

*The 4th Principal Meridian:
Its History and Resurvey in
Minnesota*

Presented by Jordan M. Ketola

2013 MSPS Annual Meeting

Wednesday, February 6th, 2013

Ramada Mall of America, Bloomington, MN

Objectives

- 1) *Understand why there are surveys done under both the 4th and 5th Principal Meridians in Minnesota*
 - *This includes taking a look at Minnesota's Territorial History*
- 2) *Understand the origins of the 4th P.M.*
 - *Also looking at the surveys of Wisconsin in the 4th to get to Minnesota*
- 3) *Understand the history to get to the 4th P.M. itself in Minnesota*
 - *Highlight the original surveyors that made it possible*

Objectives cont'd

4) *Analyze Resurveys*

– *Both GLO and BLM*

5) *Any other objectives you would like to discuss?*

Why are there 2 meridians governing the surveys in Minnesota?

- Stems back to the territorial history



Territorial History

- Throughout the territorial history, often times the state of Minnesota was defined in two parts being separated by the Mississippi River and the Northwest Angle, as described in the original Northwest Territory.
- The division between the 4th and 5th PM is the Mississippi River (besides a few townships around the Twin Cities) until about present day Aitkin, where it then runs North along the 3rd Guide Meridian to the Canadian border, near present day Loman.

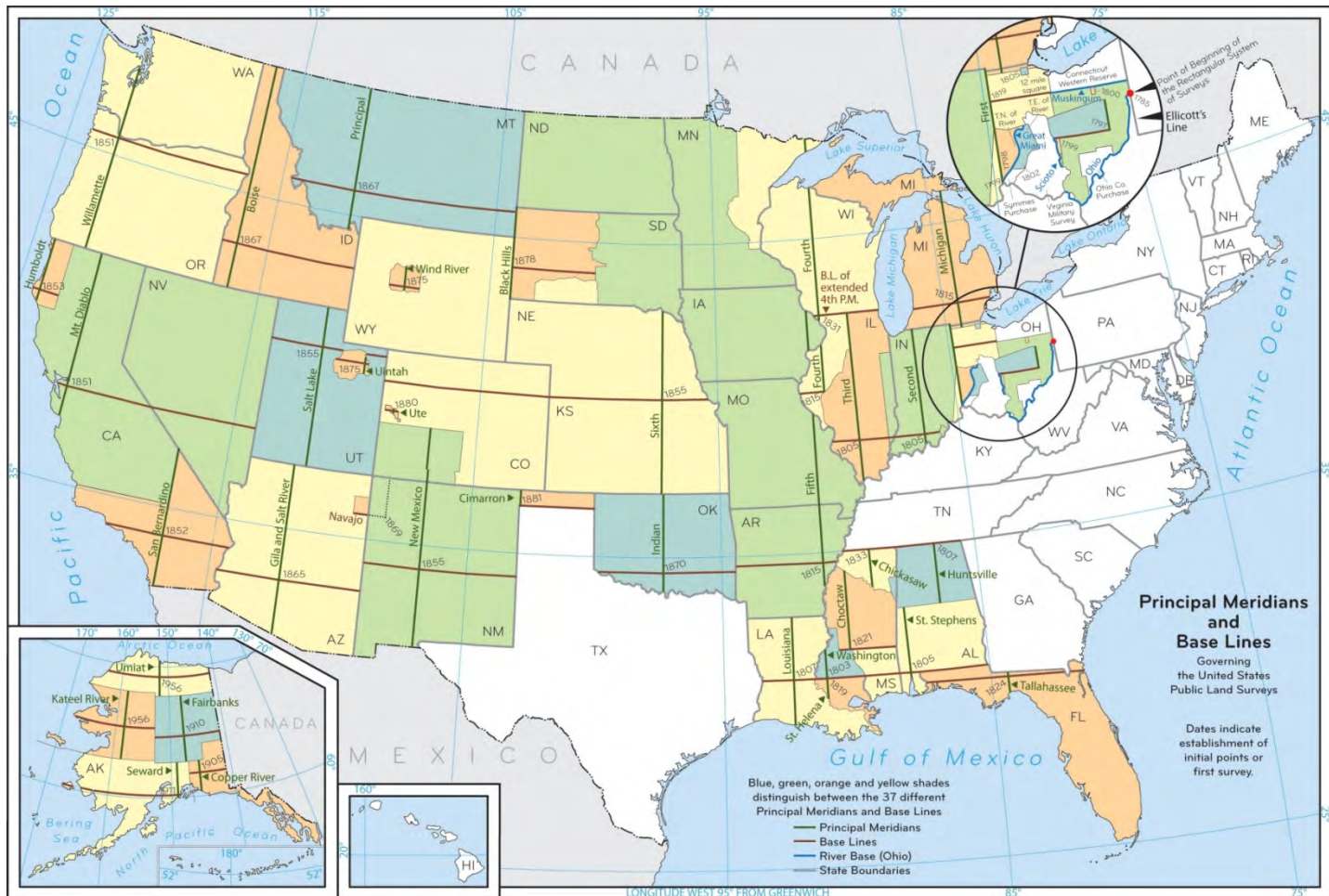
Territorial History, cont'd

- “ . . . the establishment of the 3rd G. Mer. from where it would intersect the Mississippi river North of Crow Wing, to the North boundary of the Territory, as the line on which the surveys hitherto carried on East and West of the River should be connected . . . ”

*C.L. Emerson, Surveyor General, to GLO
Commissioner, 3/26/1858*

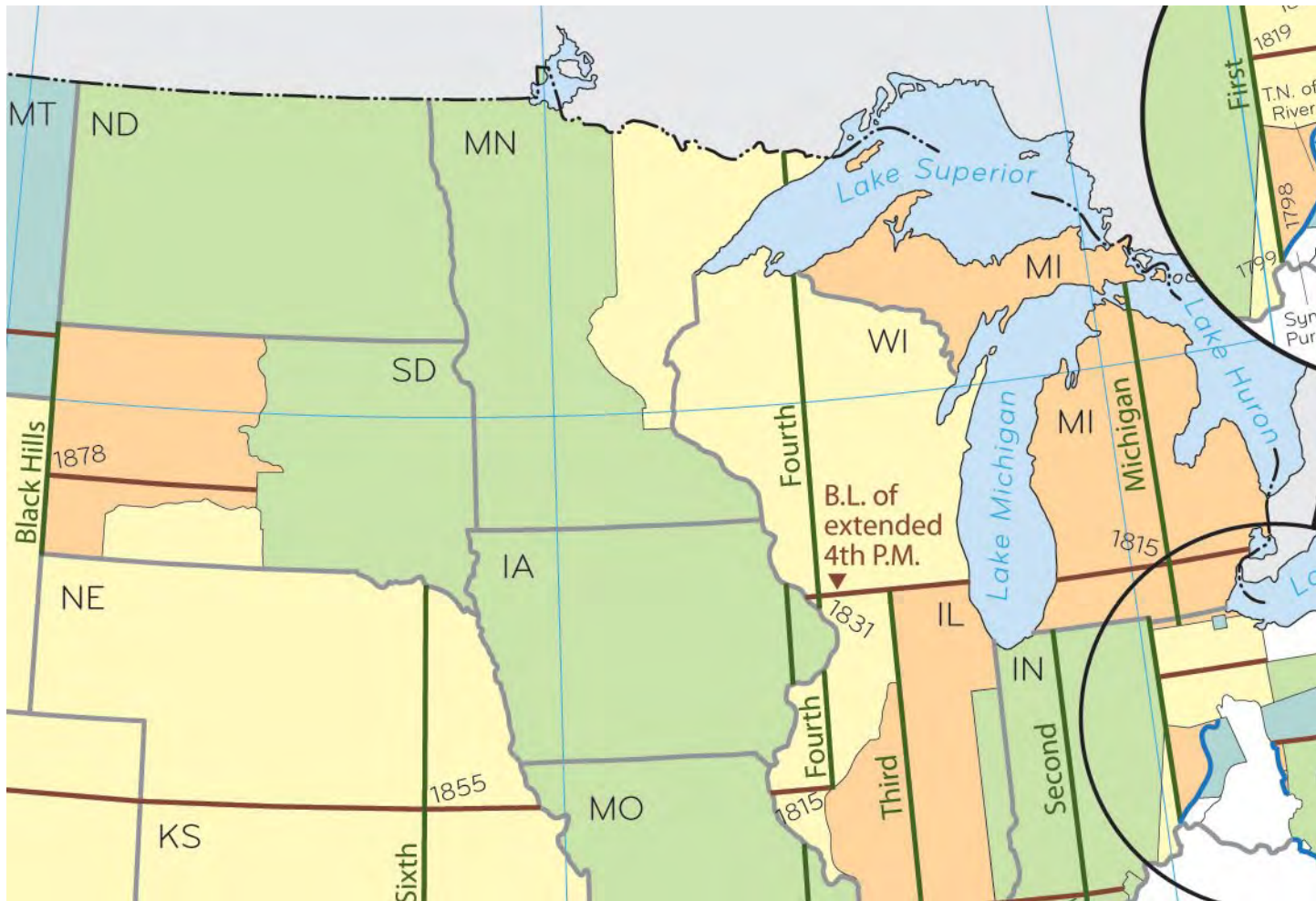
Origins of the 4th P.M.

We've all seen this, right?



