ELECTRONICALLY FILED

41H-0094-R-2021

April 10, 2024

Montana Water Court

Mystic Lake Dam
1904/05

PLANS

OF THE

MYSTIC LAKE STORAGE RESERVOIR

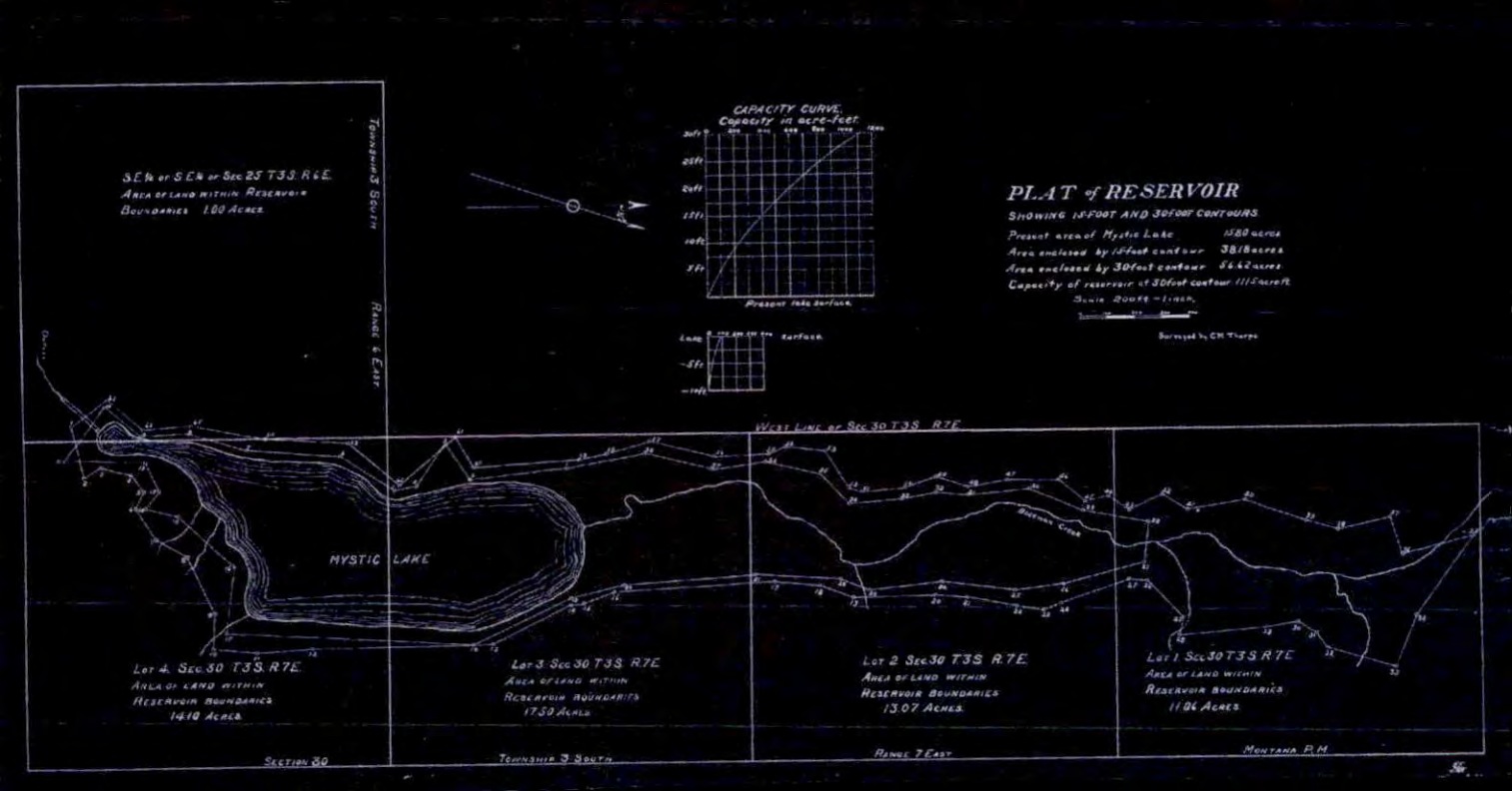
OF THE

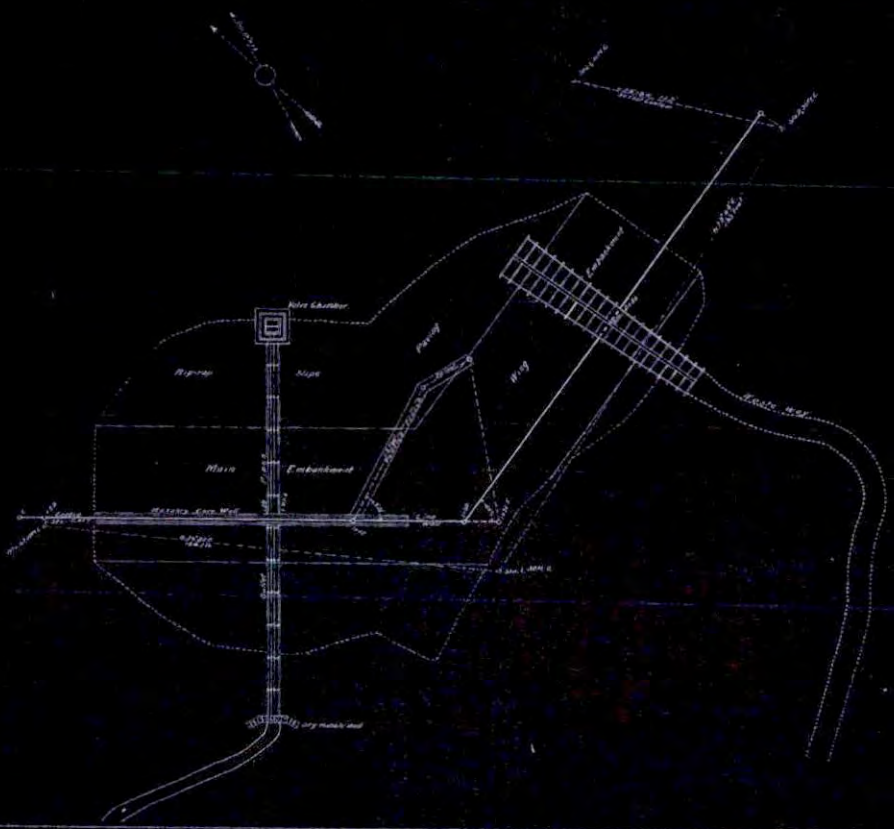
BOZEMAN CREEK RESERVOIR COMPANY

LOCATED NEAR THE HEAD-WATERS OF BOZEMAN CREEK IN GALLATIN CO., MONT.

C. M. Tharpe Engineer in charge

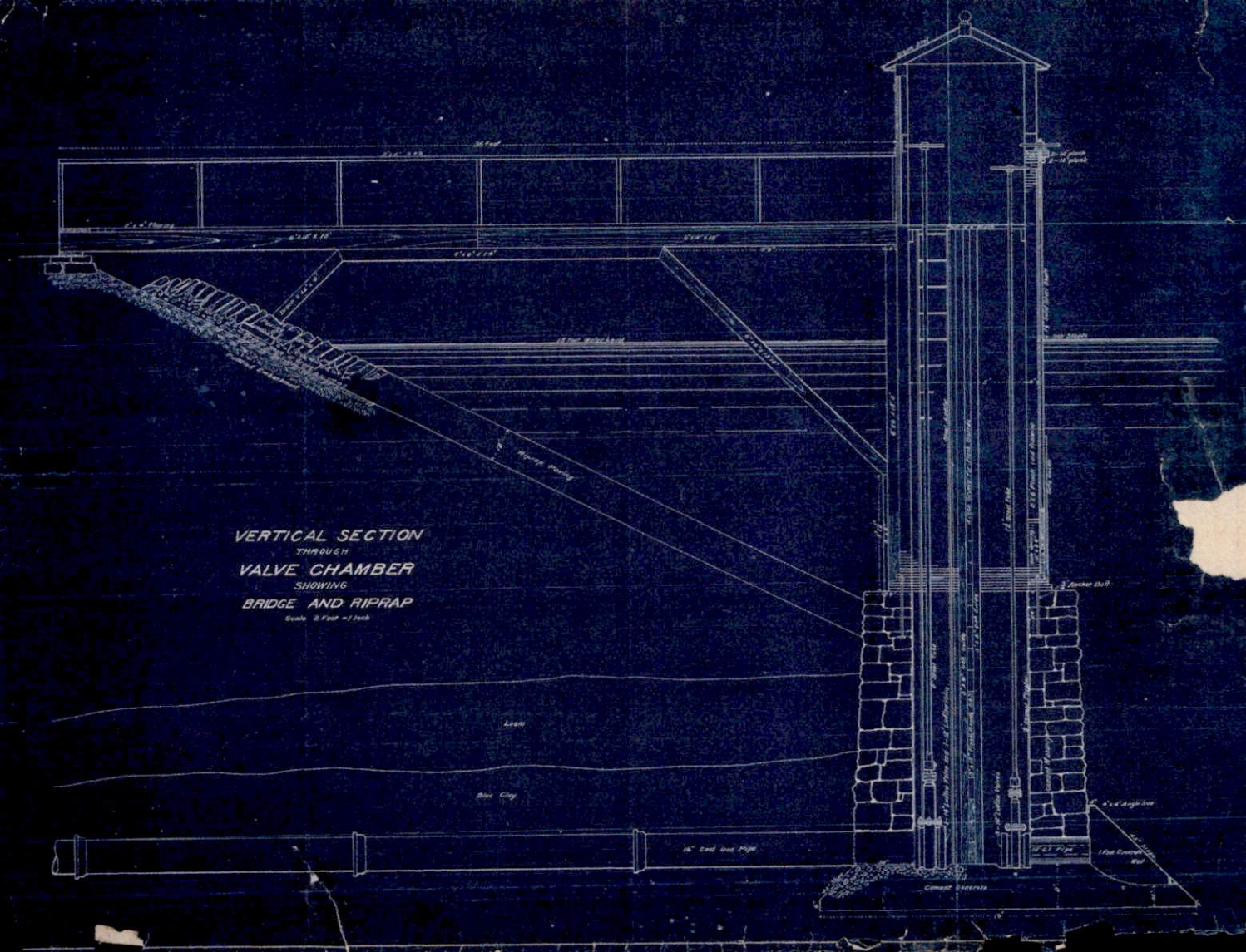
Samuel Fortier Consulting Engineer

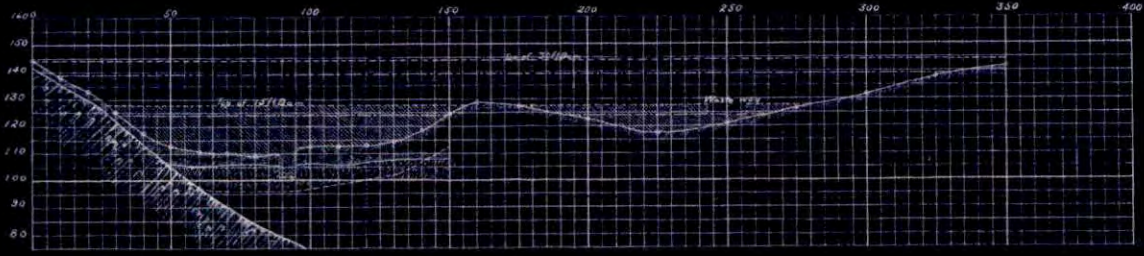

S.E¼ of S.E¼ of Sec 25 T3S. R6E.
Area of land within Reservoir Boundaries 1.00 Acres.
Township 3 South
Range 6 East
CAPACITY CURVE.
Capacity in acre-feet.
Present lake surface.
PLAT of RESERVOIR
SHOWING 15-FOOT AND 30-FOOT CONTOURS.
Present area of Mystic Lake 158.0 acres
Area enclosed by 15-foot contour 381.8 acres
Area enclosed by 30-foot contour 566.2 acres
Capacity of reservoir at 30-foot contour 11.5 acre-ft.
Scale 200 ft. = 1 inch.
Surveyed by C.M. Thorpe
West Line of Sec 30 T3S R7E
MYSTIC LAKE
Bozeman Creek
Lot 4. Sec. 30 T3S. R7E.
Area of land within Reservoir Boundaries 14.10 Acres.
Lot 3 Sec 30 T3S. R7E.
Area of land within Reservoir Boundaries 17.30 Acres.
Lot 2 Sec 30 T3S. R7E.
Area of land within Reservoir Boundaries 13.07 Acres.
Lot 1 Sec 30 T3S R7E
Area of land within Reservoir Boundaries 11.86 Acres.
Section 30
Township 3 South
Range 7 East
Montana P.M.



OUTLINE PLAN
— OF —
DAM

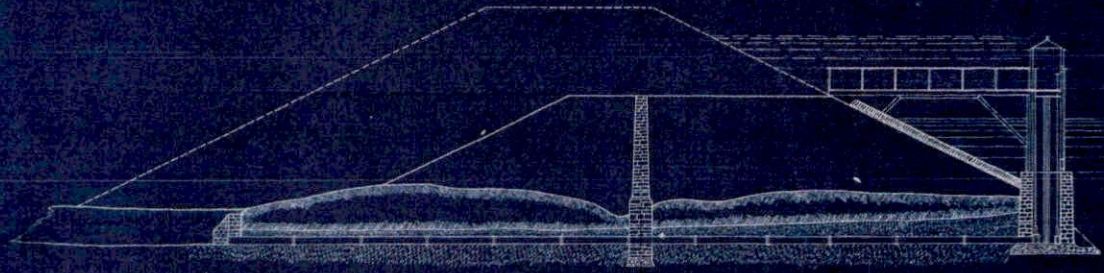
Scale 20 feet = 1 inch.


VERTICAL SECTION
THROUGH
VALVE CHAMBER
SHOWING
BRIDGE AND RIPRAP
Scale 2 Feet = 1 Inch
Loam
Blue Clay
16" cast iron Pipe
Concrete Foundation



PROFILE of DAM

Through centre of core wall



SECTION of DAM
THROUGH
VALVE CHAMBER
Scale 1 inch = 10 feet

Mystic Lake Improvements:
Bozeman Creek Reservoir Comp.
1959

STORAGE UNIT
RACK #5

G083 – MASTER PLANS: LAND USE
PLANNING REPORT 1970

ASSEMBLING AND UPDATING OF INFORMATION TO EXPEDITE PLANNING AND ZONING OF JURISDICTIONAL AREA

TAP ECONOMIC CONSULTANTS

OFFICES
25 E. MENDENHALL
PHONE 406 587-4461

MAILING ADDRESS
TAP INC
PO BOX 471

BOZEMAN, MONTANA 59715

City ENGINEERS Copy

ASSEMBLING AND UPDATING OF INFORMATION TO EXPEDITE PLANNING AND ZONING OF JURISDICTIONAL AREA

Submitted to: The City of Bozeman,
The County of Gallatin and
The Bozeman City-County Planning Board

Submitted by: T.A.P., Incorporated
P.O. Box 471
Bozeman, Montana 59715

November, 1970

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8. Soils Analysis Survey
9. Present and Proposed Parks
10. Topography
11. Flood Plains and Climatic Conditions
12. Social and Economic
13. Subdivision Regulations
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PURPOSE AND SCOPE

Planning and zoning becomes a very personal problem when it affects you directly as has been indicated by the large number of small zoning districts that are being requested at the present time.

If the County Commissioners were to implement zoning procedures on these smaller areas it would only partially solve the problem that exists. They, therefore, ask that we compile and update as much information as possible in the time allotted.

