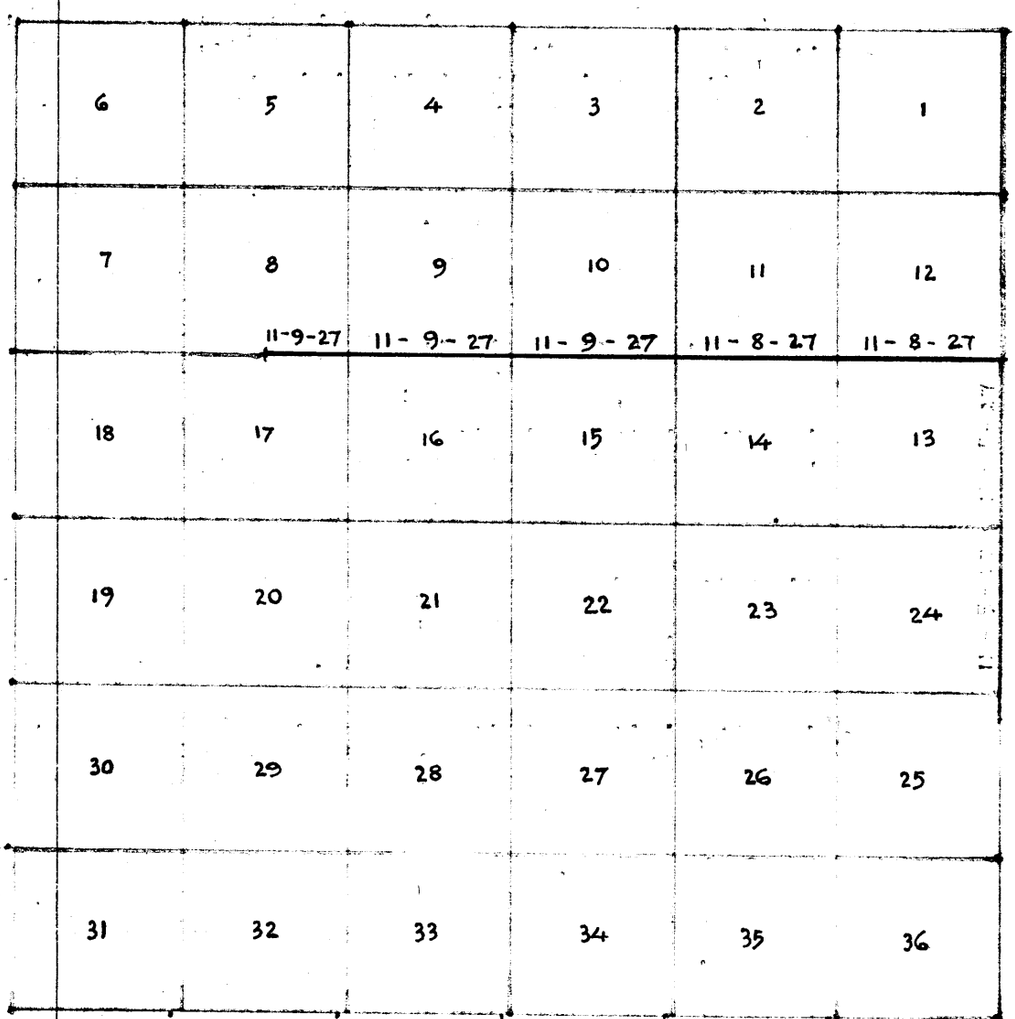
Book "G"

Group 145 Arizona

Township 32 North Range 3 West

DATE DIAGRAM

1927



Surveyed by Leroy R.Hanson, U.S.Transitman on dates shown thereon.

The following notes describe the survey of certain subdivisional lines for the purpose of locating the Grand Canyon National Park Boundary. No subdivisional surveys in this Tp. are of record.

The surveys herein described, were executed on dates shown on diagram on page 1 hereof, by Leroy R.Hanson, U.S. Transitman using Young & Son Transit No. 8477; the instrument is equipped with Smith Solar Attachment and otherwise conforms to Standard requirements of the General Land Office.