Origins of the 4th P.M., cont'd

Let's examine how the 4th got started



Origins of the 4th P.M., cont'd

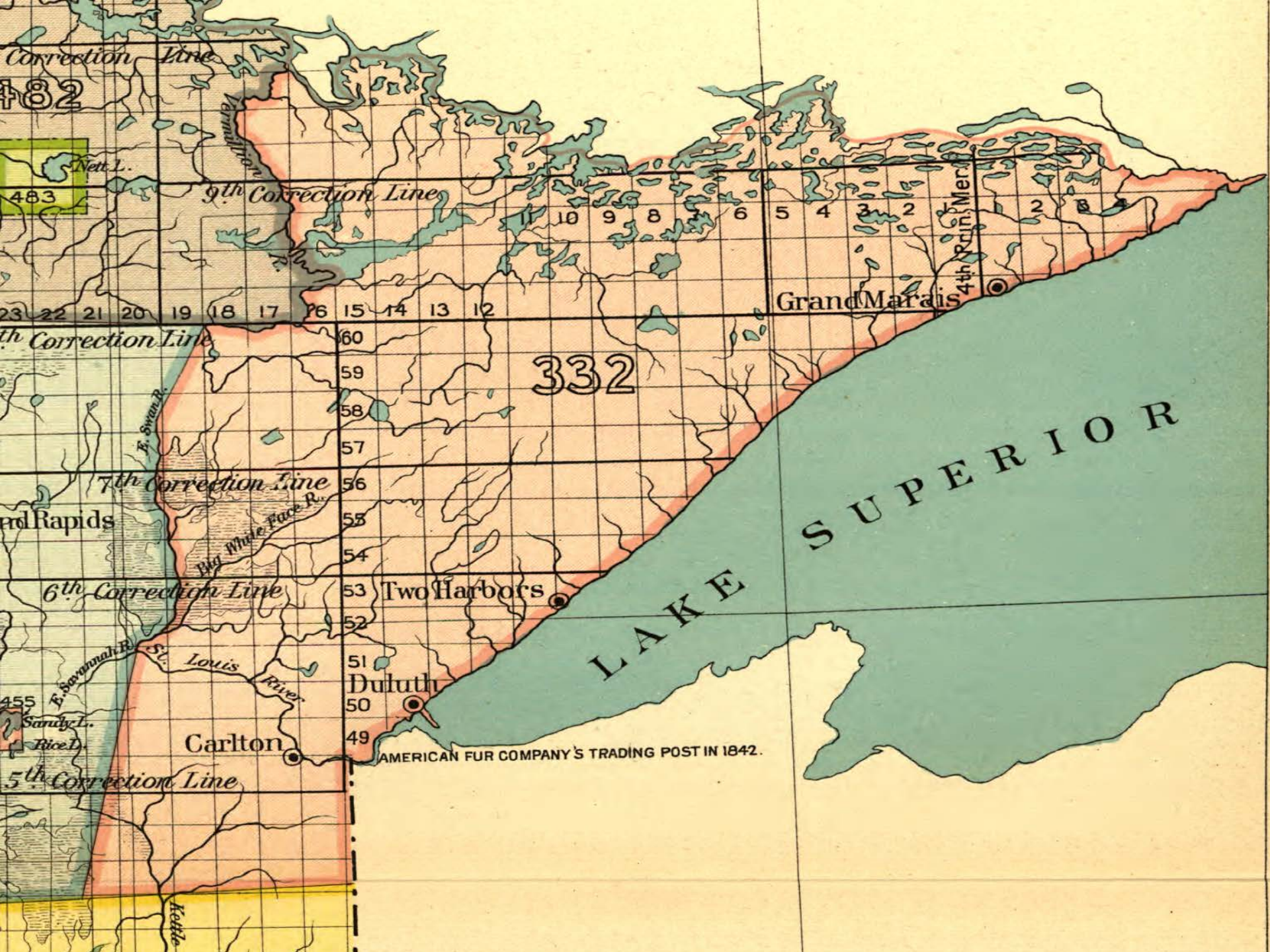
- In 1815 the Initial Point of the 4th P.M. was established near the bank of the Illinois River near what is now Beardstown, Ill.
- In the 1820's the lead mining boom in southwestern WI put pressure on the Federal Gov't to subdivide the land.
- In 1831 the Initial Point of the Extended 4th P.M. was established on the Northern Border of Illinois, about 10 miles east of the Mississippi River, near what is present day Hazel Green, WI.

Origins of the 4th P.M., cont'd



1854 Treaty of La Pointe

- The treaty ceded all of the Lake Superior Ojibwe lands to the United States in the Arrowhead Region of Northeastern Minnesota, in exchange for reservations for the Lake Superior Ojibwe in Wisconsin, Michigan, and Minnesota.



182

483

23 22 21 20 19 18 17 16 15 14 13 12

332

Correction Line

9th Correction Line

8th Correction Line

7th Correction Line

6th Correction Line

5th Correction Line

Rapids

Carlton

Two Harbors

Duluth

Grand Marais

LAKE SUPERIOR

AMERICAN FUR COMPANY'S TRADING POST IN 1842.

Vermilion

E. Sween R.

Big White Face R.

E. Savannah R.

S. Louis River

Kettle

4th Poin. Mer.

Sandy L.
Rice I.

1854 Treaty of La Pointe, cont'd

Article 2 outlines the boundaries for the Fond Du Lac and Grand Portage Reservations in Minnesota. Grand Portage was described as:

“Beginning at a rock a little east of the eastern extremity of Grand Portage Bay, running thence along the lake shore to the mouth of a small stream called by the Indians Maw-ske-gwaw-caw-maw-se-be, or Cranberry Marsh River, thence up said stream, across the point to Pigeon River, thence down Pigeon River to a point opposite the starting-point, and thence across to the place of beginning.”

1854 Treaty of La Pointe, cont'd

Article 3 states

“The United States will define the boundaries of the reserved tracts, whenever it may be necessary, by actual survey, and the President may, from time to time, at his discretion, cause the whole to be surveyed . . . ”

- This was one of the main reasons to extend surveys up the shore of Lake Superior, aside from settlement purposes.

1854 Treaty of La Pointe, cont'd

“ You will at an early period select out and carefully determine what particular localities in your Surveying District are required to be surveyed by reason of either the treaty stipulations with the Chippewas and also such as are demanded for actual settlement . . . ”

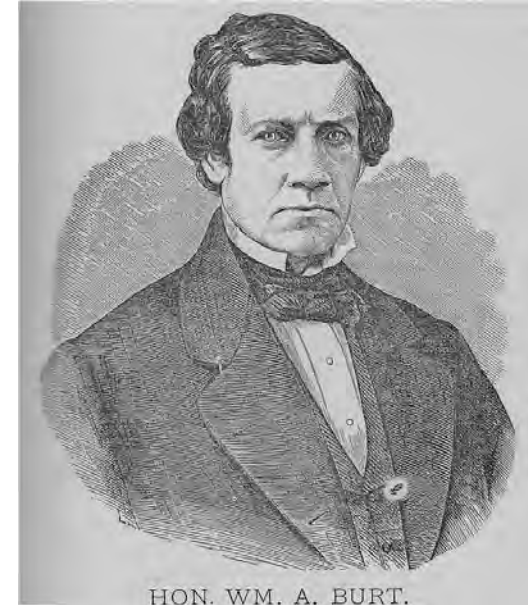
From T.A. Hendricks, GLO Commissioner, 6/4/1857

William Austin Burt

THE William Austin Burt???

- the elder: 6/13/1792 to 8/18/1858
 - USDS 1833 to 1853
- taught many young men in the Detroit area the art of surveying
- Had 5 sons that assisted him and also became Deputy Surveyors

- the younger: 10/31/1825 to 12/19/1898
 - USDS 1847 to 1858



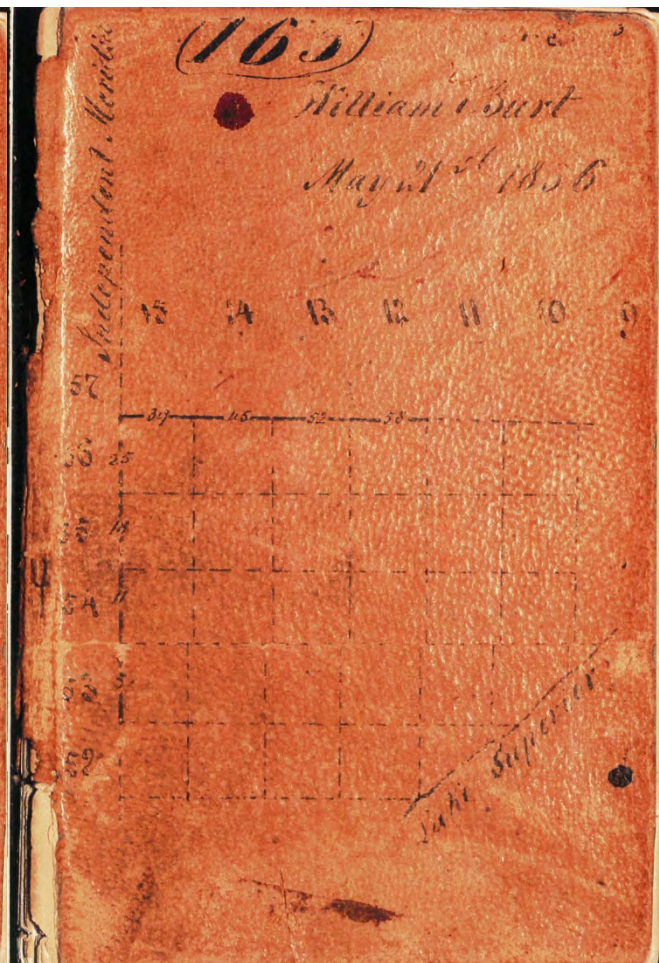
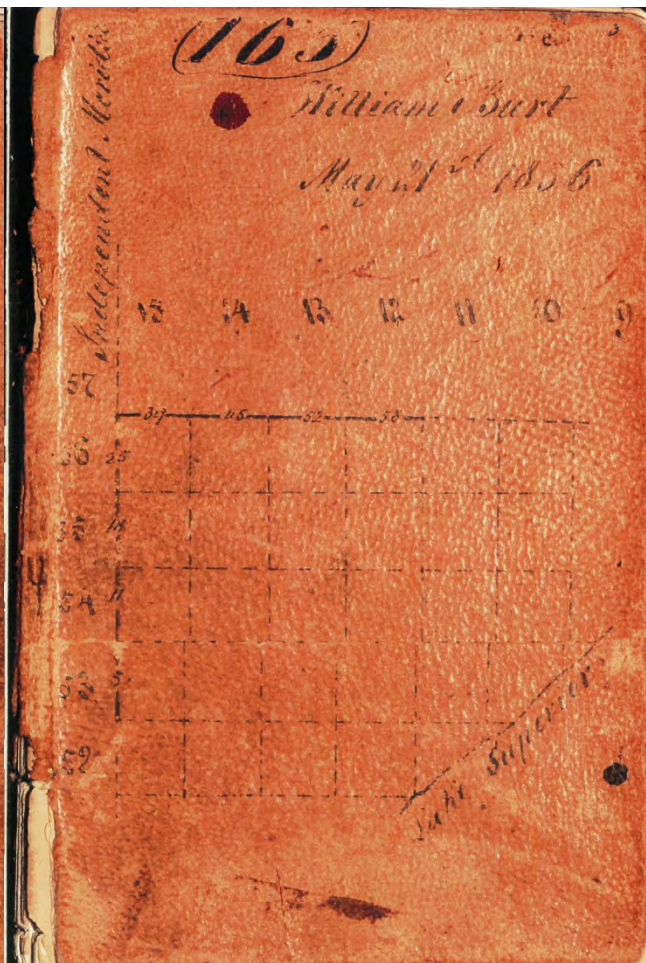
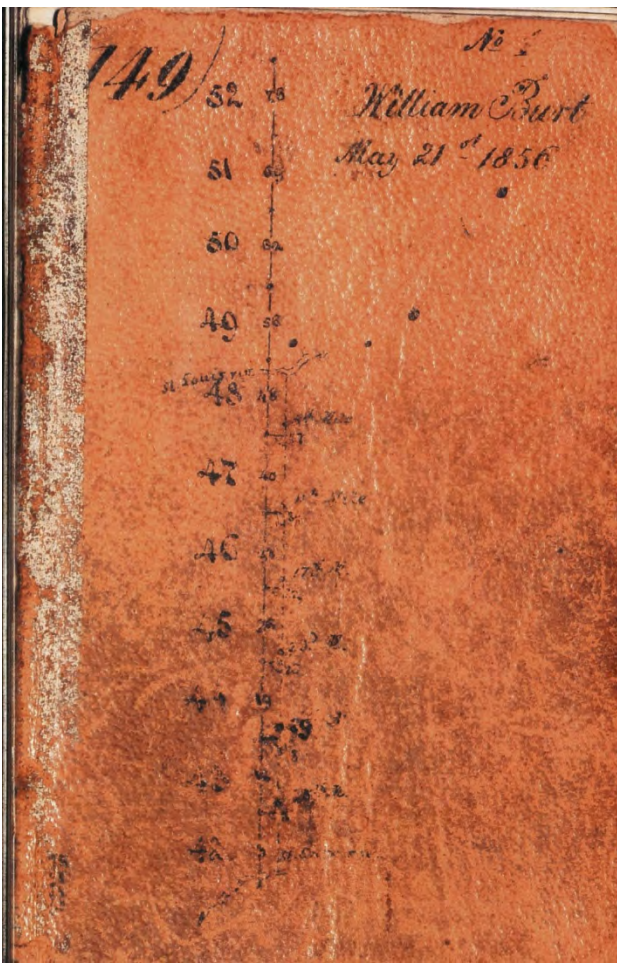
William Austin Burt, cont'd