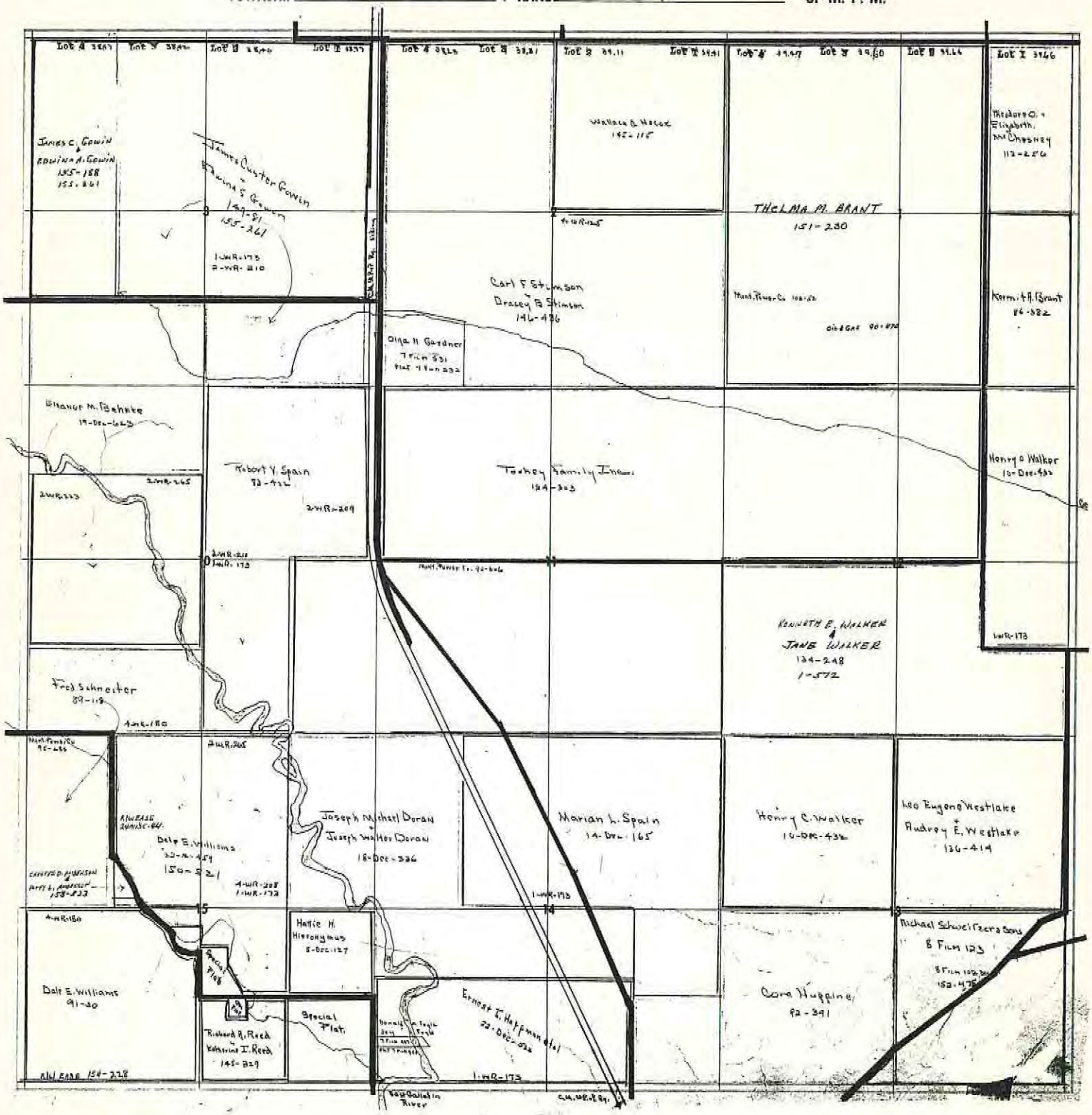
The text following is an attempt to coordinate the existing data from various sources. It is not intended to be the final answer but an assist to the preliminary planning of the Jurisdictional Area of the City-County Planning Board.

There are several unanswered questions that we would suggest be studied in depth in the immediate future. These will be covered in detail in the conclusions.

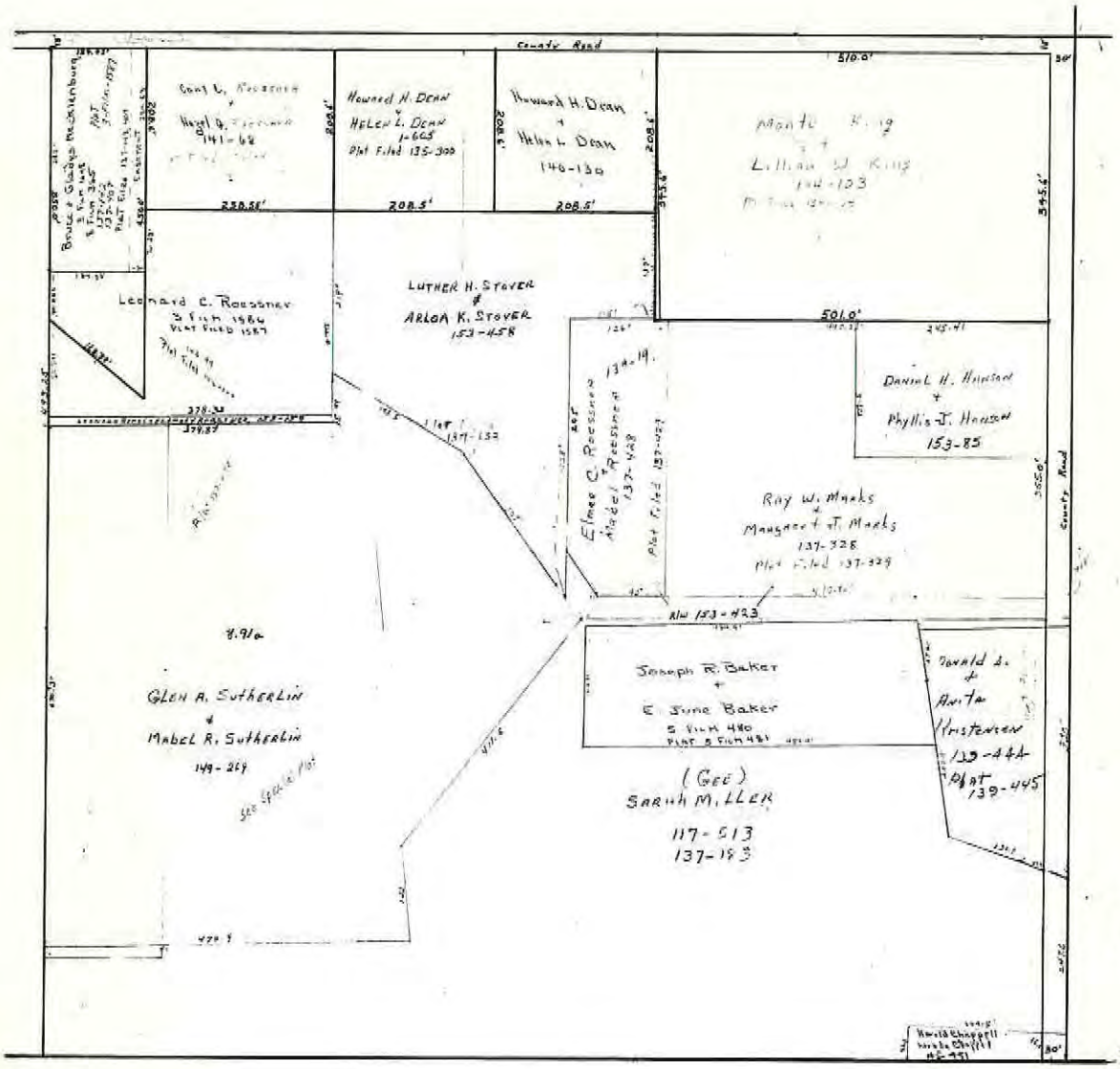
PLAT MAPS, DEDICATED*

* Source: Gallatin County Clerk and Recorder

TOWNSHIP 1 SOUTH RANGE 5 EAST OF M. P. M.



SCALE 1" = 100'

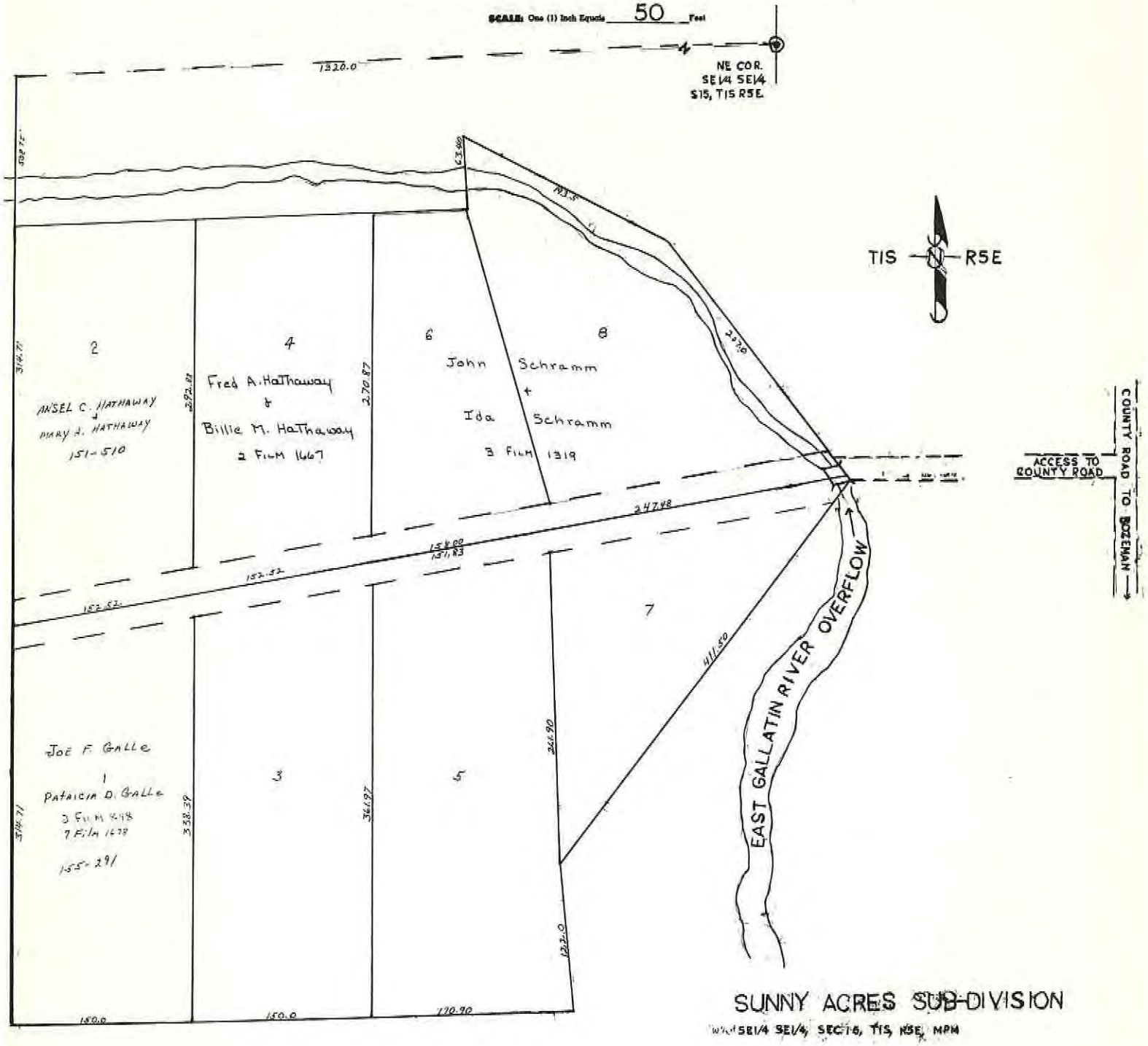


PETITIONER'S EXHIBIT 13

SE¼
SE¼
SEC 15
T1S
R5E

SECTION 15 TOWNSHIP 1S RANGE 5E

SCALE: One (1) Inch Equals 50 Feet



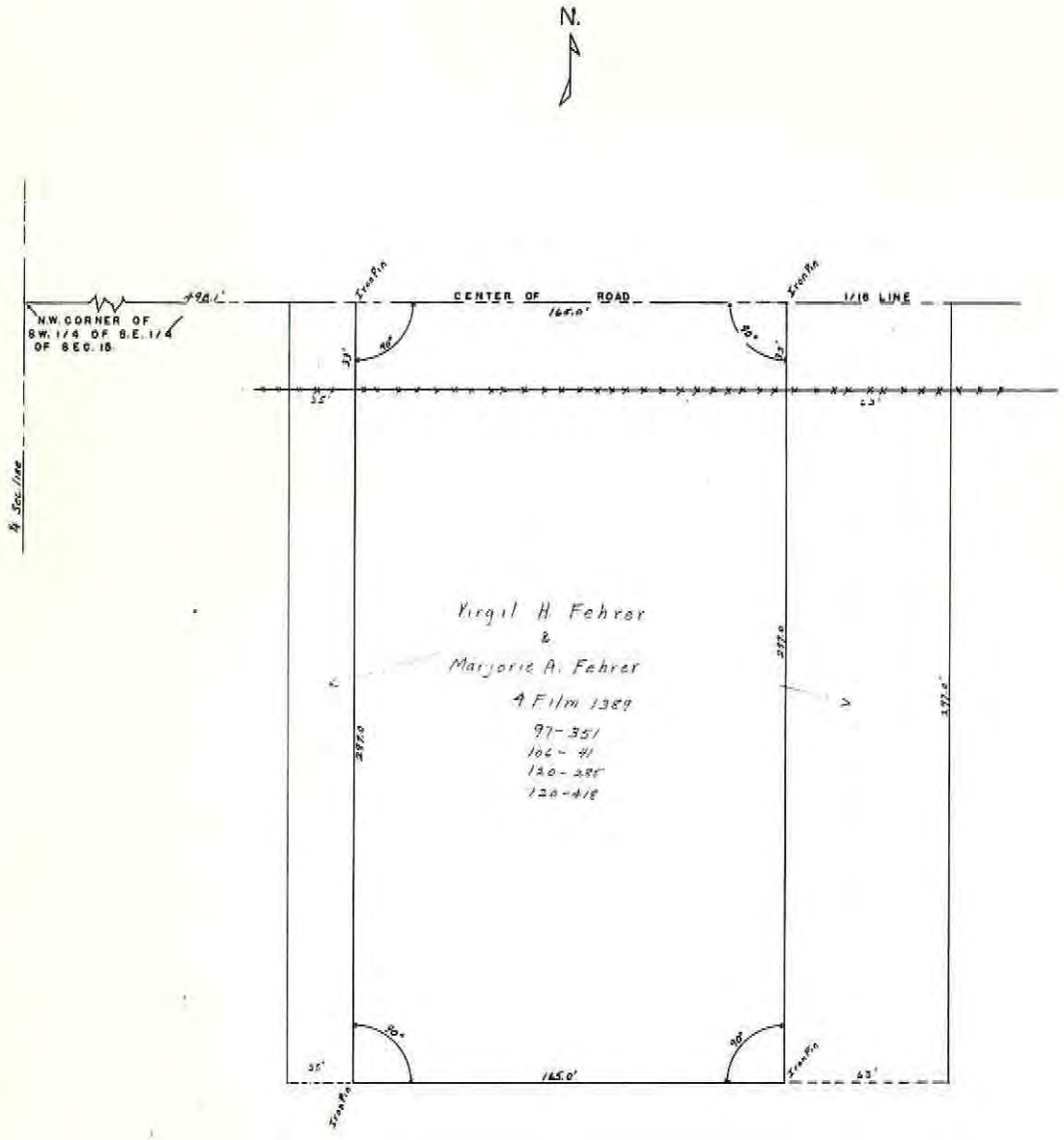
SUNNY ACRES SUB-DIVISION

W½ of SE1/4 SE1/4, SEC. 15, T1S, R5E, MPM

A TRACT IN N. 1/2, S.W. 1/4, S.E. 1/4,
SECTION 15, **TOWNSHIP** 1 SOUTH **RANGE** 5E AST.