PRELIMINARY FIELD TEST
of
Young & Son Transit No.8477
by
Leroy R.Hanson, U.S.Transitman.

November, 8, 1927: at the cor. secs. 7, 12, 13 and 18, Ts. 32N., Rs.2 and 3 W., latitude 36° 9' 56"N., and longitude 112°33'W., at 4h.26m., a.m., l.m.t., observe Polaris at Western Elongation, making four observations, two each with the telescope in direct and reversed positions and marking the mean point in the line thus determined by a tack set in top of stake, driven firmly in the ground about 5 chs. N.

Azimuth of Polaris at western elongation : 1°20' 25"

At 8 h. 00m., a.m., app. t., deflect 88°39½' to the west and prolong this line, testing the solar apparatus during the day, as follows:
At 9h.00m., a.m., app. t., set off 36°10'N., on the lat. arc, 16°23½'S., on the decl. arc and determine a meridian with the solar which is found to agree with the true meridian.

At 12h.00m., app. noon, with the lat. arc unchanged, observe the sun on the meridian; the resultant reading of the decl. arc is 16°26'S., which agrees with the computed declination of the sun.

At 3h.00m., p.m., app.t., with lat. arc unchanged, set off 16°27½'S., on the decl. arc and determine a meridian with the solar which is found to agree with the true meridian.

As all of the obsns. taken during the usual hours of solar work agree within 1' of the true meridian, conclude that the adjustments of the instrument is satisfactory.

Unless otherwise specified all measurements are made with a Lufkin steel tape, 5 chs. in length, compared with a Lufkin standard and found correct.

The measurements are made on the slope, the vertical angle determined and the slope measurements properly reduced to true horizontal distances.

Chains	
	From the cor. secs. 7, 12, 13 and 18, described in book "F" of this Group,
	West, on true line, bet. secs. 12 and 13, on Park Bdy.
	Over rolling land, thru heavy timber and scattering undergrowth.
	Desc. gradual W. slope.
2.30	Wash, 10 lks. wide, course SW.
	Asc. 20 ft. over E. slope. Enter scattering timber, brs. N-S.
9.00	Ridge, brs. NE-SW. Over level surface of same.
16.00	Leave ridge; desc. 51 ft. over NW slope.
26.80	Wash, 20 lks. wide, course SW.
	Asc. 51 ft. over SE slope.
33.75	Ridge, brs. NE-SW. Over level surface of same, to
40.00	Set an iron post 3 ft. long, 1 in. in diam., 12 ins. in the ground to bedrock, deposit a stone mkd. with a cross (X) at base of post, supported by a md. stone, for the ¼ sec. cor. secs. 12 and 13, with brass cap mkd.
	¼ S 12 / S 13
	1927
	No suitable trees available.
41.00	Leave level; desc. 69 ft. over W. slope.
50.00	Wash, 10 lks. wide, course SW.
	Asc. 81 ft. over E. slope.
73.75	Ridge, brs. NE-SW. Over level surface of same.
78.25	Desc. 37 ft. over NW slope.
80.00	Set an iron post 3 ft. long, 2 ins. in diam., 15 ins. in the ground to bedrock, deposit a stone mkd. with a cross (X) at base of post, supported by a md. stone, for the cor. secs. 11, 12, 13 and 14, with brass cap mkd.
	T32N R3W / S11 S12 / S14 S13
	1927
	No suitable trees available.
	Land, rolling and level.
	Soil, rocky 4th. rate.
	Timber, cedar and pinion.
	Undergrowth, sagebrush and cacti.