Under Contract dated 5/21/1856 to:

- “. . . commence the survey of your district at the corner to Townships No. 41&42 North, Rgs. 15&16 West 4th Mer, and from thence run an Independent Meridian north to the corner to Towns. 56&57 . . . ”
- “You are also to survey correction lines from the corner to Townships No. 53&54 and 56&57 respectively due East to Lake Superior . . . ”

From Warner Lewis, Surveyor General, 5/26/1856

William Austin Burt, cont'd

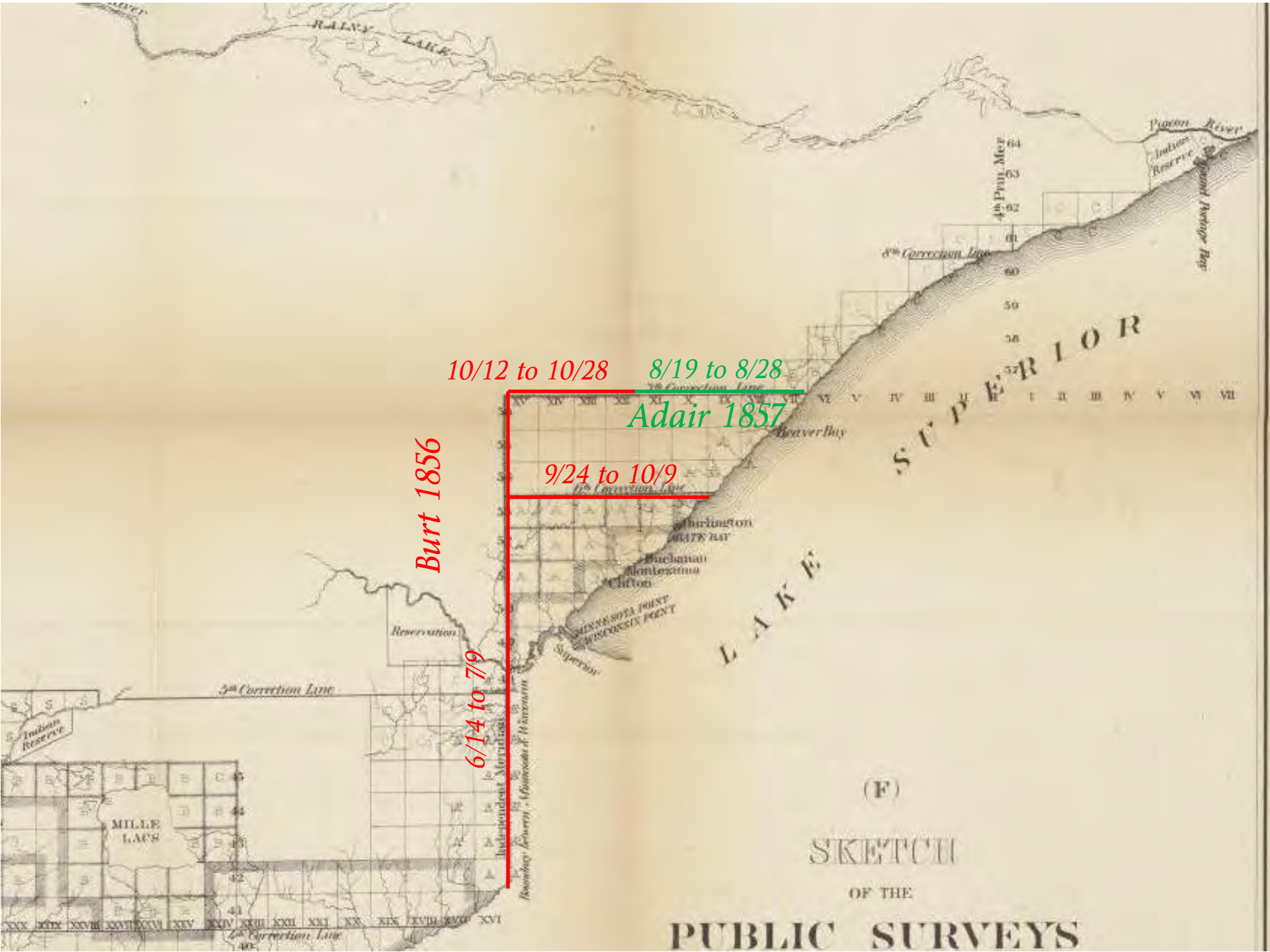


George E. Adair

Under Contract dated 7/23/1857:

- “You will commence operations by first extending the correction line, from the S.E. corner of T57NR12W, East to Lake Superior. You will then commence at the S.E. corner of T54NR11W and run up the range line between 11 & 12. Then proceed to lay off into Townships all East of this line to the Lake, after completing which you will finish Ranges 12,13,14 & 15 in the order named.”

From C.L. Emerson, Surveyor General, 7/1/1857



10/12 to 10/28 8/19 to 8/28

Adair 1857

9/24 to 10/9

Burt 1856

6/14 to 7/9

(F)

SKETCH

OF THE

PUBLIC SURVEYS

George E. Adair, cont'd

- Was from Utica (Macomb Co.) Michigan and was more than likely trained in surveying from William A. Burt.
- Performed many other contracts in Michigan

George H. Cannon

Born 12/30/1826

Was closely linked to William A. Burt

- Was from Washington (Macomb Co.), Michigan, and was more than likely trained in surveying from William A. Burt.
- He had worked with Burt on contracts in Michigan.
- Was only 23 years old when appointed his first Deputy Surveyor contract in Michigan.

George H. Cannon, cont'd

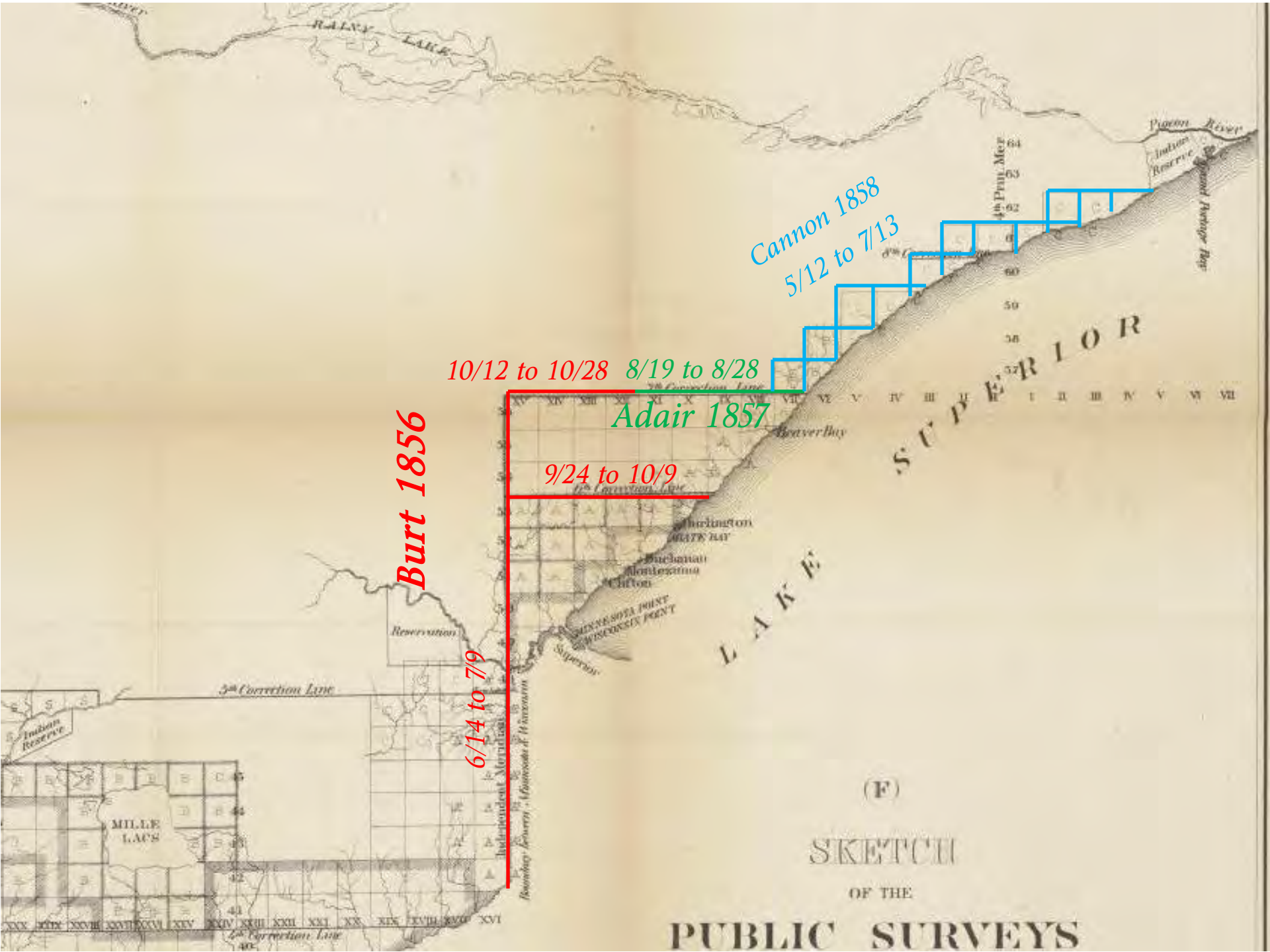
- Married Lucy Cole, Burts neice.
- He considered Burt his mentor and had wrote several articles and essays about him.
- He states in a letter to the Surveyor General on 4/20/1858: “It would be very desirable to leave Detroit in company with Mr. Adair Deputy Surveyor who expects to leave for his District about the 1st of May.”