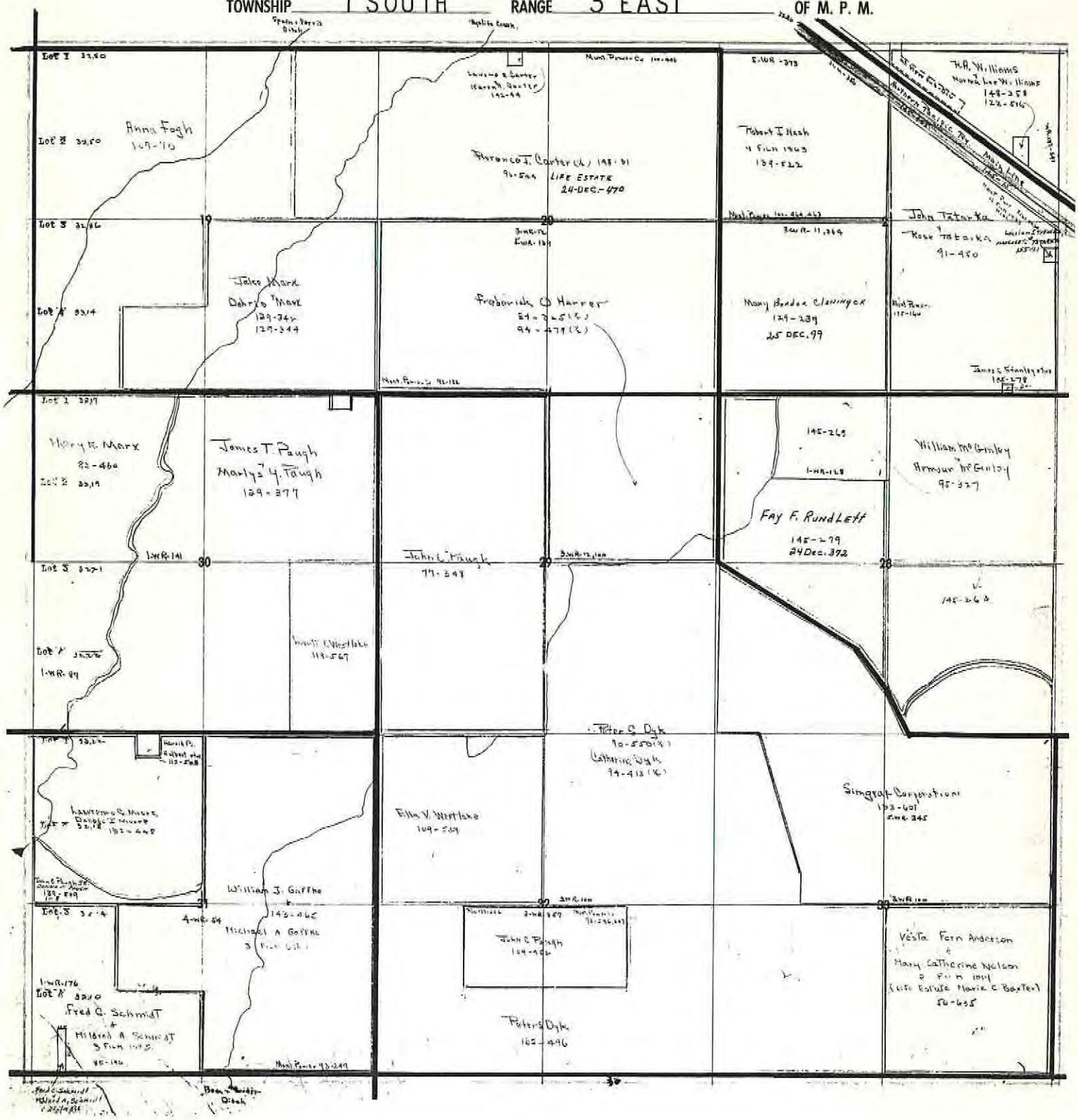
SCALE: One (1) Inch Equals 30 Feet

BON ACRE

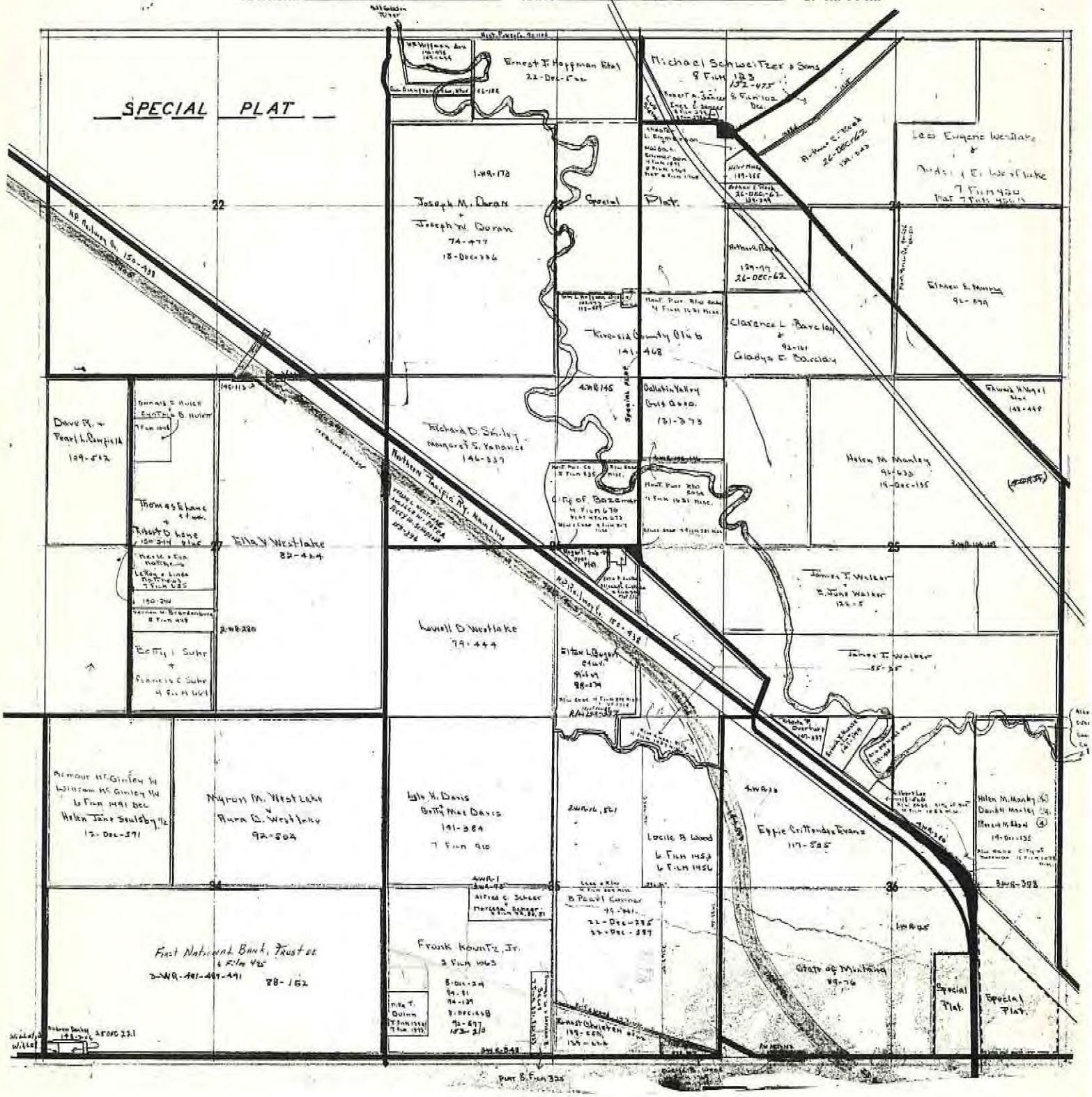


BON ACRE.
S.W. 1/4 OF S.E. 1/4, SEC. 15.

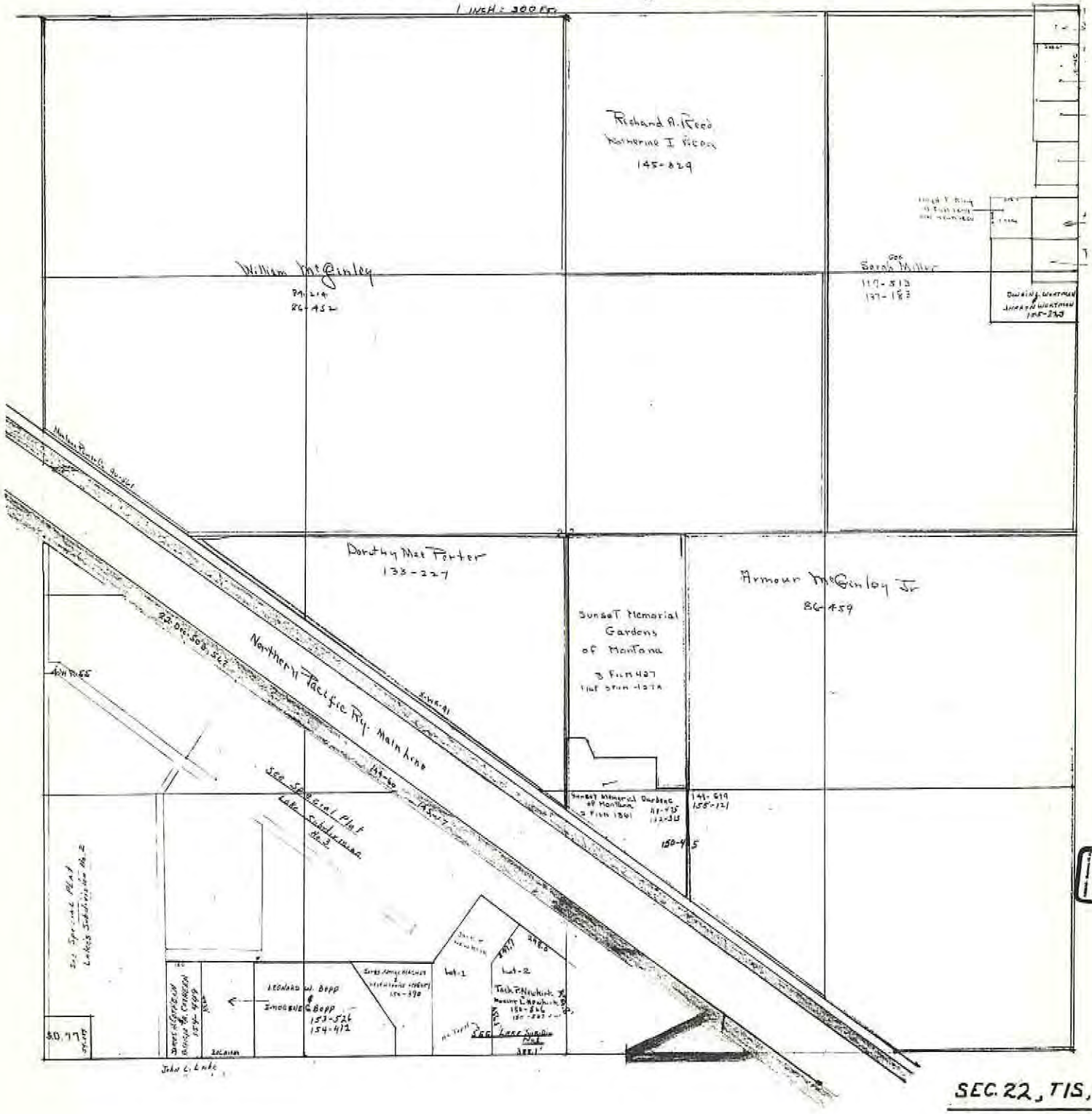
TOWNSHIP 1 SOUTH RANGE 5 EAST OF M. P. M.



TOWNSHIP 1 SOUTH RANGE 5 EAST OF M. P. M.