	West, on true line, bet. secs. 11 and 14, on Park Bdy.
	Over rolling land, thru scattering timber and undergrowth.
	Desc. 185 ft. over NW slope.
10.05	Wash, 20 lks. wide, course SW.
	Asc. 45 ft. over SE slope.
13.00	Spur, slopes S.
	Desc. 31 ft. over W. slope.
26.00	Enter draw bottom, 4 chs. wide, course SW.
30.00	Leave bottom, asc. 144 ft. over broken E. slope.
40.00	Set an iron post 3 ft. long, 1 ins in diam., 24 ins. in the ground for the ¼ sec. cor. secs. 11 and 14, with brass cap mkd.
	¼ S 11 / S 14
	1927
	No trees available; raise a md. stone 3 ft. base, 1½ ft. high N. of cor.

Chains	
	Enter mtns. land.
	Asc. 114ft. over SE slope.
44.15	Spur, slopes SW.
	Desc. gradual NW slope.
46.40	Wash, 20 lks. wide, course SW.
	Asc. 122 ft. over SE slope.
56.90	Ridge, bears NE-SW. Over level surface of same.
63.40	Desc. 284 ft. over NW slope.
71.50	Wash, 100 lks. wide, course SW.
	Asc. 46 ft. along SE slope to
80.00	Set an iron post 3 ft. long, 2 ins. in diam., 12 ins. in the ground to bedrock, deposit a stone mkd. with a cross (X(at base of post, supported by a md. stone, for the cor. secs. 10, 11, 14 and 15, with brass cap mkd.

T32N R3W
S10 S11
S15 S14

1927

No trees available.

Land, rolling and mountainous.
Soil, rocky 4th. rate.
Timber, cedar and pinion.
Undergrowth, sagebrush and cacti.

West, on true line, bet. secs. 10 and 15, on Park Bdy.
Over mountainous land, thru scattering timber and undergrowth.
Desc. gradual NW slope.

1.70	Wash, 10 lks. wide, course SE.
	Asc. 37 ft. over NE slope.
6.00	Spur, slopes SE.
	Desc. 118 ft. over SW slope.
10.00	Wash, 20 lks. wide, course SE.
	Asc. 164 ft. over NE slope.
16.15	Spur, slopes S.
	Desc. 23 ft. over SW slope.
21.15	Wash, 20 lks. wide, course S.
	Asc. 185 ft. over SE slope.
32.00	Spur, slopes gradually to SW; over level land, to
40.00	Set an iron post 3 ft. long, 1 in. in diam., 4 ins. in the ground to bedrock, supported by a md. stone, for the ¼ sec. cor. secs. 10 and 15, with brass cap mkd.

¼ S 10
S 15

1927 from which,
a cedar, 15 ins. in diam., brs. N.80½°W., 31 lks. dist., mkd. ¼ S10 BT
a cedar, 8 ins. in diam., brs. S.24°W., 135 lks. dist., mkd. ¼ S15 BT

USGS BM and Triangulation Sta. 5946 brs. N.14°48'E., 62.34 chs. dist.
Desc. 34 ft. over NW slope.

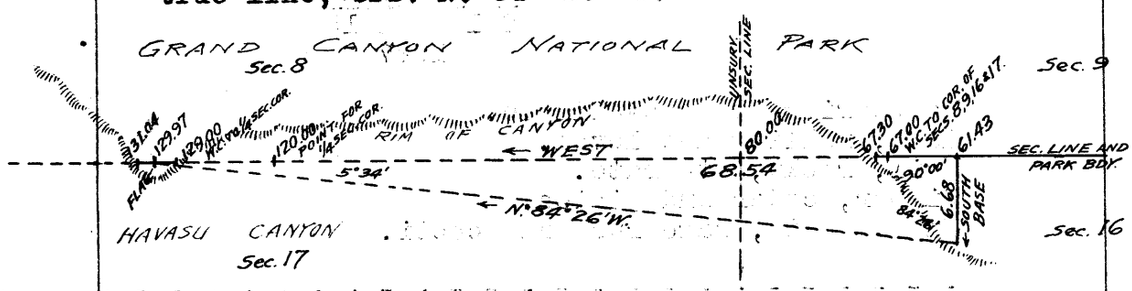
46.30	Wash, 20 lks. wide, course SW.
	Asc. gradual SE slope.
66.50	Bench, brs. NE-SW; over level surface of same.