George H. Cannon, cont'd

Was under Contract dated 5/5/1858

- “the establishment of the exterior boundaries and the subdivision of the Fractional Townships lying on the North Shore of Lake Superior between T56NR6West 4th Prin. Mer: and Pigeon River (on National Boundary) or so much thereof as you could complete the present season.”

From C.L. Emerson, Surveyor General, 4/13/1858



Cannon 1858
5/12 to 7/13

10/12 to 10/28 8/19 to 8/28

Adair 1857

9/24 to 10/9

Burt 1856

6/14 to 7/9

(F)

SKETCH

OF THE

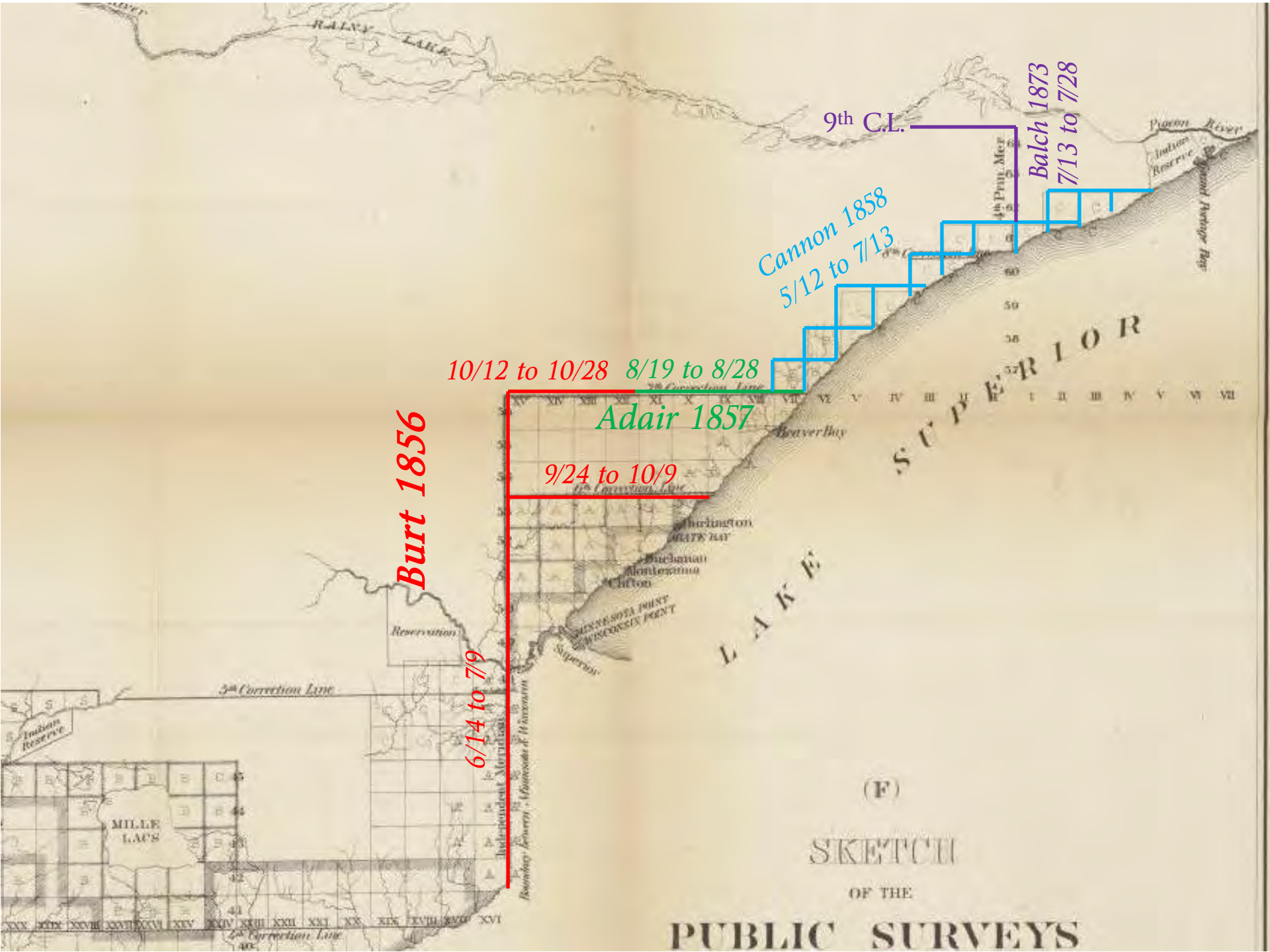
PUBLIC SURVEYS

George H. Cannon, cont'd

- 6/7/1858 - North $\frac{1}{4}$ Corner to Section 1 of T59NR4W, Cannon marks a Cedar, 18" N20W, 10 links.
- 1966 - 108 years later Cedar is recovered and is reported as 24".
- 2012 - 154 years later Cedar is alive and healthy and is reported as 25".

Albert V. Balch

- I found very little correspondence or documentation at the Minnesota Historical Society, or other research elsewhere.
- Under contract dated 7/10/1873 for:
“The 4th Principal Meridian in Townships 62,63&64 N. the 10th Correction Line in Ranges 1,2&3 W, Township lines between Townships 62&63, 63&64 N of Range 1 West, Range line between Ranges 1&2 W of Townships 62,63&64 North, Subdivision of Township 63 North of Range 1 West 4th Prin Mer.”



Burt 1856

Adair 1857

**Cannon 1858
5/12 to 7/13**

9th C.L.

**Balch 1873
7/13 to 7/28**

10/12 to 10/28 8/19 to 8/28

9/24 to 10/9

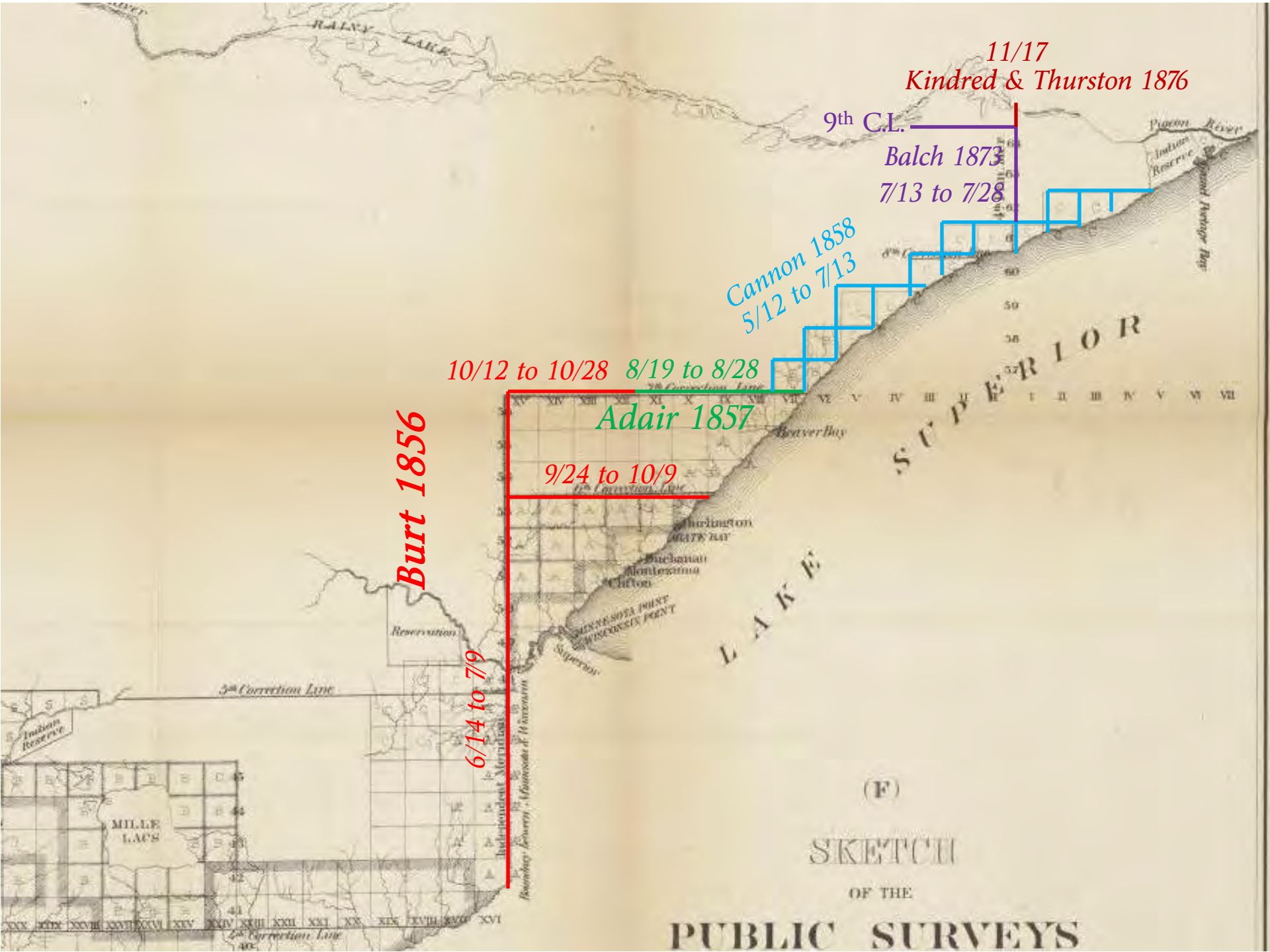
6/14 to 7/9

(F)
SKETCH
OF THE
PUBLIC SURVEYS

*William A. Kindred &
Charles E. Thurston*

Under contract dated 9/23/1876 for:

“The survey of the 4th Princ. Mer. from the 9th
Cor. Line North to the International
Boundary”



11/17
Kindred & Thurston 1876

9th C.L.