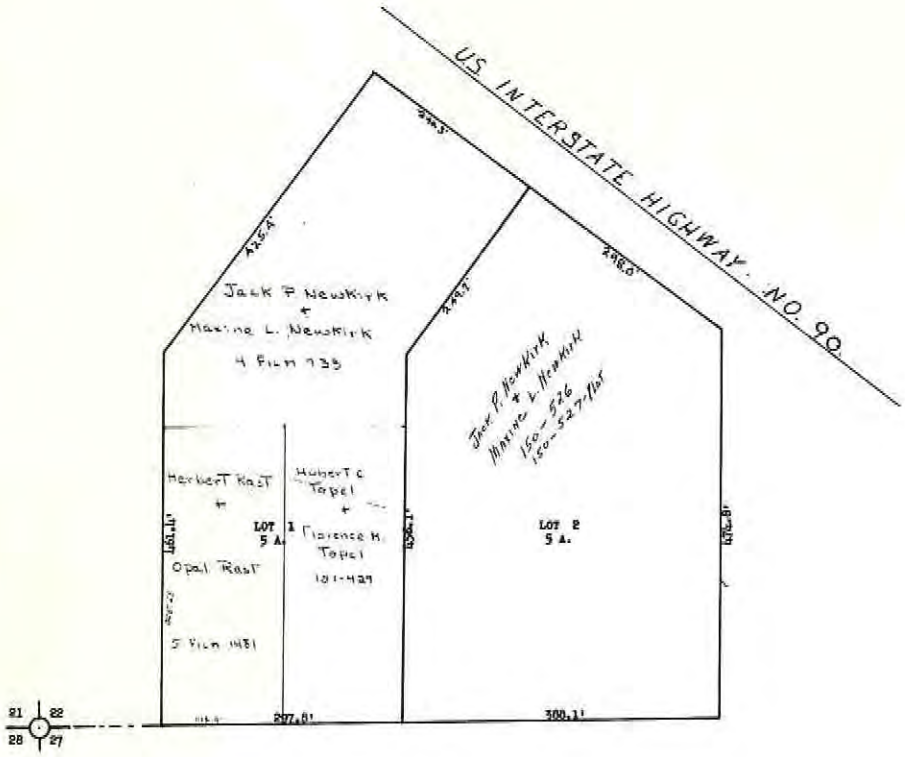


SECTION 22, T 1 SOUTH, R 5 EAST



LAKE SUBDIVISION NO. 1

SCALE - - 1" - - 100 feet - - -

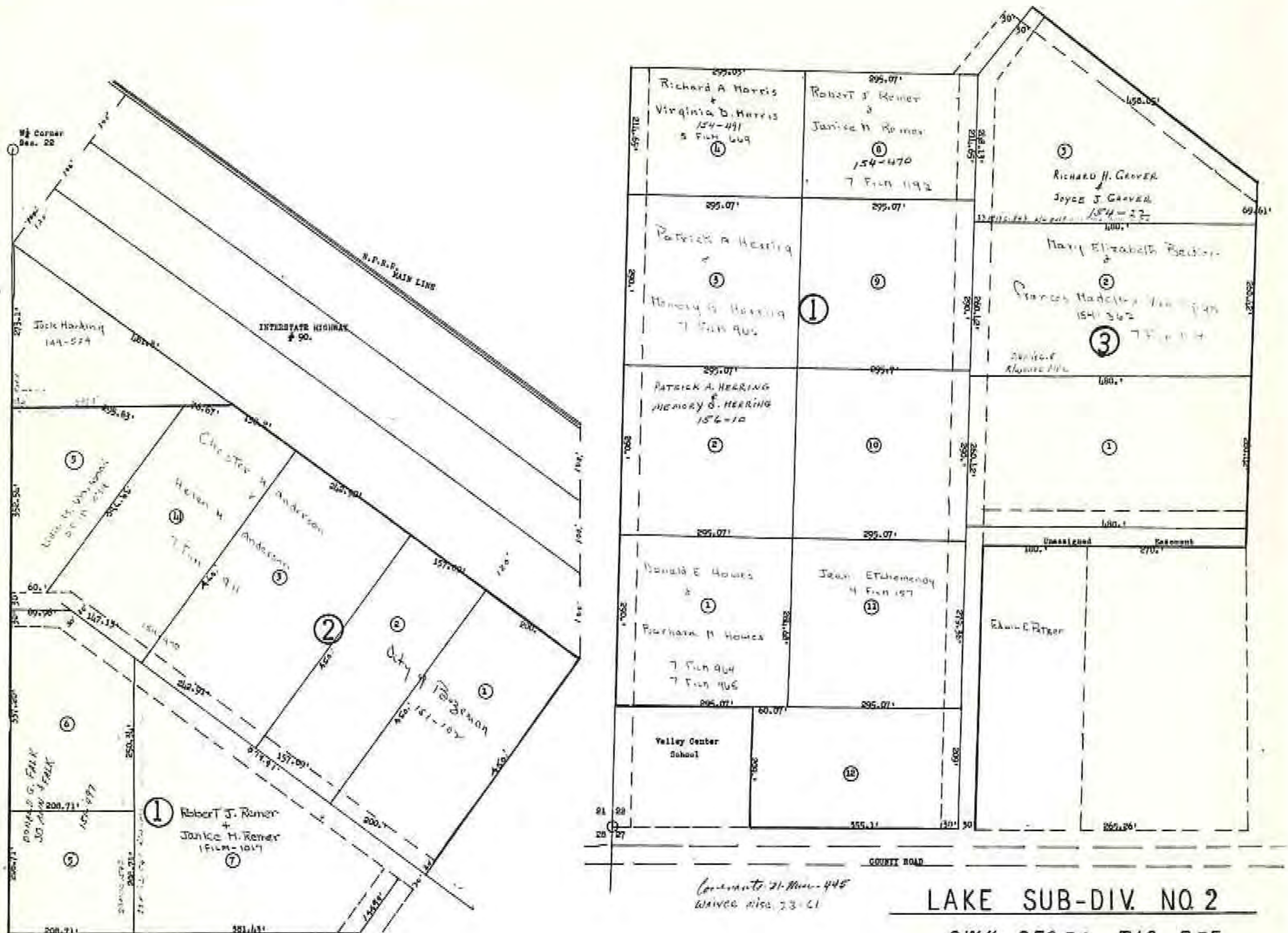


LAKE SUBDIVISION NO. 1

Part of Section 22, T 18, R 5E. in the So. West ¼

SECTION 22 TOWNSHIP 1S RANGE 5E

SCALE: One (1) Inch Equals 100 Feet

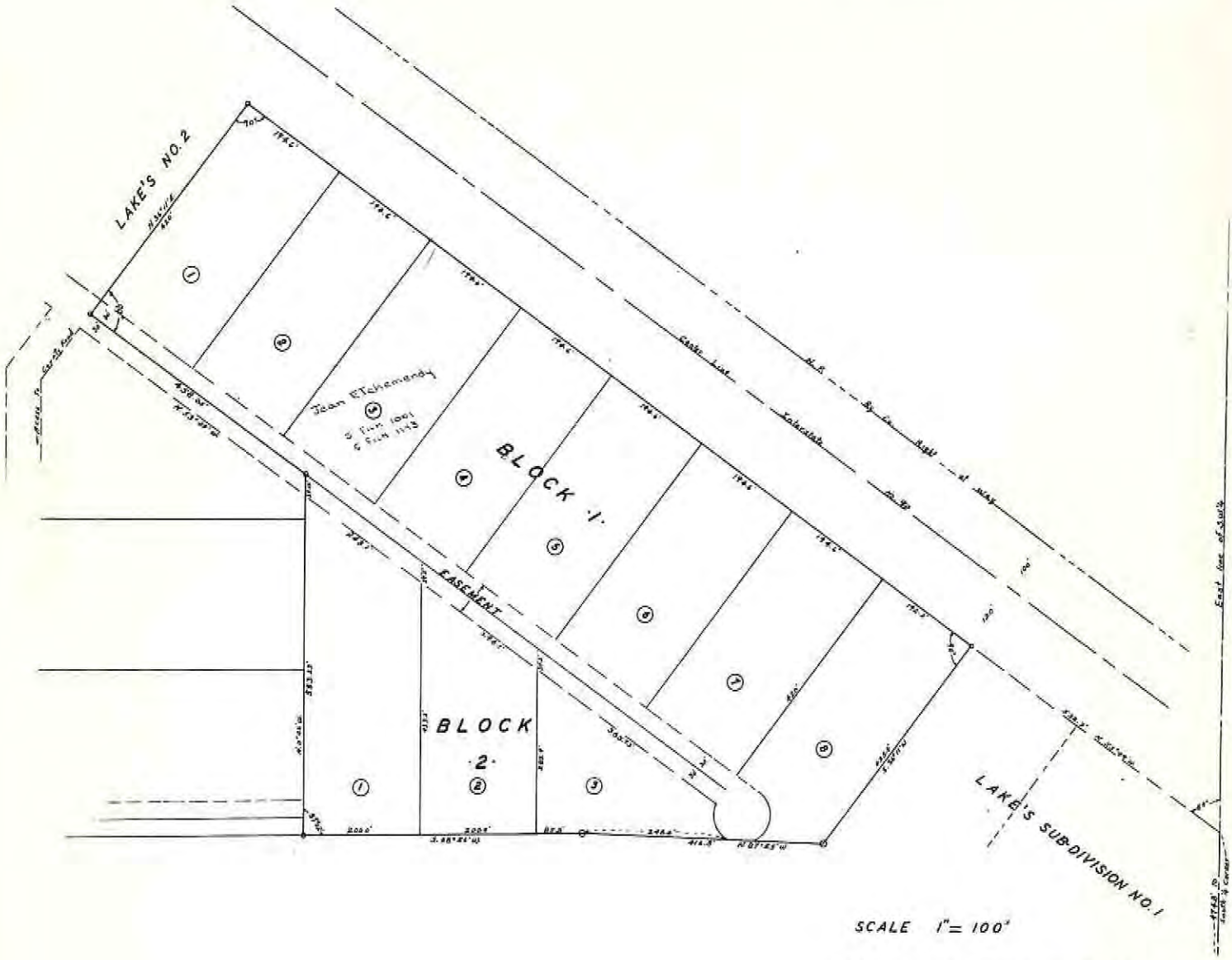


LAKE SUB-DIV. NO. 2

SW¼, SEC. 22, T1S, R5E.

LAKE'S SUB-DIVISION NO. 3

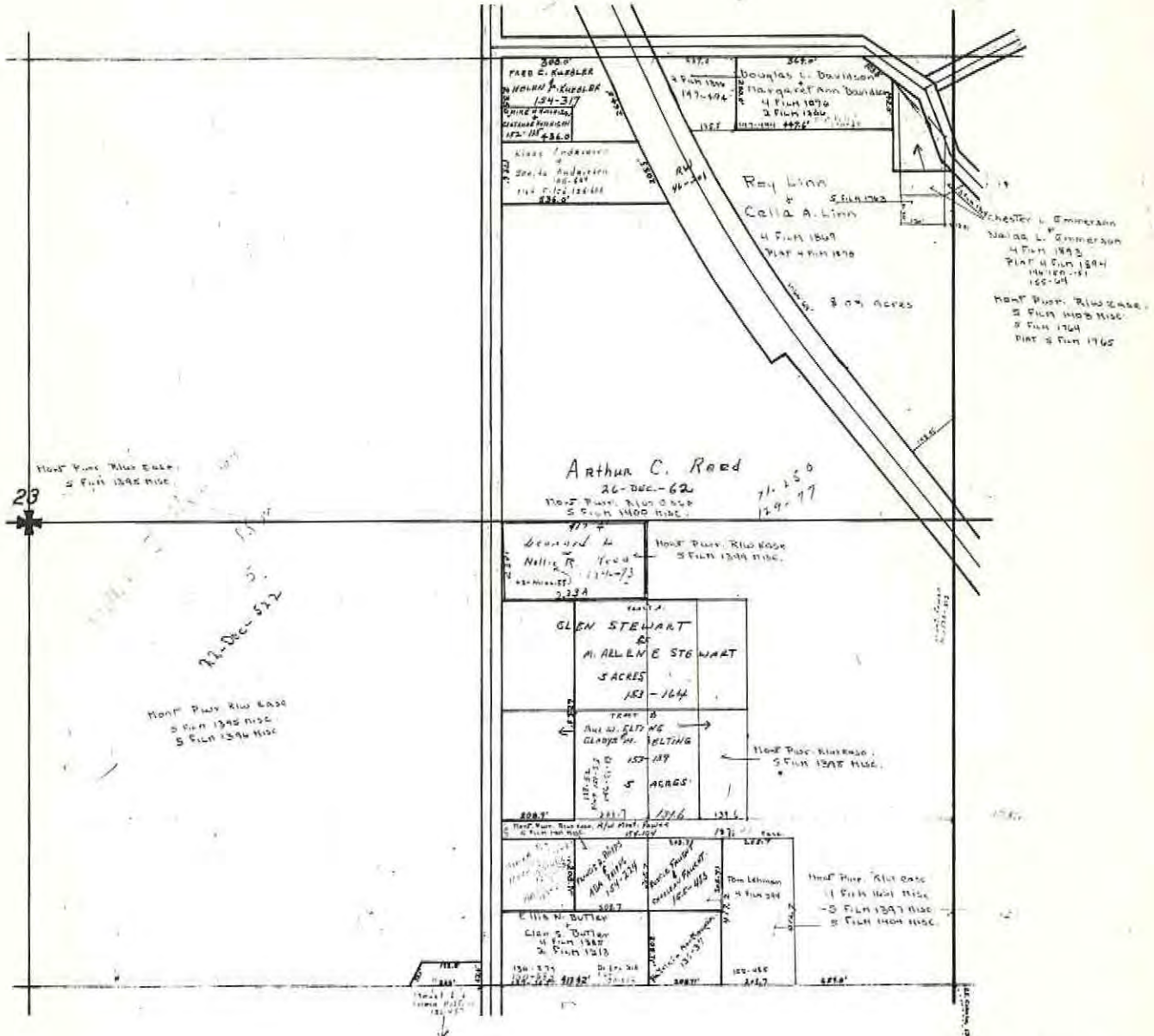
A TRACT IN THE S.W. 1/4, SEC. 22, T. 1 S., R. 5 E.



LAKE'S SUB-DIVISION NO. 3
A TRACT IN THE S.W. 1/4, SEC. 22, T. 1 S., R. 5 E.