Survey of Part of the Subdivision Lines of T. 32 N., R. 3 W.

Chains	
80.00	Set an iron post, 3 ft. long, 2 ins. in diam., 16 ins. in the ground to bedrock, deposit a stone mkd. with a cross (X) at base of post, supported by a md. of stone for the cor. of secs. 9, 10, 15 and 16, with brass cap mkd.
	T 32 N . R 3 W. S 9 | S 10 S 16 | S 15 1927
	No bearing trees available. Land, rolling and level. Soil, rocky, 4th rate. Timber, cedar and pinion. Undergrowth, sagebrush and cacti.
	- -
	West, on true line, bet. secs. 9 and 16, on Park Bdy. Over rolling land, thru scattering timber and undergrowth.
10.00	Top of bench, brs. NW-SE. Desc. 44 ft. over West slope.
29.00	Wash, course NW., into Rattlesnake Canyon. Asc. gradual NE. slope.
40.00	Set an iron post, 3 ft. long, 1 in. in diam., 6 ins. in the ground, to bedrock, deposit a stone mkd. with a cross (X) at base of post, and raise a md. of stone around post for ¼ sec. cor. of secs. 9 and 16, with brass cap marked
	¼ S 9 / S 16 1927
	No bearing trees available. Continue on ascent over NE. slope.
41.50	Rim of bench, brs. NW. and SE. Over level surface of same.
61.43	Rim of bench. Set point for triangulation hereinafter described. Leave bench. Desc. over W. slope to
67.00	Set an iron post, 3 ft. long, 2 ins. in diam., 24 ins. in the ground for witness cor. to cor. of secs. 8, 9, 16 and 17, with brass cap mkd.
	T 32 N R 3 W W C S 8 | S 9 S 17 | S 16 1927
	No trees available; raise a md. of stone, 3 ft. base, 1½ ft. high, N. of cor. Descend slightly over W. slope to.
67.30	East of right rim of Havasu Canyon, brs. NW. and SE. Discontinue chaining.
80.00	True point for cor. of secs. 8, 9, 16 and 17, falls in canyon on precipitous slopes where it is impracticable to monument the corner. Establish W. C. at 13.00 chs. E., as hereinbefore described. Land, rolling and mountainous. Soil, rocky, 4th rate. Timber, cedar and pinion. Undergrowth, sagebrush and cacti.
	- -
	From true point for cor. of secs. 8, 9, 16 and 17.

Survey of Part of the Subdivision Lines of T. 32 N., R. 3 W.

Chains	
	West, on true line, bet. secs. 8 and 17, on Park Bdy.
	Over mountainous land, on East or right wall of Havasu Canyon.
	Measurement by triangulation as follows:
	Set flag ahead on true line.
	From 61.43 ch. point bet. secs. 9 and 16, measure a base south 6.68 chs. From S. end of base flag ahead on true line, brs. N. 84° 26' W.



	Triangulated distance	68.54 chs. West
	Chained dist, bet. secs. 9 & 16	61.43 " "
	Dist. from cor. of secs. 9, 10, 15 & 16 to flag point	129.97 chs. West.
	Length of line bet. secs. 9 & 16.	80.00 "
	Dist. from point for cor. of secs. 8, 9, 16 & 17, to flag point	49.97 chs. West.
	Return chaining to W. C.	0.97 " East
	Dist. on line bet. secs. 8 and 17, from sec. cor. to W. C. to ¼ sec. cor.	49.00 chs. West

40.00 True point for ¼ sec. cor. of secs. 8 and 17, falls on cliffs in Havasu Canyon, where it is inaccessible and can not be monumented, therefore a witness cor. thereto is established 9.00 chs. west.

The top of Burro Mountain is about 10.00 chs. North from the true point for ¼ sec. cor. of secs. 9 and 16.