Balch 1873

7/13 to 7/28

Cannon 1858
5/12 to 7/13

10/12 to 10/28 8/19 to 8/28

Adair 1857

9/24 to 10/9

Burt 1856

6/14 to 7/9

(F)

SKETCH

OF THE

PUBLIC SURVEYS

Resurveys of the 4th P.M.

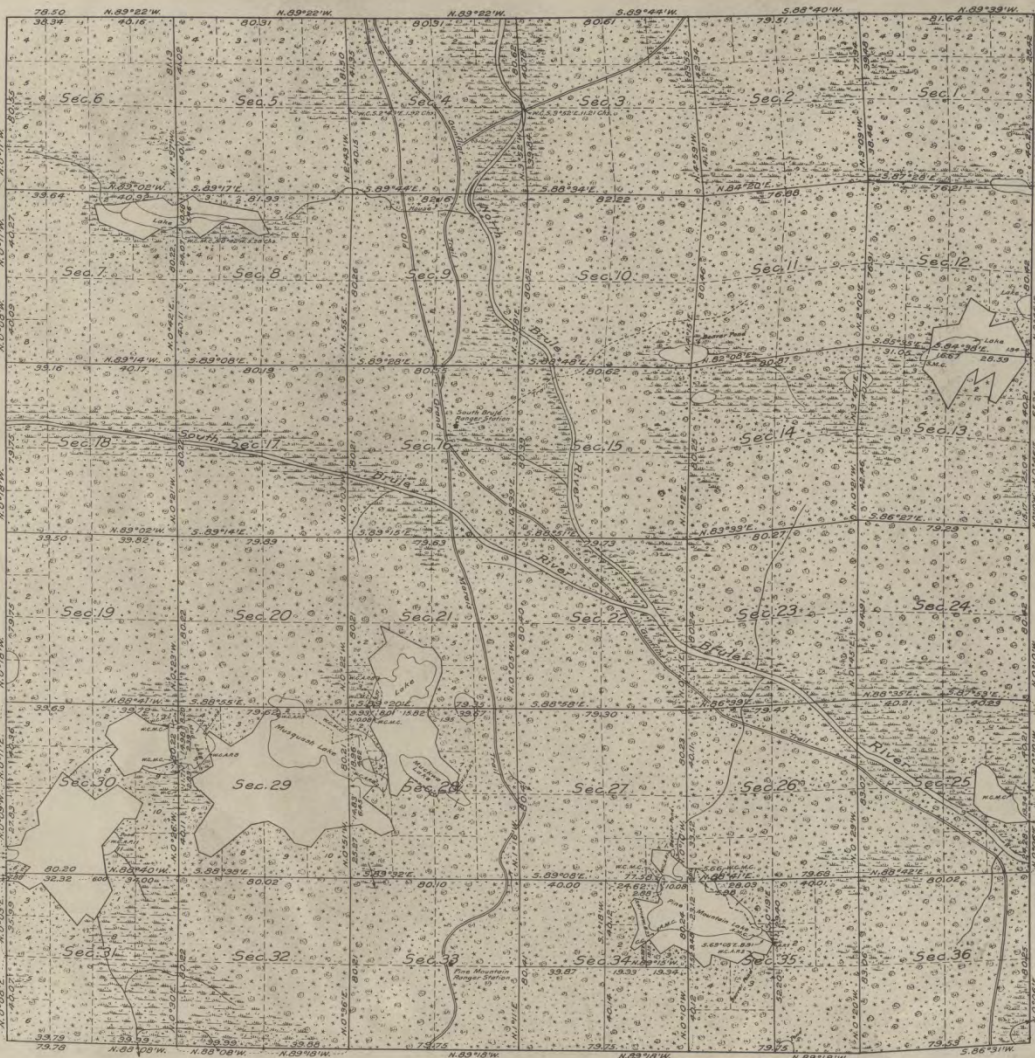
1924 Guy R. Veal

The first authorized GLO resurvey of a portion of the 4th was under Group No. 19, for the resurvey of all of T63NR1E, assigned to Veal, Harrington & Brown, dated 6/12/1924.

Field work from 7/31/1924 to 10/15/1925.

Had a total of 22 crew members!

Resurvey Plat of T.63 N., R.1 E., 4th Prin. Mer., Minnesota.
In Three Sheets



MEMORANDUM.

This plat is based upon a reestablishment of the lines defining the lands in Township 63 North, Range 1 East, of the 4th Principal Meridian, Minnesota, as shown upon the official plat approved January 21, 1880, and an extension survey including lands not shown upon said plat.

The original lines have been identified and the corners remonumented with iron posts having brass caps suitably marked and witnessed by new bearing trees.

See Sheets Nos. 2 and 3 of this township, Group No. 19, Minnesota, for the showing of the new lot numbers and areas of the omitted lands, the topographic features on the omitted lands and the "a" and "b" areas within those sections that are invaded by certain lakes.

LEGEND.

Scale: 1 inch = 40 chains.

Surveyed by Guy R. Veal, Earl G. Harrington, and Arthur W. Brown, U. S. Cadastral Engineers, from July 31, 1924 to October 15, 1925, under special instructions for Group No. 19, Minnesota, dated June 12, 1924, issued by Frank M. Johnson, Supervisor of Surveys, and supplemental special instructions for Group No. 19, Minnesota, dated July 22, 1925, issued by Arthur D. Kidder, Associate Supervisor of Surveys, which were approved by the Commissioner of the General Land Office on June 30, 1924 and August 12, 1925, respectively.

Office of U. S. Supervisor of Surveys.
Denver, Colorado, September 27, 1926.

The above resurvey plat of Township No. 63 North, Range No. 1 East, of the Fourth Principal Meridian, in the State of Minnesota, is strictly conformable to the field notes of the resurvey thereof, which have been examined and approved.

Frank M. Johnson
U. S. Supervisor of Surveys.

DEPARTMENT OF THE INTERIOR.
GENERAL LAND OFFICE.

Washington, D. C., March 26, 1927

The resurvey represented by this plat, having been correctly executed in accordance with the requirements of law and the regulations of this office, is hereby accepted.

Thomas C. Howell
Assistant Commissioner.

Resurveys of the 4th P.M., cont'd

1924 Guy R. Veal, cont'd

Veal resurveyed the 4th P.M., and recovered Balch original evidence at 12 of 17 corners set along the line, 51 years later. Balch's line was typically found within 50 links per mile and 10' bearing from North.

Resurveys of the 4th P.M., cont'd

1929 Wesson Cook

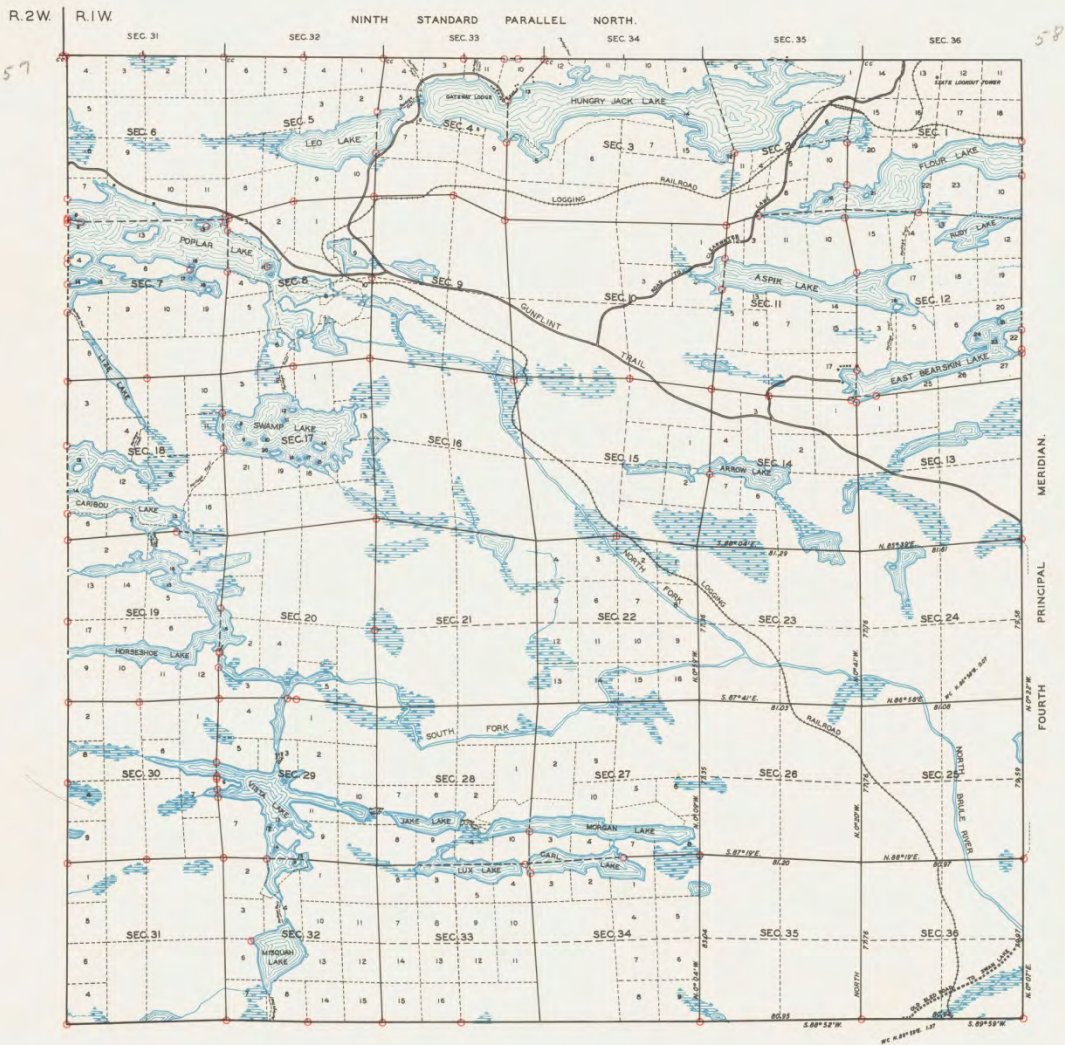
Under Group No. 28, with Special Instructions dated 5/18/1929, Wesson Cook resurveyed the 4th P.M. through T64NR1W during a complete resurvey of the township.