S½ NE¼
N½ SE¼ SECTION 23 TOWNSHIP 1S RANGE 5E

SCALE: One (1) Inch Equals 200 Feet

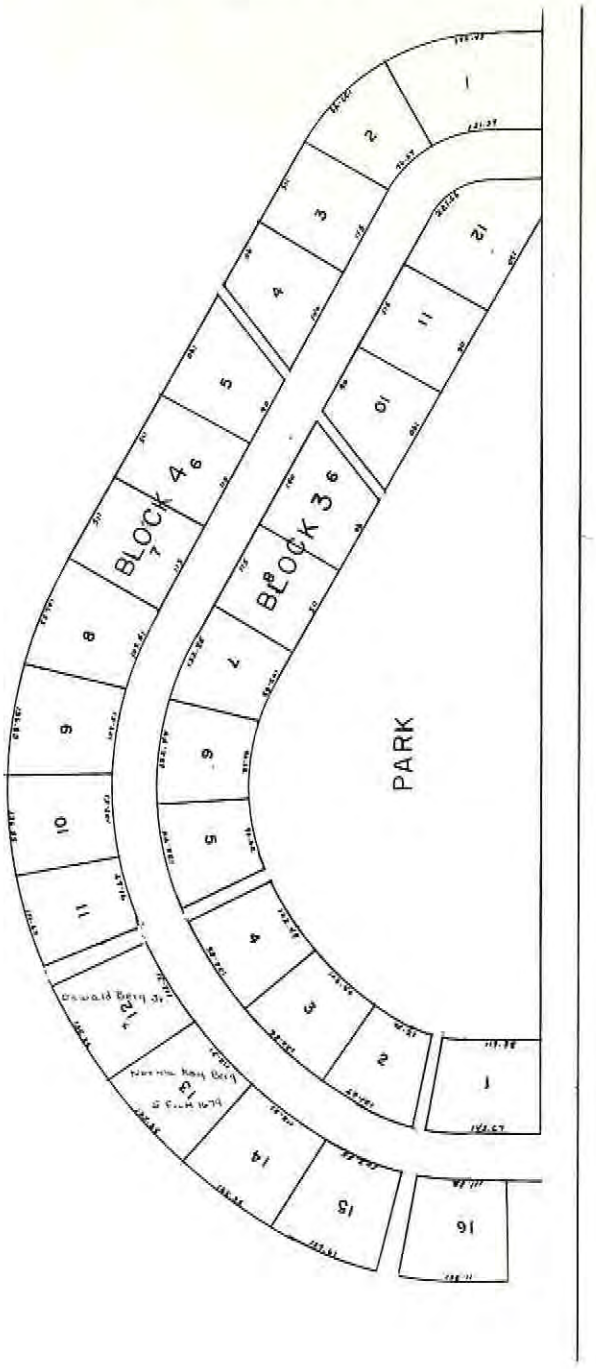


S½ NE¼
N½ SE¼
SEC. 23
T1S R5E

SECTION 23 & 26 TOWNSHIP 1S RANGE 5E

SCALE: One (1) Inch Equals 100 Feet

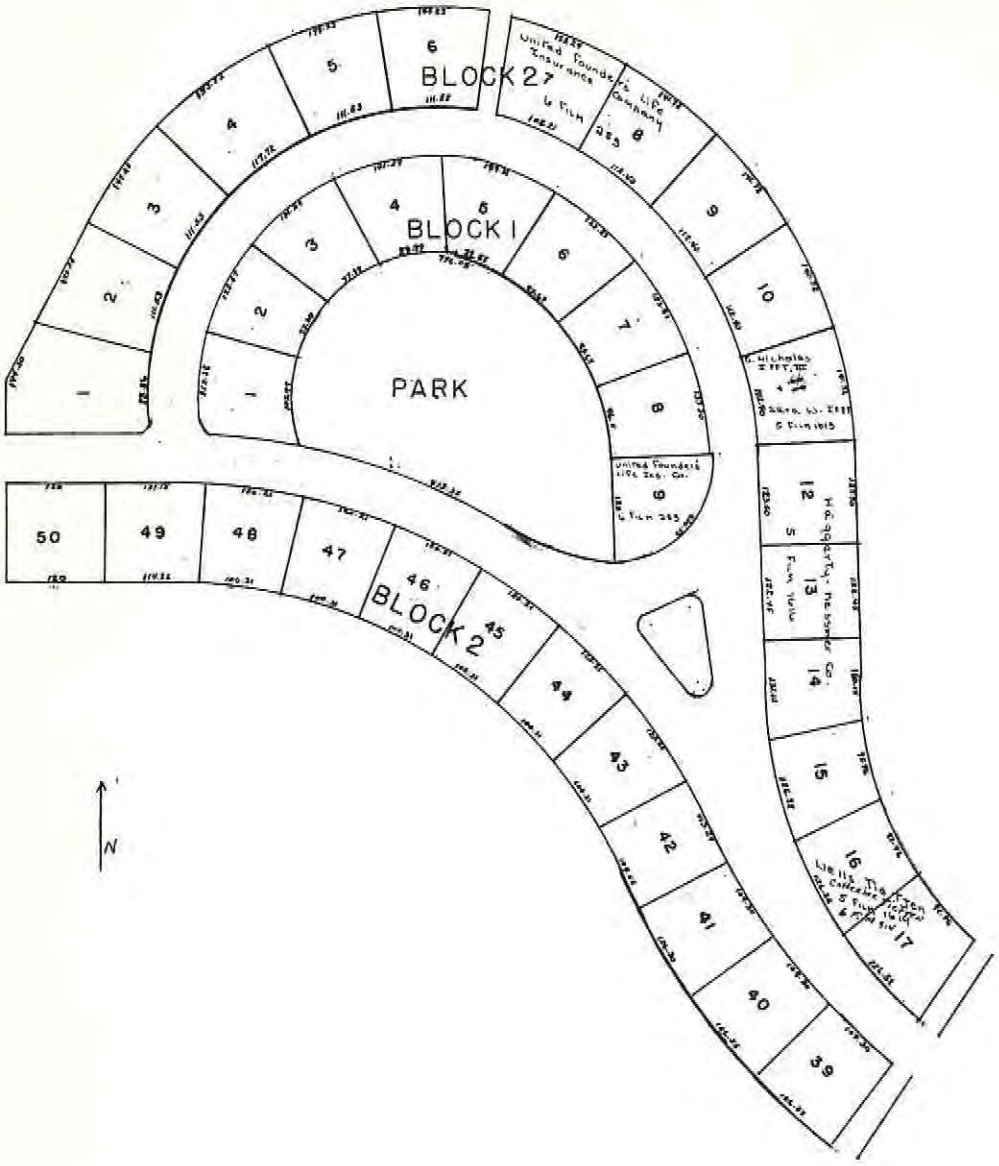
RIVERSIDE MANOR



SECTION 23&26 **TOWNSHIP** 1S **RANGE** 5E

SCALE: One (1) Inch Equals 100 Feet

RIVERSIDE MANOR

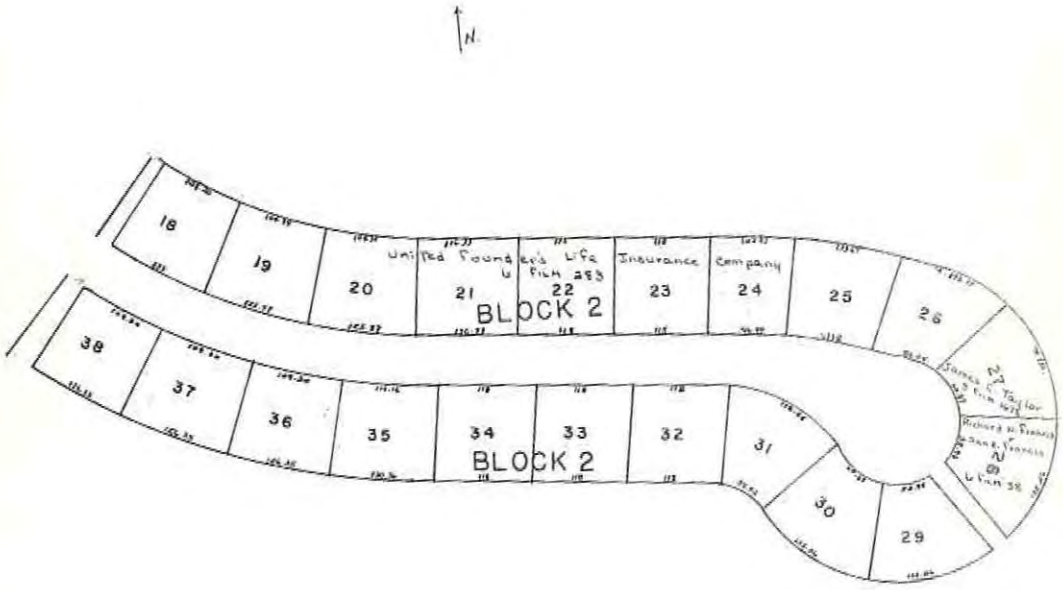


CONTINUED

SECTION 25 TOWNSHIP 1S RANGE 5E

SCALE: One (1) Inch Equals 100 Feet

RIVERSIDE MANOR



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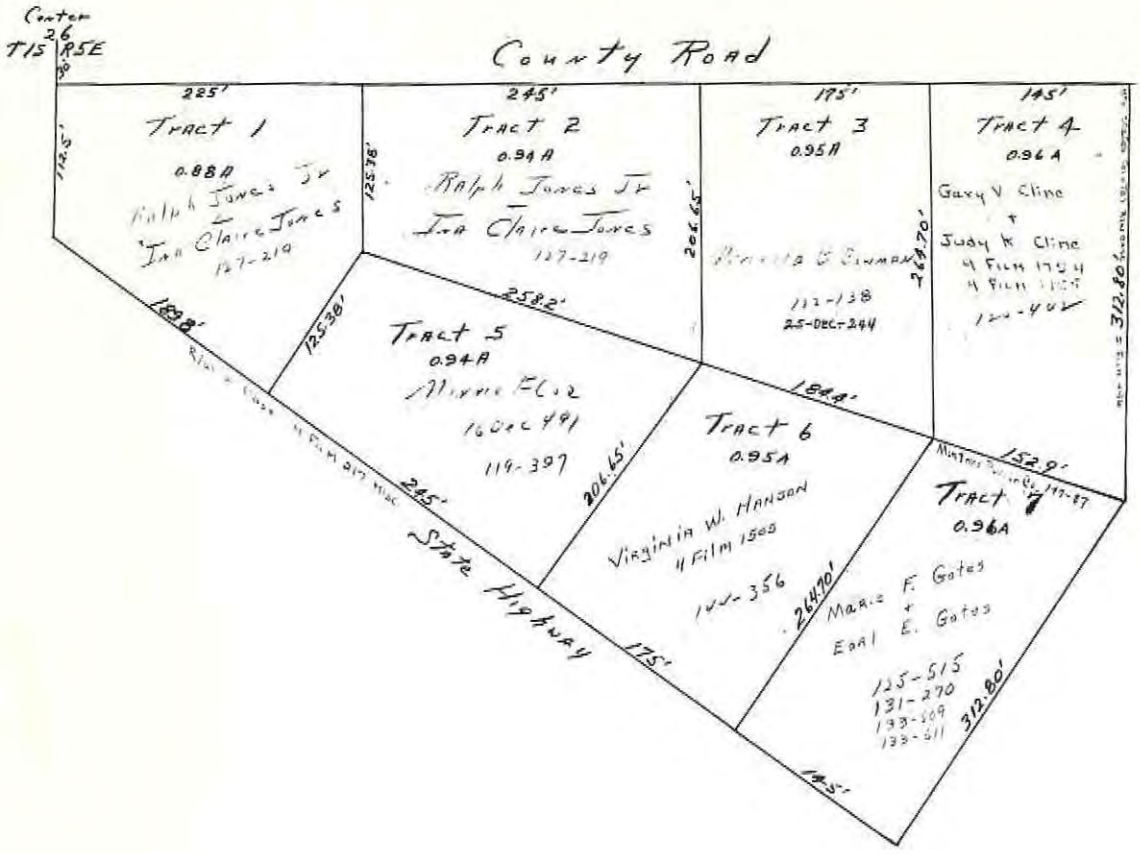
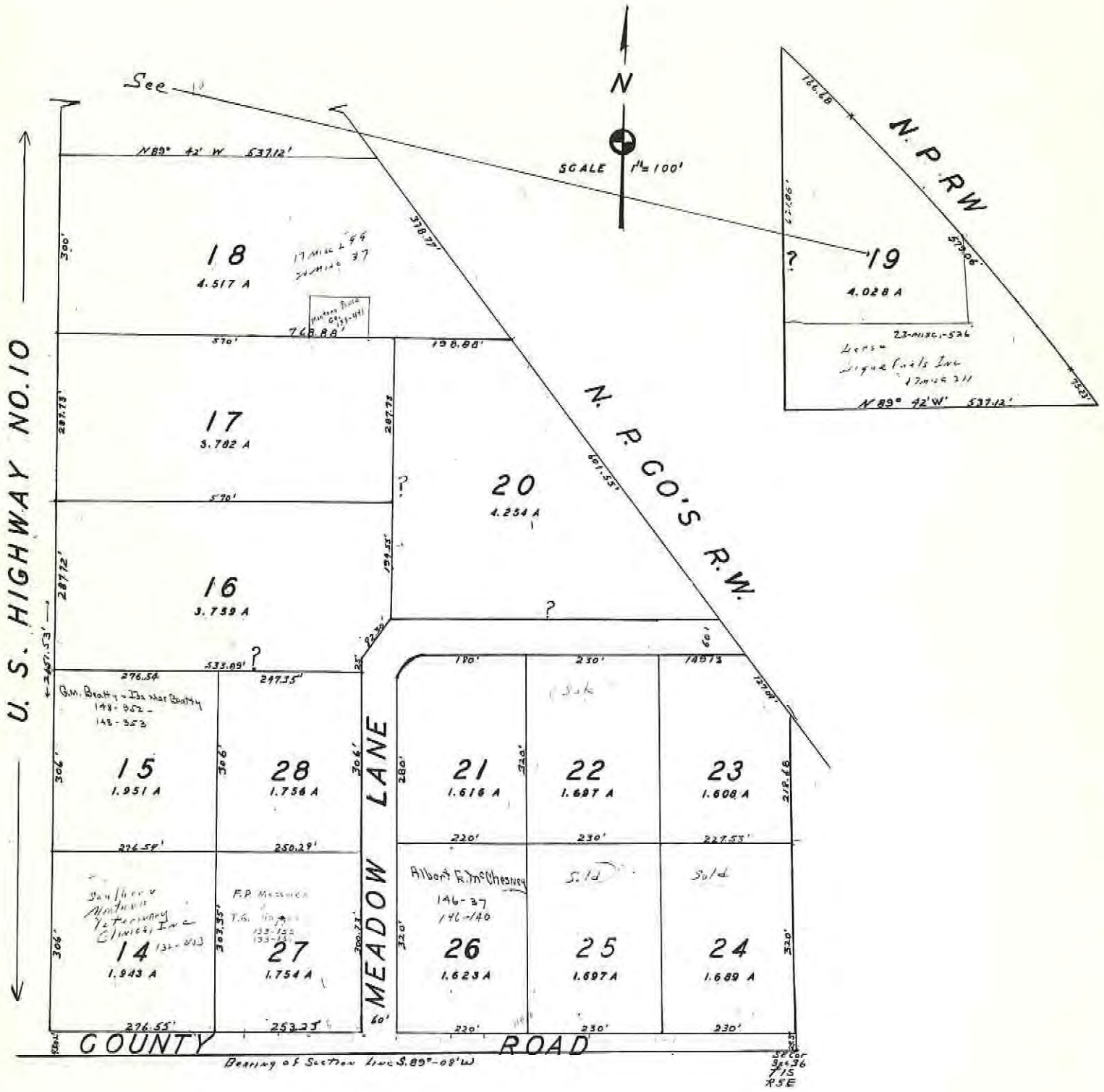


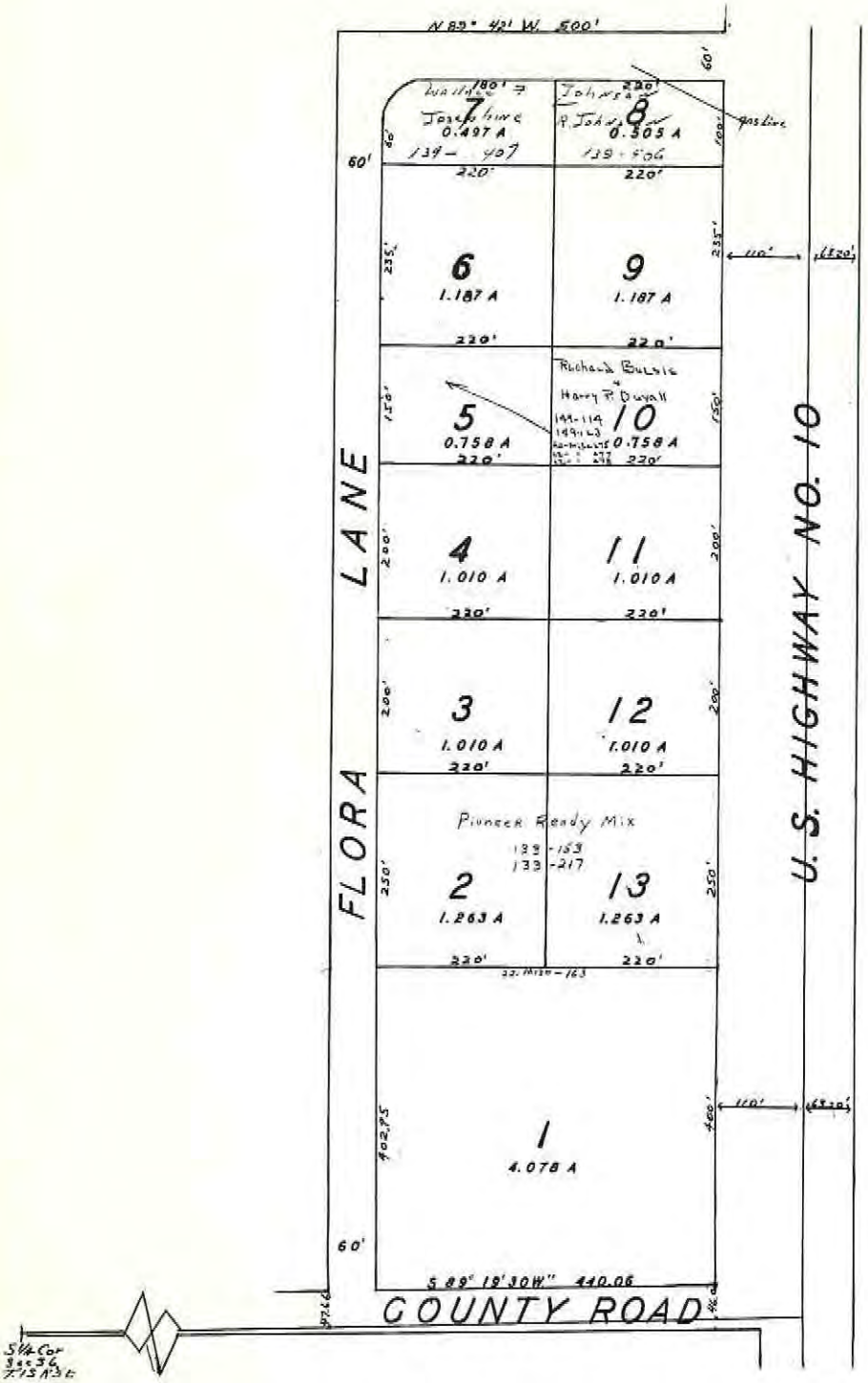
Bogart Subdivision

A Subdivision of Part of The NW¼ SE¼ Sec. 26 T.1S. R.5E.