49.00 East or right rim of Havasu Canyon, bearing NE. & SW.

Set an iron post, 3 ft. long, 1 in. in diam., 6 ins. in ground to bedrock, deposit a stone mkd. with a cross (X) at base of post, and raise a mound of stone around post, for witness cor. to ¼ sec. cor. of secs. 8 and 17 with brass cap mkd.

$$\frac{1}{4}\ \frac{S\ 8}{S\ 17}\ W\ C$$

1927

No bearing trees available. Descend slightly over SW. slope.

49.97 Flag point of triangulation hereinbefore described.

Continue chaining on sec. line to

51.04 East or right rim of Havasu Canyon, bearing NW. and SE.

The remainder of the sec. line falls in Havasu Canyon, the precipitous slopes of which render chaining impracticable, therefore discontinue survey of the sec. line and Park Bdy. at this point.

This Park Bdy. extends due West from this point to West or left rim of Havasu Canyon, thence northwesterly along said rim to a point on the Colorado River.

The bottom of Havasu Canyon, course NW. is about 70 chs. West from and about 2000 ft. below 51.04 ch. station on sec. line.

Land, mountainous.

Soil, rocky, 4th rate.

Timber, cedar and pinion.

Undergrowth, sagebrush and cacti.

Chains

All chaining on the lines described in the foregoing notes was duplicated in order to secure accuracy.

- -

The continued satisfactory adjustment of the instrument used in the execution of the surveys described in the foregoing notes is indicated from final field tests of same described in Book "A".

- -

GENERAL DESCRIPTION.

The lands along the surveyed line described in the foregoing notes are rolling in the east part and to the west break abruptly into Havasu Canyon, about 2,000 ft. deep. The soil, is rocky, 4th rate, and about 1 ft. deep to bedrock; the timber becomes scattering towards the west.

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8

4—680

BOOK 3860

FIELD ASSISTANTS.

to

Leroy R. Hanson, U.S.Transitman

NAMES.	CAPACITY.
McMillan Pollock	1st Chainman
Charles McDonald	2nd Chainman
Floyd Wright	Flagman
Ivan Workman	Axman

6—2764

18

9

BOOK 3860

CERTIFICATE OF UNITED STATES SURVEYOR.

I, Leroy R. Hanson, U.S. Transitman, hereby certify upon honor that, in pursuance of special instructions received from the District Cadastral Engineer, for Group 145, Arizona bearing date of the 11th day of May, 1927, I have well, faithfully, and truly in my own proper person, and in strict conformity with said instructions, the Manual of Surveying Instructions, and the laws of the United States, surveyed all those parts or portions of

the subdivision lines of Township 32 North, Range 3 West

of the Gila & Salt River Base & Meridian, in the State of Arizona, which are represented in the foregoing field notes as having been executed by me, and under my direction; and that all the corners of said survey have been established and perpetuated in strict accordance with the Manual of Surveying Instructions, and the special written instructions of the District Cadastral Engineer, for Group 145, Arizona, and in the specific manner described in the field notes, and that the foregoing are the original field notes of such survey.

and by diagram on page 1 hereof

Place: Phoenix, Arizona

Date: May 1, 1928.

Leroy R. Hanson
U.S. Transitman

APPROVAL.

OFFICE OF THE U.S. SUPERVISOR OF SURVEYS,

Denver, Colo., April 20, 1929

The foregoing field notes of the survey of

Part of the Grand Canyon National Park Boundary formed by part of the subdivision lines of Township 32 North, Range 3 West

of the Gila and Salt River Base and Meridian, State of Arizona

executed by Leroy R. Hanson, U.S. Transitman

under his special instructions dated May 11, 1927 for Group 145 Arizona, having been critically examined, and the necessary corrections and explanations made, the said field notes, and the surveys they describe, are hereby approved.

U.S. SUPERVISOR OF SURVEYS.

~~I certify that the foregoing transcript of the field notes of the above-described surveys in~~

~~, has been correctly copied from the original notes on file in this office.~~

~~U. S. Surveyor-General.~~

6—2764