Field work from 6/22/1929 to 8/18/1931.

Had a total of 13 crew members, 1 of which was on the 1924 Veal resurvey. Beverly Johnson, Axman, is the first woman I've seen listed as an assistant (could be a man?).

TOWNSHIP NO. 64 NORTH, RANGE NO. 1 WEST OF THE FOURTH PRINCIPAL MERIDIAN, MINNESOTA.

DEPENDENT RESURVEY.



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MEMORANDUM

THIS PLAT OF THE RESURVEY OF T. 64 N., R. 1 W., DELINEATES A RETRACEMENT AND REESTABLISHMENT OF THE LINES OF THE ORIGINAL SURVEY AS SHOWN UPON THE PLAT APPROVED OCTOBER 21884, IN THEIR TRUE ORIGINAL POSITIONS ACCORDING TO THE BEST AVAILABLE EVIDENCE OF THE POSITION OF THE ORIGINAL CORNERS; ALL DIFFERENCES BETWEEN THE MEASUREMENTS SHOWN ON THE ORIGINAL PLAT AND THOSE DERIVED IN THE RETRACEMENT HAVE BEEN DISTRIBUTED PROPORTIONALLY BETWEEN ACCEPTED CORNERS IN ACCORDANCE WITH SURVEYING RULES; REFERENCE WILL BE MADE TO THE ORIGINAL PLAT FOR THE SHOWING OF AREAS EXCEPT WHERE REVISED LOTTINGS OF PUBLIC LAND AREAS IN DISTORTED SECTIONS IN MEANDERING LAKES WITHIN THE TOWNSHIP WHICH WERE NOT INCLUDED IN THE ORIGINAL SURVEY AS SHOWN UPON THE ORIGINAL PLAT.

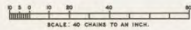
AUTHORITY FOR THE RESURVEY OF THE TOWNSHIP IS CONTAINED IN GENERAL LAND OFFICE LETTER 108818 D DATED JUNE 5, 1928 WHICH BEARS DEPARTMENTAL APPROVAL UNDER DATE OF JUNE 7, 1928 THE ISLAND SURVEYS WERE AUTHORIZED BY LETTER DATED JUNE 22, 1931 WHICH BEARS DEPARTMENTAL APPROVAL UNDER DATE OF JUNE 23, 1931.

DETAILED DATA RELATING TO THE RESURVEY OF SECS. 23, 24, 25, 26, 35 AND 36 IS SHOWN ON THIS PLAT DETAILED DATA RELATING TO THE REMAINDER OF THE TOWNSHIP AND THE ISLAND SURVEYS, IS SHOWN ON SUPPLEMENTAL PLATS AS FOLLOWS:

SHEET NO 2: SECS. 1, 2, 3, 10, 11, 12, 13, 14 AND 15.
SHEET NO 3: SECS. 4, 5, 6, 7, 8, 9, 16, 17 AND 18.
SHEET NO 4: SECS. 19, 20, 21, 22, 27, 28, 29, 30, 31, 32, 33, 34 AND 34.

THE RED CIRCLES ON THIS PLAT INDICATE THE POSITIONS OF THE IDENTIFIED CORNERS OF THE ORIGINAL SURVEY.

THE WHOLE TOWNSHIP IS COVERED WITH BIRCH, POPLAR, PINE, SPRUCE, BALSAM AND CEDAR TIMBER, WITH UNDERGROWTH OF HAZEL, MAPLE, WILLOW AND ALDER, MAKING A DENSE FOREST.



AREA RESURVEYED: 20,376.37 ACRES.
AREA SURVEYED: 8.54 "

OFFICE OF U.S. SUPERVISOR OF SURVEYS

DENVER, COLORADO, AUGUST 13, 1934
THE ABOVE PLAT OF TOWNSHIP NO. 64 NORTH, RANGE NO. 1 WEST, OF THE FOURTH PRINCIPAL MERIDIAN, MINNESOTA, IS STRICTLY CONFORMABLE TO THE FIELD NOTES OF THE SURVEY THEREOF WHICH HAVE BEEN EXAMINED AND APPROVED.

Wm. H. Damon
U.S. SUPERVISOR OF SURVEYS.

DEPARTMENT OF THE INTERIOR
GENERAL LAND OFFICE.

WASHINGTON, D.C. AUGUST 21, 1934.
THE SURVEY REPRESENTED BY THIS PLAT HAVING BEEN CORRECTLY EXECUTED IN ACCORDANCE WITH THE REQUIREMENTS OF LAW AND THE REGULATIONS OF THIS OFFICE, IS HEREBY ACCEPTED.

Antoniette Lund
ASSISTANT COMMISSIONER.

LINES DESIGNATED.	BY WHOM SURVEYED	GROUP			MILEAGE		WHEN SURVEYED	
		NO.	DATE	M.L.S.	CH.S.	BEGUN	COMPLETED	
EXTERIOR SUBDIVISIONAL MEANDERS CONNECTIONS	WESSON COOK U.S. TRANSITMAN	28	MAY 18, 1930	23	75.20	JUNE 22, 1929.	AUGUST 18, 1931	
		80	JULY 23, 1930	11	60			
		88	JUNE 12, 1931	76	77			
		9		52	29			

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Resurveys of the 4th P.M., cont'd

1929 Wesson Cook, cont'd

Cook recovered Balch original evidence at 7 of 18 corners set along the line, 56+ years later. Balch's line was typically found within 50 links per mile and 10' bearing from North, besides the last ½ mile because he had to Single Proportion the township corner on the 9th Standard Parallel.

Cook notes: "The dependent type of resurvey was employed in spite of the eccentricities disclosed in the original survey, it being the only method applicable because of the fact that two-thirds of the land in the township is in private ownership."

Resurveys of the 4th P.M., cont'd

1935 Wesson Cook

Under Group No. 19, with Special Instructions dated 6/12/1924, Wesson Cook resurveyed the 4th P.M. through T65NR1E during a complete resurvey of the township.

Field work from 7/19/1935 to 8/15/1936.

Had a total of 8 crew members.

TOWNSHIP NO. 65 NORTH, RANGE NO. 1 EAST OF THE FOURTH PRINCIPAL MERIDIAN, MINNESOTA.

DEPENDENT RESURVEY AND EXTENSION SURVEYS.

SECTIONS 19, 20, 21, 28, 29, 30, 31, 32, AND 33.

IN 2 SHEETS
SHEET NO. 2



SCALE. 20 CHAINS TO AN INCH.

AREA RESURVEYED, 3,205.54 ACRES.
AREA SURVEYED, 285.94 ACRES.

LINES DESIGNATED	BY WHOM SURVEYED	GROUP NO.	MILEAGE		WHEN SURVEYED		
			DATE	MLS.	CHS.	BEGUN	COMPLETED
INTERNATIONAL BDY.			JUNE 12,	1	37.53		
EXTERIOR	WESSON COOK,		1924.	2	5.97	JULY 19,	AUGUST 15,
SUBDIVISIONAL	TRANSITMAN.	19	JULY 2,	11	43.12	1935.	1936.
MEANDER			1936.	21	26.20		

MEMORANDUM.

THIS PLAT OF THE RESURVEY OF A PORTION OF TOWNSHIP 65 NORTH, RANGE 1 EAST, DELINEATES A RETRACEMENT AND REESTABLISHMENT OF THE LINES OF THE ORIGINAL SURVEY AS SHOWN UPON THE PLAT APPROVED NOVEMBER 6, 1877, IN THEIR TRUE ORIGINAL POSITIONS ACCORDING TO THE BEST AVAILABLE EVIDENCE OF THE POSITION OF THE ORIGINAL CORNERS. ALL DIFFERENCES BETWEEN THE MEASUREMENTS SHOWN ON THE ORIGINAL PLAT AND THOSE DERIVED IN THE RETRACEMENT HAVE BEEN DISTRIBUTED PROPORTIONALLY BETWEEN ACCEPTED CORNERS IN ACCORDANCE WITH SURVEYING RULES. REFERENCE WILL BE MADE TO THE ORIGINAL PLAT FOR THE SHOWING OF AREAS EXCEPT WHERE REVISED LOTTING OF PUBLIC LAND AREAS IN CERTAIN SECTIONS IS INDICATED ON THIS PLAT.

THE POSITION OF THE ORIGINAL RECORD-MEANDER COURSES OF CLEARWATER LAKE FRONTING ALONG ORIGINAL LOTS 1, 2, 3, 4 AND 5, SECTION 32, AND OF CARIBOU LAKE FRONTING ALONG LOTS 1, 2 AND 3, SECTION 33, IS SHOWN BY AN IRREGULAR LINE WITH NUMBERED ANGLE POINTS. THESE LINES AS ORIGINALLY REPORTED ARE GROSSLY IN ERROR, AND HAVE THEREFORE BEEN MARKED AS FIXED BOUNDARIES WITH THE DIRECTIONS AND LENGTHS OF THE SEVERAL COURSES ADJUSTED TO THE RECORD OF THE ORIGINAL SURVEY.

THE POSITION OF THE ORIGINAL RECORD-MEANDER COURSES OF DANIELS LAKE IN SECTION 30 IS SHOWN BY AN IRREGULAR BROKEN LINE. THIS LINE, AS THUS ORIGINALLY REPORTED, IS GROSSLY IN ERROR AND HAS THEREFORE BEEN PROTRACTED ON THE PLAT AS A FIXED BOUNDARY, WITH THE DIRECTIONS AND LENGTHS OF THE SEVERAL COURSES ADJUSTED TO THE RECORD OF THE ORIGINAL SURVEY.