TRACTS

GORDON MANDEVILLE
STATE SCHOOL
SECTION
SUBDIVISION



N

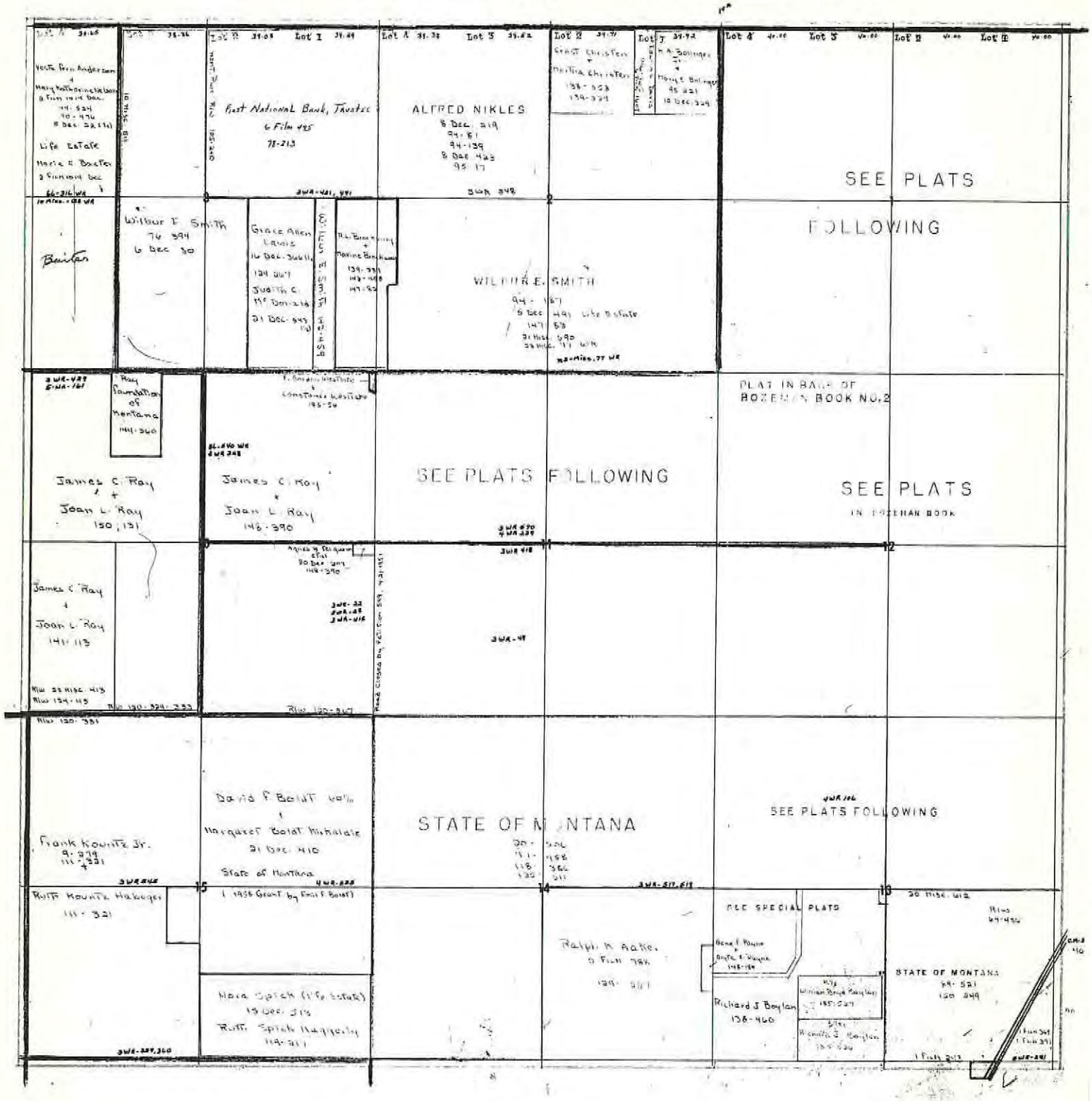
Scale: 1" = 100'

TRACTS

GORDON MANDEVILLE STATE SCHOOL SECTION SUBDIVISION

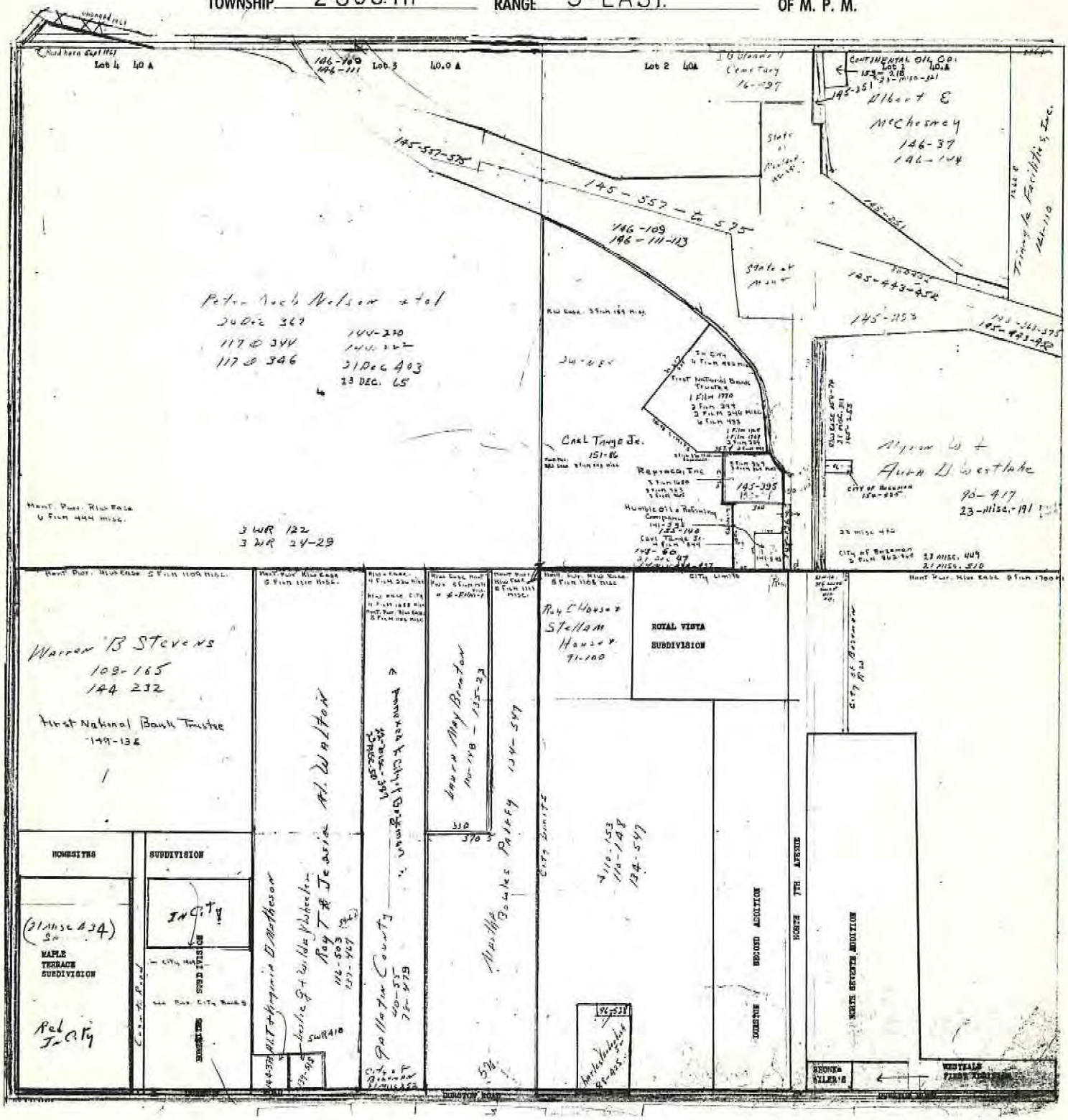
Located in Sec. 36 T 15 R 5 E

TOWNSHIP 2 SOUTH RANGE 5 EAST OF M. P. M.

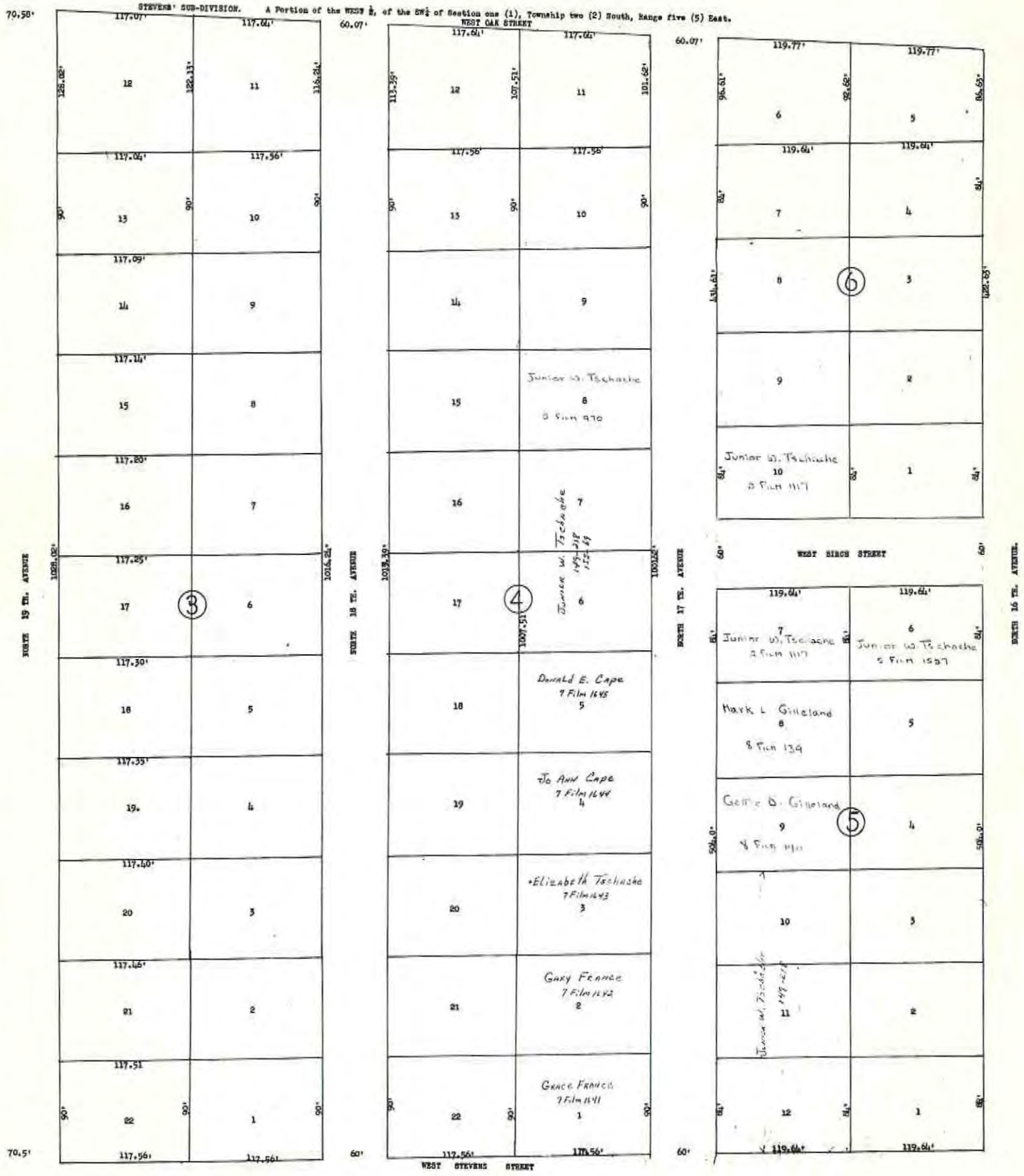


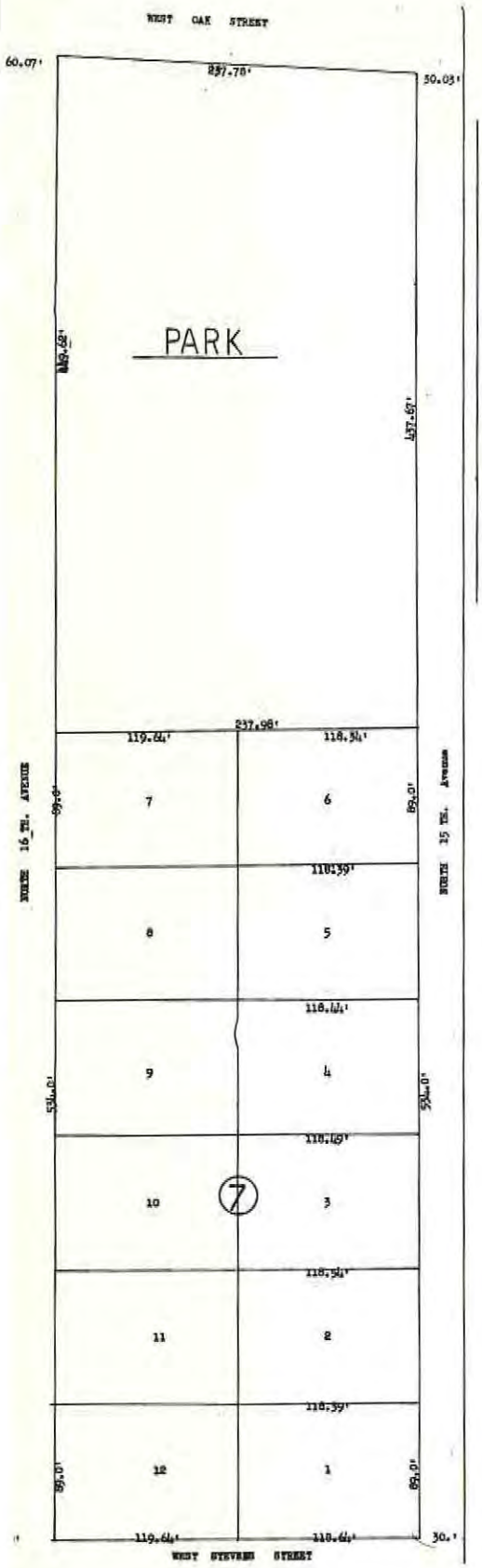
SECTION 1

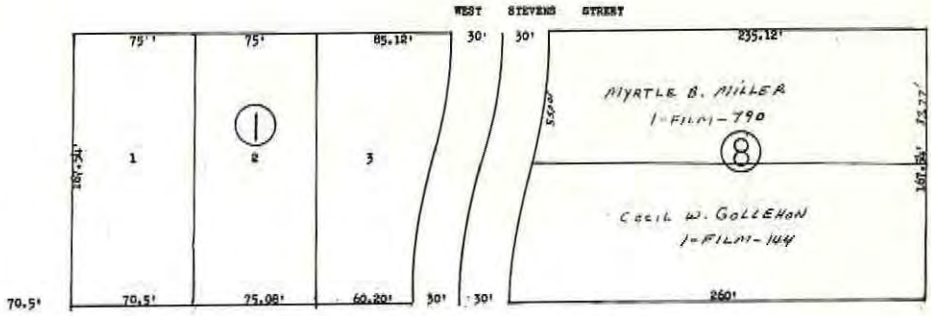
TOWNSHIP 2-SOUTH RANGE 5-EAST OF M. P. M.

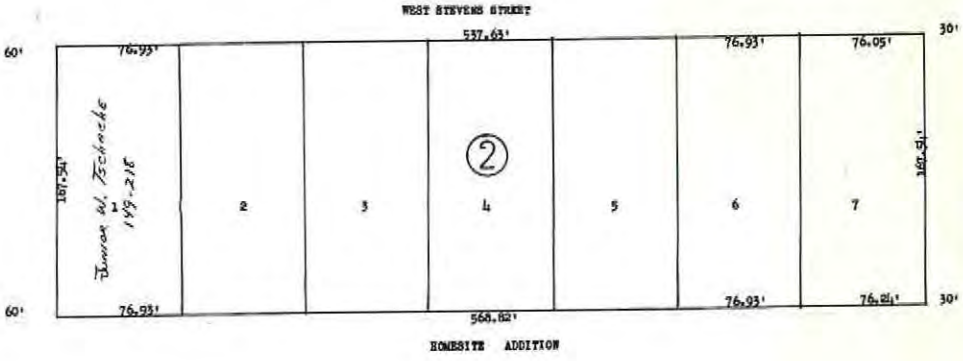


STEVENS' SUB-DIVISION





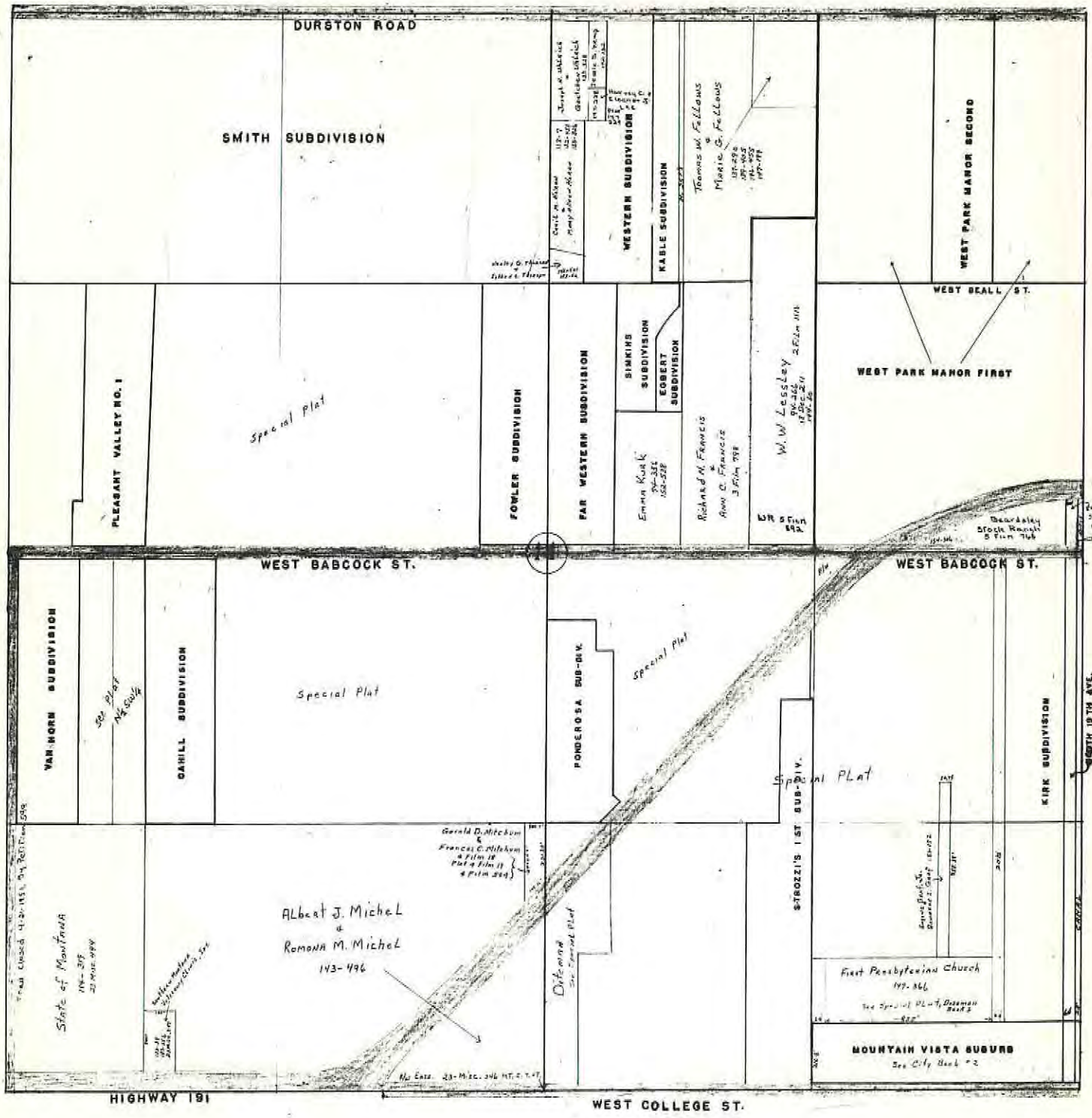




STEVENS' SUB-DIVISION

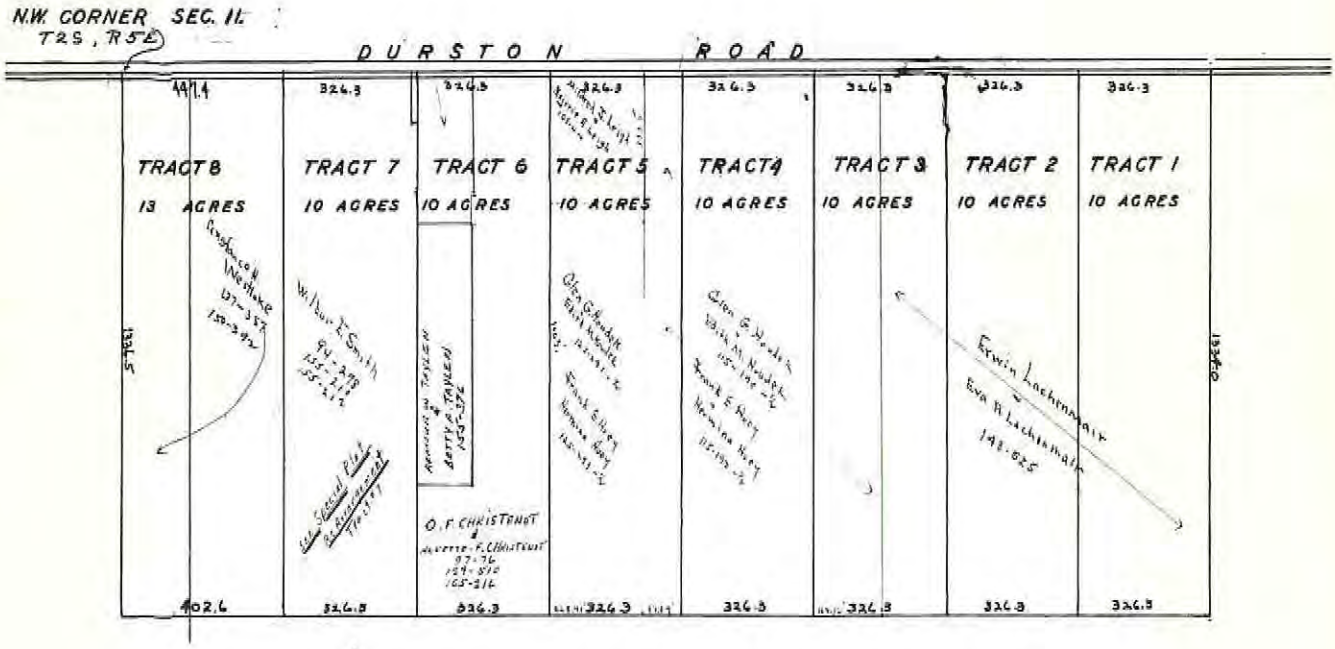
SECTION 11 **TOWNSHIP** 2S **RANGE** 5E

SCALE: One (1) Inch Equals 300 Feet



SECTION 11 TOWNSHIP 2S RANGE 5E

SCALE: One (1) Inch Equals 200 Feet

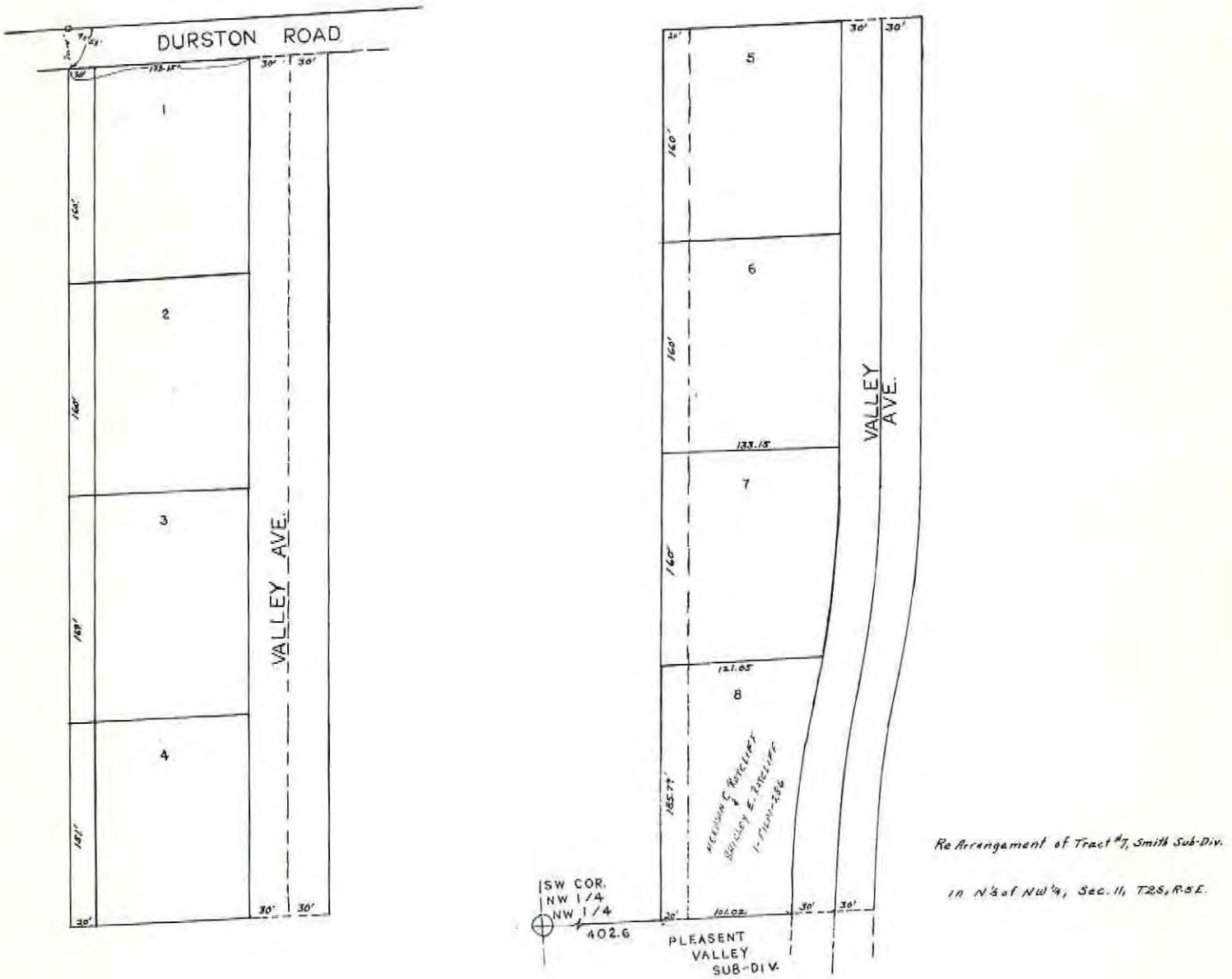


SMITH SUBDIVISION

SECTION 11 TOWNSHIP 2S RANGE 5E

SCALE: One (1) Inch Equals 50 Feet

REARRANGEMENT OF TRACT #7
SMITH SUB-DIVISION

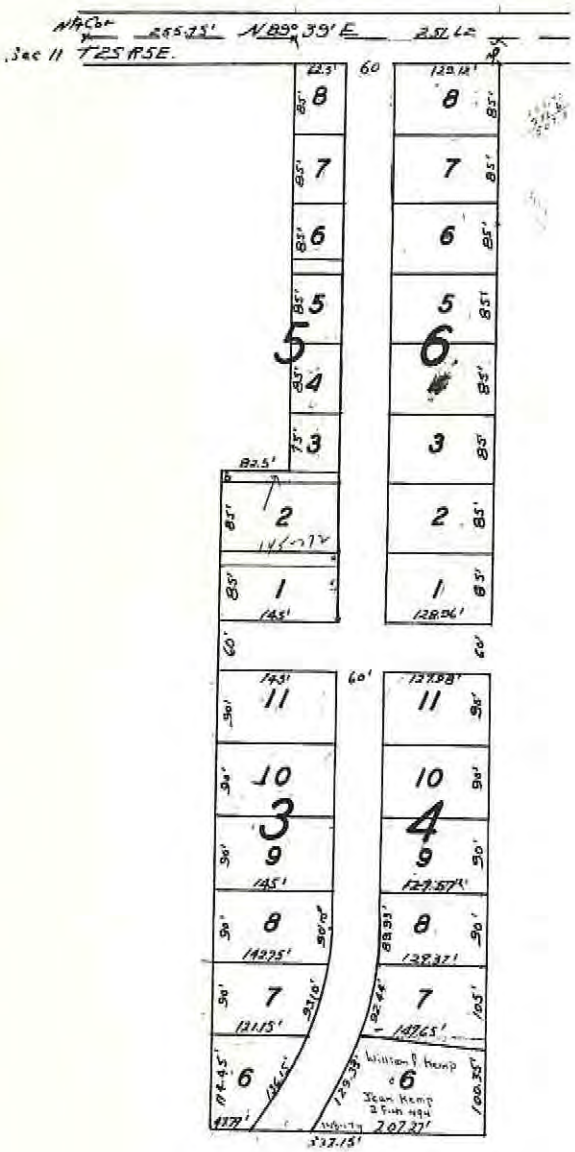


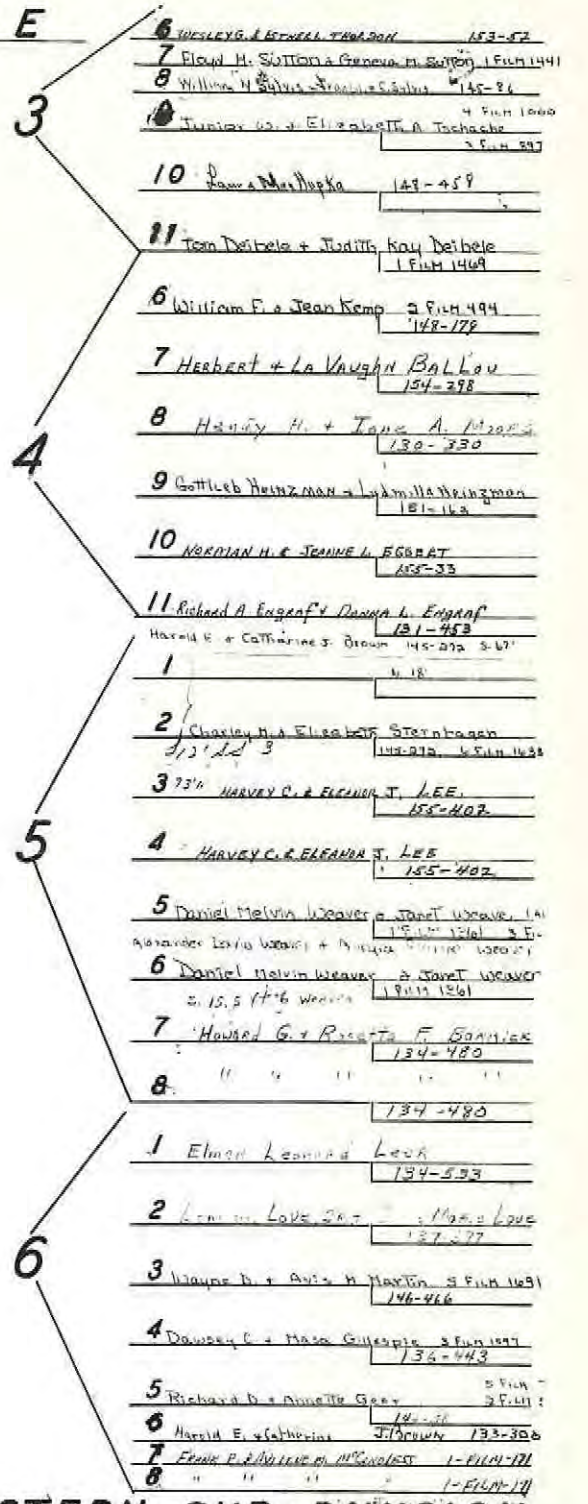
Re Arrangement of Tract #7, Smith Sub-Div.

in N½ of NW¼, Sec. 11, T2S, R5E.