THE POSITION OF THE ORIGINAL RECORD-MEANDER COURSES OF WATAP LAKE IN SECTIONS 19 AND 20, OF CLEARWATER LAKE IN SECTIONS 28, 29, AND 31, AND OF CARIBOU LAKE IN SECTION 33, ADJACENT TO CERTAIN PATENTED LANDS, IS INDICATED ON THE PLAT BY A LIGHT BROKEN LINE.

THE ACTUAL AREA OF EACH SUBDIVISION IN SECTION 19 CROSSED BY THE INTERNATIONAL BOUNDARY LINE, UNITED STATES AND CANADA, IS SHOWN ON THE PLAT WITH THE DESIGNATING LETTER "A", DENOTING THE PART THEREOF IN THE UNITED STATES.

AUTHORITY FOR THE RESURVEY IS CONTAINED IN GENERAL LAND OFFICE LETTER 1040291 "E" DATED FEBRUARY 18, 1924, WHICH BEARS DEPARTMENTAL APPROVAL OF THE SAME DATE; THE EXTENSION SURVEYS WERE AUTHORIZED BY LETTER DATED JUNE 10, 1936, WHICH BEARS DEPARTMENTAL APPROVAL OF JUNE 13, 1936.

THE WHOLE TOWNSHIP IS WELL TIMBERED WITH BIRCH, POPLAR, PINE, SPRUCE, BALSAM, AND CEDAR, WITH UNDERGROWTH OF HAZEL, MAPLE, WILLOW, AND ALDER.

OFFICE OF THE SUPERVISOR OF SURVEYS.
DENVER, COLORADO, OCTOBER 5, 1938.

THE ABOVE PLAT OF SECTIONS 19, 20, 21, 28, 29, 30, 31, 32 AND 33, TOWNSHIP NO. 65 NORTH, RANGE NO. 1 EAST, FOURTH PRINCIPAL MERIDIAN, MINNESOTA, IS STRICTLY CONFORMABLE TO THE FIELD NOTES OF THE RESURVEY THEREOF, WHICH HAVE BEEN EXAMINED AND APPROVED.

Thomas D. Danon
SUPERVISOR OF SURVEYS.

UNITED STATES
DEPARTMENT OF THE INTERIOR.
GENERAL LAND OFFICE.
WASHINGTON, D. C., JUNE 20, 1939.

THE RESURVEY REPRESENTED BY THIS PLAT, HAVING BEEN CORRECTLY EXECUTED IN ACCORDANCE WITH THE REQUIREMENTS OF LAW AND THE REGULATIONS OF THIS OFFICE, IS HEREBY ACCEPTED.

Joseph David Walden
ACTING ASSISTANT COMMISSIONER.

Resurveys of the 4th P.M., cont'd

1935 Wesson Cook, cont'd

Cook recovered Kindred & Thurston original evidence at 6 of 7 corners set along the line, 59 years later. Although Kindred & Thurston's line was typically found within 50 links per mile, the bearings varied widely.

Cook notes: "The complete retracement of the original survey in this township discloses that the work was very poorly executed. In addition to wide discrepancies in the positions of the lines and corners, the field note record of corner descriptions and bearing trees is in many cases erroneous as to the variety, size, bearing, and distance of the trees actually marked. In each case where the trees are in disagreement with the record, but have been identified by age, distinctive type of mark, or otherwise, as the most reliable evidence of the original survey, the corner point has been located facing the blazes on the trees or as nearly as possible in the position which the original corner appears to have occupied.

Resurveys of the 4th P.M., cont'd

1937 Willis W. Bandy

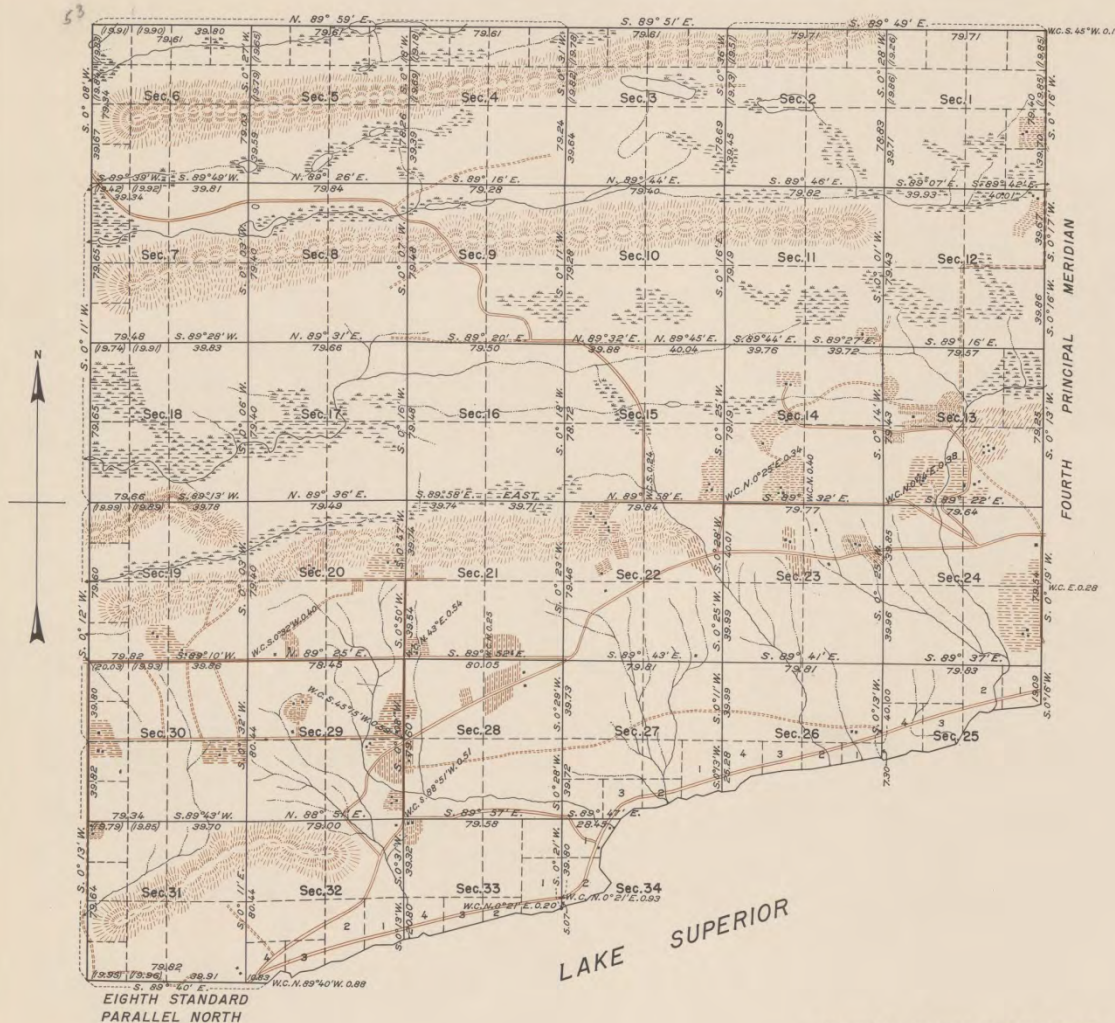
Under Group No. 52, with Special Instructions dated 7/8/1937, Willis W. Bandy resurveyed the 4th P.M. through T61NR1W during a complete resurvey of the township.

Field work from 7/13/1937 to 8/26/1937.

Had a total of 9 crew members.

TOWNSHIP NO.61 NORTH, RANGE NO.1 WEST, FOURTH PRINCIPAL MERIDIAN, MINNESOTA.

DEPENDENT RESURVEY.



MEMORANDUM.

THIS PLAT OF THE RESURVEY OF T. 61 N., R. 1 W. DELINEATES A RETRACEMENT AND REESTABLISHMENT OF THE LINES OF THE ORIGINAL SURVEY AS SHOWN UPON THE PLAT APPROVED JANUARY 21, 1860, IN THEIR TRUE ORIGINAL POSITIONS ACCORDING TO THE BEST AVAILABLE EVIDENCE OF THE POSITION OF THE ORIGINAL CORNERS. ALL DIFFERENCES BETWEEN THE MEASUREMENTS SHOWN ON THE ORIGINAL PLAT AND THOSE DERIVED IN THE RETRACEMENT HAVE BEEN DISTRIBUTED PROPORTIONALLY BETWEEN ACCEPTED CORNERS IN ACCORDANCE WITH SURVEYING RULES. REFERENCE WILL BE MADE TO THE ORIGINAL PLAT FOR THE SHOWING OF AREAS AND MORE DETAILED DESCRIPTIONS OF THE VARIOUS SMALLER SUBDIVISIONS.

THE RESURVEY WAS EXECUTED PURSUANT TO AUTHORITY CONTAINED IN GENERAL LAND OFFICE LETTER 1676465 "E" DATED MARCH 23, 1937, AND JULY 24, 1937 WHICH BEARS DEPARTMENTAL APPROVAL ON THE SAME DATE.

THE TOWNSHIP SUPPORTS A FAIR STAND OF SECOND GROWTH POPLAR, WHITE BIRCH, SPRUCE, BALSAM, CEDAR, AND ASH TIMBER, WITH DENSE UNDERGROWTH OF HAZEL, ALDER, MAPLE, CHERRY AND YOUNG TIMBER.

OFFICE OF THE SUPERVISOR OF SURVEYS.
DENVER, COLORADO, APRIL 19, 1941.

THE ABOVE PLAT OF TOWNSHIP NO. 61 NORTH, RANGE NO. 1 WEST, FOURTH PRINCIPAL MERIDIAN, MINNESOTA, IS STRICTLY CONFORMABLE TO THE FIELD NOTES OF THE RESURVEY THEREOF, WHICH HAVE BEEN EXAMINED AND APPROVED.

William E. Johnson
SUPERVISOR OF SURVEYS.

UNITED STATES
DEPARTMENT OF THE INTERIOR.
GENERAL LAND OFFICE.
WASHINGTON, D. C., APRIL 25, 1941.
THE RESURVEY REPRESENTED BY THIS PLAT, HAVING BEEN CORRECTLY EXECUTED IN ACCORDANCE WITH THE REQUIREMENTS OF LAW AND THE REGULATIONS OF THIS OFFICE, IS HEREBY ACCEPTED.

Joel David Wolfson
ASSISTANT COMMISSIONER.

SCALE: 40 CHAINS TO AN INCH.

AREA RESURVEYED: 20,280.14 ACRES.

LINES DESIGNATED	BY WHOM SURVEYED	GROUP NO.	DATE	MILEAGE		WHEN SURVEYED	
				MLS.	CHS.	BEGUN	COMPLETED
EXTERIOR	WILLIS W. BANDY, SURVEYOR.	52	JULY 8, 1937.	17	22.82	JULY 13,	AUG. 26,
SUBDIVISIONAL				53	59.52	1937.	1937.
MEANDER				5	56.81		

Resurveys of the 4th P.M., cont'd

1937 Willis W. Bandy, cont'd

Bandy recovered Cannon original evidence (or perpetuated) at 6 of 10 corners set along the line, 79 years later. Cannon's line was typically found about 50 links short per mile and about 15' East bearing from North.

In and around 1910, Axel Berglund, Cook Co. Surveyor perpetuated some corners from recovered original evidence along the 4th P.M. that Bandy then accepted in 1937.

Resurveys of the 4th P.M., cont'd

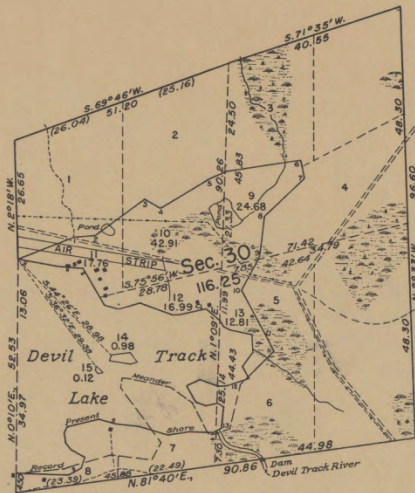
1950 Norville E. Shearer

Under Group No. 75, with Special Instructions dated 7/5/1950, Norville E. Shearer resurveyed the 4th P.M. through Section 30 in T62NR1E.

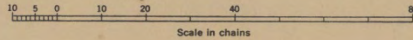
Field work from 7/20/1950 to 8/7/1950.

Additional copy on back of drawing

TOWNSHIP 62 NORTH, RANGE 1 EAST, OF THE FOURTH PRINCIPAL MERIDIAN, MINNESOTA DEPENDENT RESURVEY, EXTENSION SURVEY AND SURVEY OF TWO ISLANDS, SECTION 30



AREA RESURVEYED: 409.40 ACRES
AREA SURVEYED: 116.25 ACRES



This plat represents a retracement and reestablishment of the boundaries of Sec. 30, as shown upon the plat approved January 29, 1890, designed to restore all corners in their original locations according to the best available evidence, and the survey of islands and shore lands which were omitted from the original survey.

The position of the original record meander courses of Devil Track Lake is shown by an irregular line with numbered angle points. This line, as originally reported, was grossly in error and, with the exception of certain courses fronting on lots 6, 7 and 8, has been established as a fixed boundary, with the direction and length of the several courses adjusted to the record of the original survey.

Surveyed by Norville E. Shearer, Cadastral Engineer from July 20 to August 7, 1950 pursuant to Special Instructions for Group No. 75 dated July 5, 1950.

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Washington, D. C., May 22, 1951

This plat is strictly conformable to the approved field notes, and the survey, having been correctly executed in accordance with the requirements of law and the regulations of this Bureau, is hereby accepted.

For the Director

William F. Richards
Chief, Branch of Surveys

Resurveys of the 4th P.M., cont'd

1950 Norville E. Shearer, cont'd

Shearer recovered Balch original evidence (or perpetuated) at 3 of 4 corners set along the line, 77 years later. Balch's line was found almost 1 chain short in this mile.

In and around 1910, Axel Berglund, Cook Co. Surveyor, perpetuated 2 of the 4 corners from recovered original evidence along the 4th P.M. that Shearer then accepted in 1950.

Resurveys of the 4th P.M., cont'd

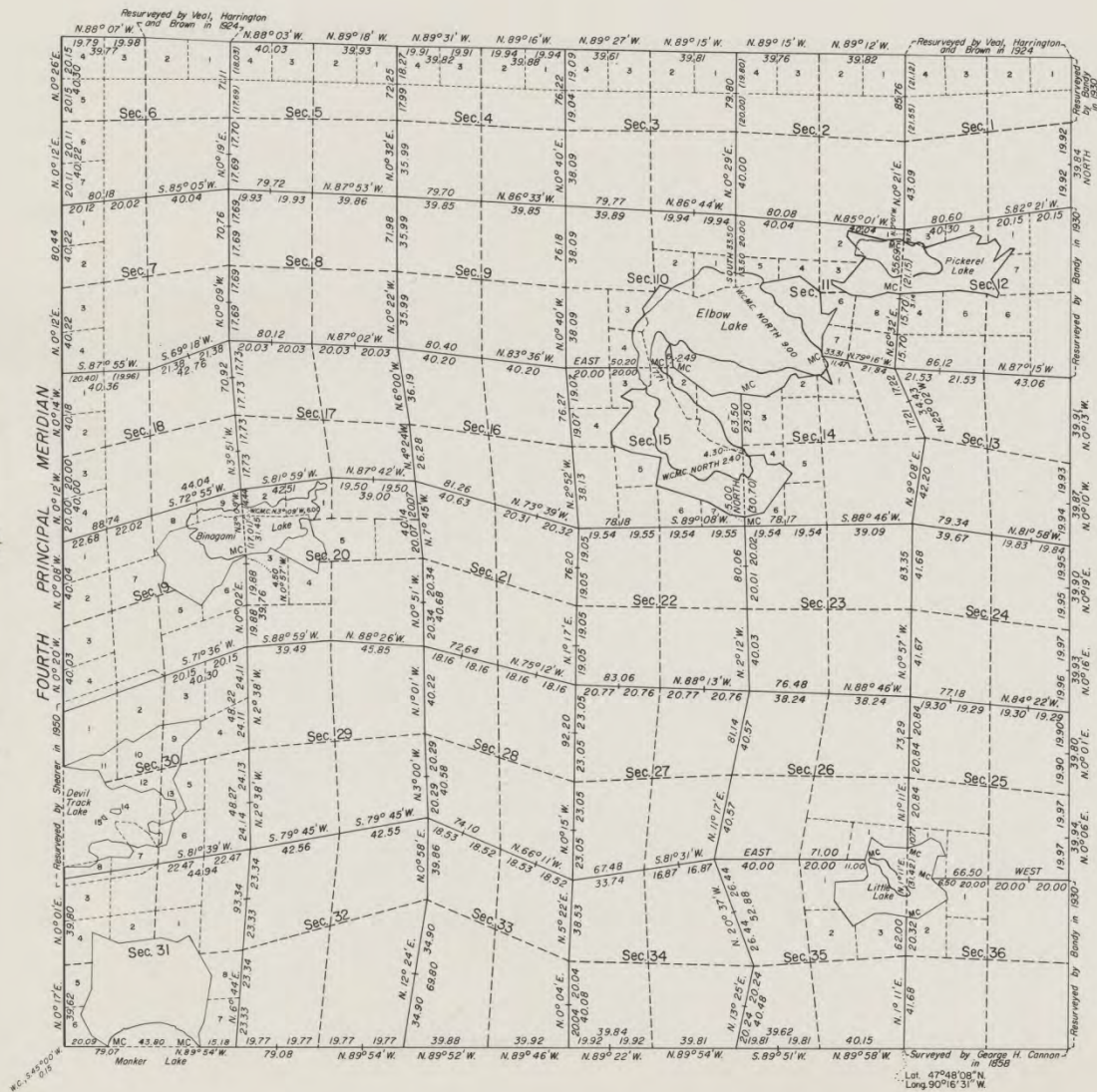
1974 Barry G. Krebs

Under Group No. 110, with Special Instructions dated 8/29/1974, Barry G. Krebs resurveyed the 4th P.M. through T62NR1E during a complete resurvey of the township.

Field work from 9/6/1974 to 10/16/1975.

TOWNSHIP 62 NORTH, RANGE 1 EAST, OF THE FOURTH PRINCIPAL MERIDIAN, MINNESOTA.

DEPENDENT RESURVEY



A history of surveys is contained in the field notes.

This plat represents the dependent resurvey of the west boundary (Fourth Principal Meridian) through T. 62 N., between Rgs. 1 E. and 1 W., a portion of the south, east and north boundaries, and a portion of the subdivisional lines designed to restore the corners in their true original locations according to the best available evidence, T. 62 N., R. 1 E., Fourth Principal Meridian, Minnesota.

The lottings and areas are as shown on the plat approved January 29, 1880.

The actual shorelines of the several lakes in the township are shown on the plat as derived from field traverses and aerial photographs. In those cases where material differences exist between the record meanders and the actual shorelines, the record meander lines are also shown.

Survey executed by Barry G. Krebs, Cadastral Surveyor, beginning September 6, 1974, and completed October 16, 1975, pursuant to Special Instructions dated August 29, 1974, for Group No. 110, Minnesota.

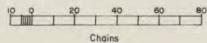
UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Denver, Colorado April 27, 1981

This plat is strictly conformable to the approved field notes, and the survey, having been correctly executed in accordance with the requirements of law and the regulations of this Bureau, is hereby accepted.

For the Director

[Signature]

Chief, Cadastral Survey
Examination and Approval Staff



Resurveys of the 4th P.M., cont'd

1974 Barry G. Krebs, cont'd

Krebs recovered Balch original evidence at 6 of 8 corners set along the line, 101 years later. Balch's line was typically found within 50 links per mile and 20' bearing from North.

Resurveys of the 4th P.M., cont'd

Resurvey summary

The 27+/- miles of the 4th P.M. has been entirely resurveyed and remonumented.

Through those resurveys, 41 of 64 corners had identified original evidence (or perpetuated from).

T61N - Cannon survey was good.

T62, 63, 64N - Balch survey was very good.

T65N - Kindred & Thurston survey was poor.

Did we meet our objectives?

- 1) Understand why there are surveys done under both the 4th and 5th Principal Meridians in Minnesota*
- 2) Understand the origins of the 4th P.M.*
- 3) Understand the history to get to the 4th P.M. itself in Minnesota*
- 4) Analyze Resurveys*

Questions?



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