SECTION 11 TOWNSHIP 2 S RANGE 5 E

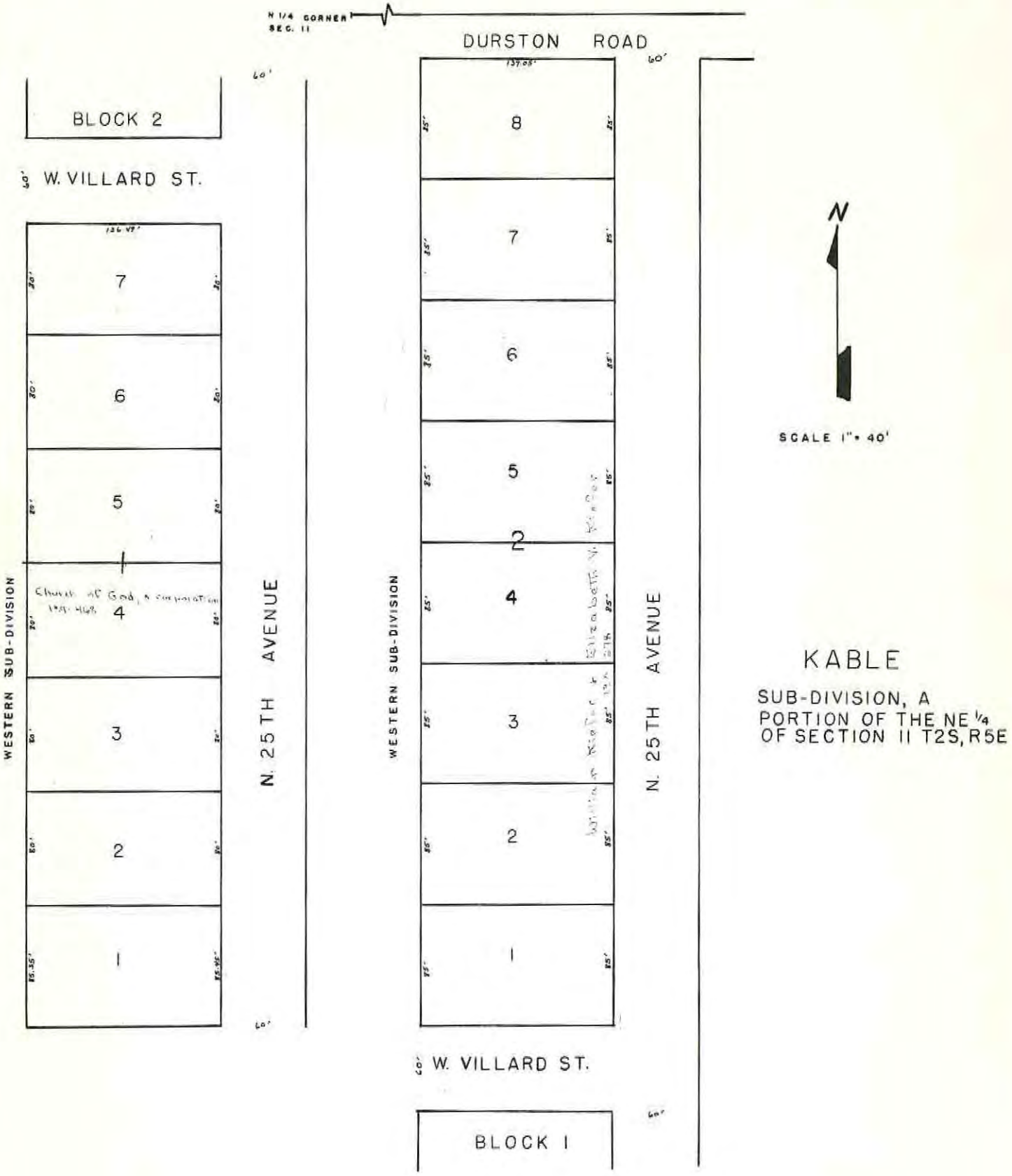
SCALE: One (1) Inch Equals 100' Feet





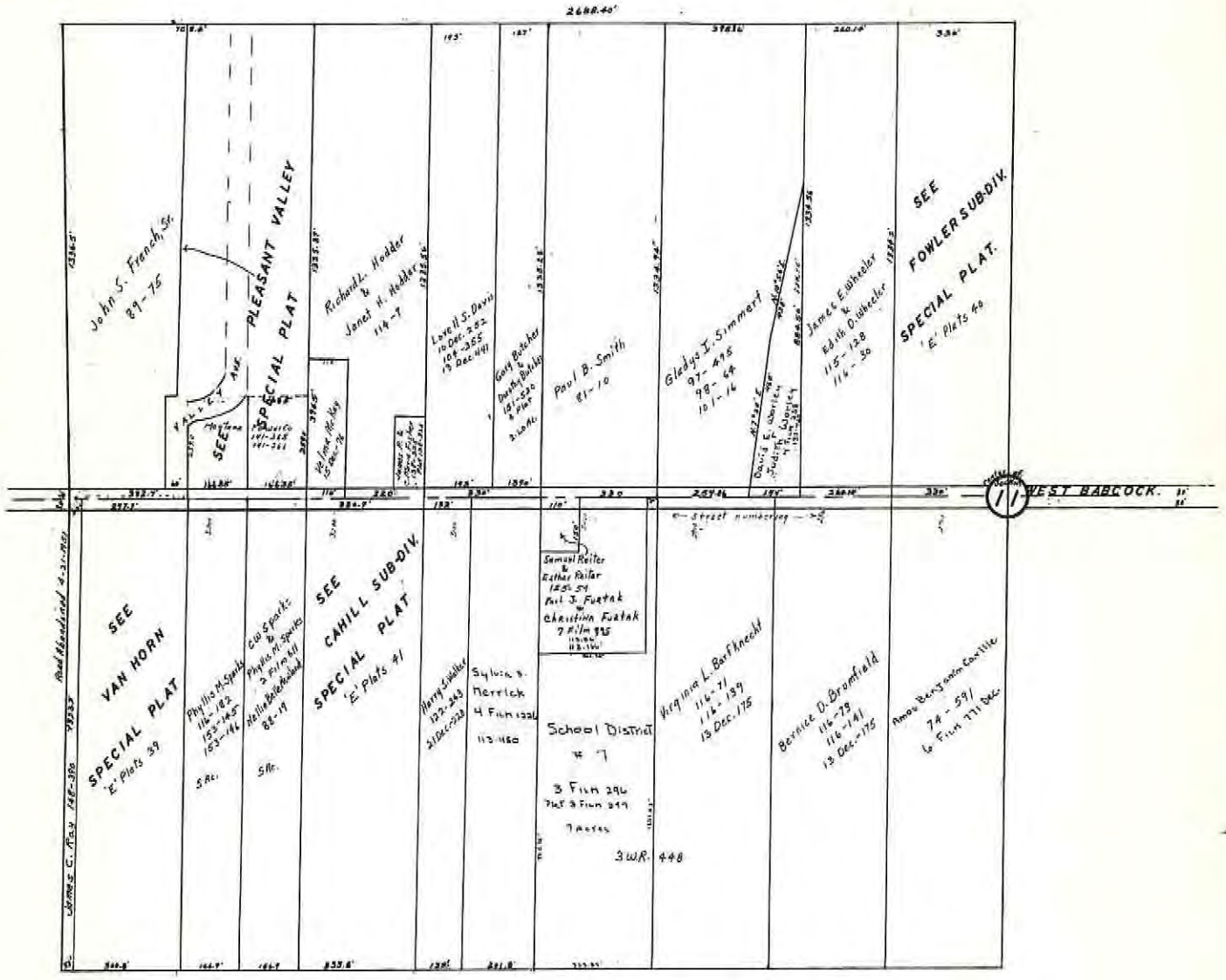
WESTERN SUB-DIVISION

A PORTION OF NE¼ SECTION 11, T 2S


N 1/4 CORNER SEC. 11
DURSTON ROAD
60'
BLOCK 2
60' W. VILLARD ST.
WESTERN SUB-DIVISION
7
6
5
4
3
2
1
N. 25TH AVENUE
8
7
6
5
4
3
2
1
60' W. VILLARD ST.
BLOCK 1
N
SCALE 1" = 40'
KABLE
SUB-DIVISION, A PORTION OF THE NE 1/4 OF SECTION 11 T2S, R5E

S1/2 OF NW1/4 & N1/2 OF SW1/4,
SECTION 11 TOWNSHIP 2 SOUTH RANGE 5 EAST.

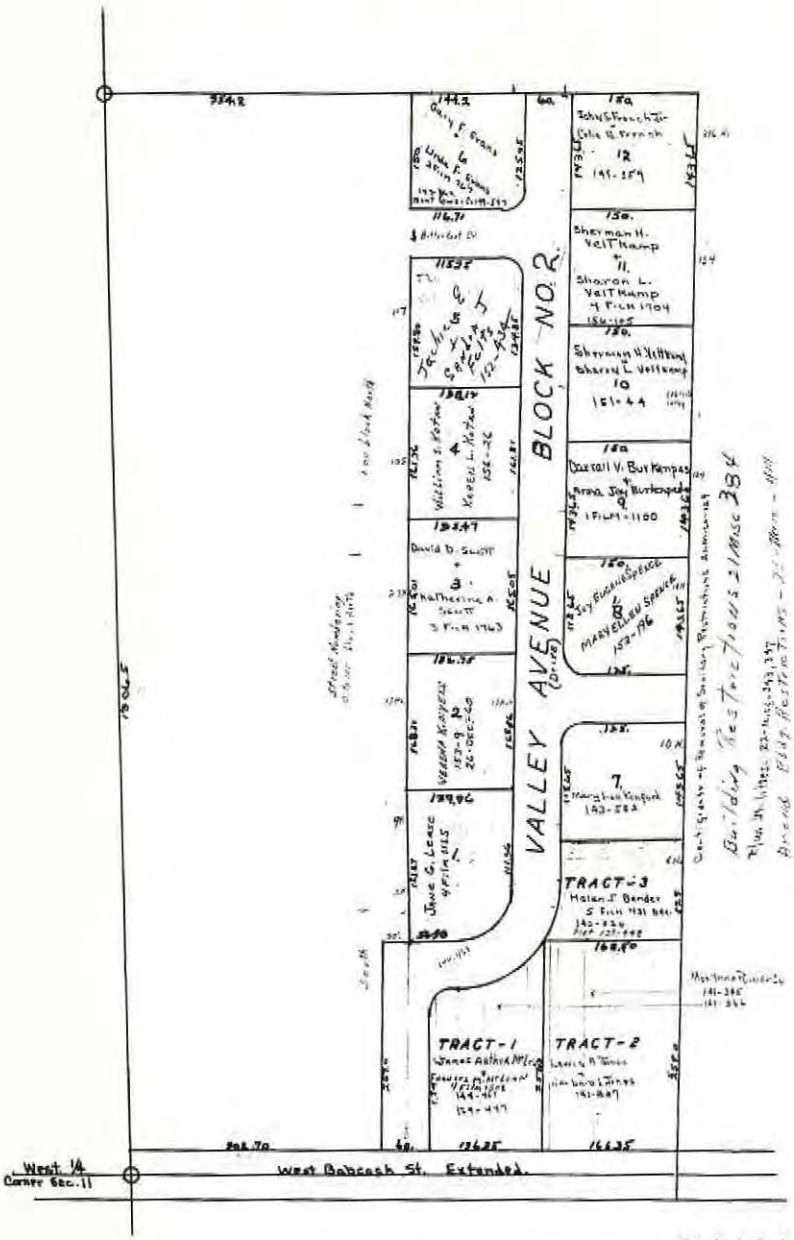
SCALE: One (1) Inch Equals 200 Feet



SOUTH HALF OF NORTHWEST QUARTER &
NORTH HALF OF SOUTHWEST QUARTER OF SEC. 11.

SECTION 11 TOWNSHIP 2-S RANGE 5E

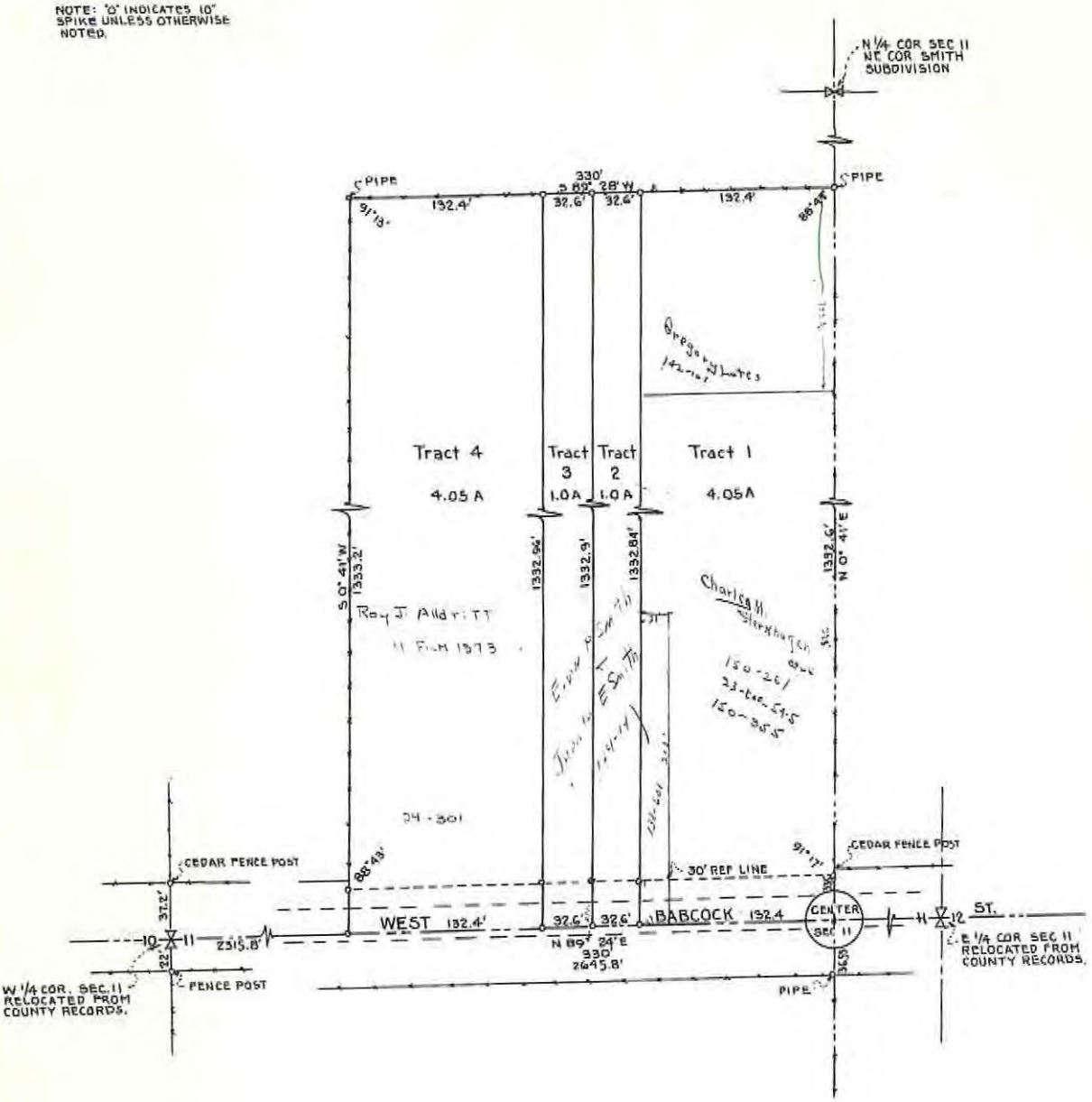
SCALE: One (1) Inch Equals 100 Feet



PLEASANT VALLEY SUB-DIVISION NO. 1

SEC. 11, 2S, 5E. W. 1/2 SW 1/4 NW 1/4

NOTE: "O" INDICATES 10" SPIKE UNLESS OTHERWISE NOTED.



FOWLER SUBDIVISION

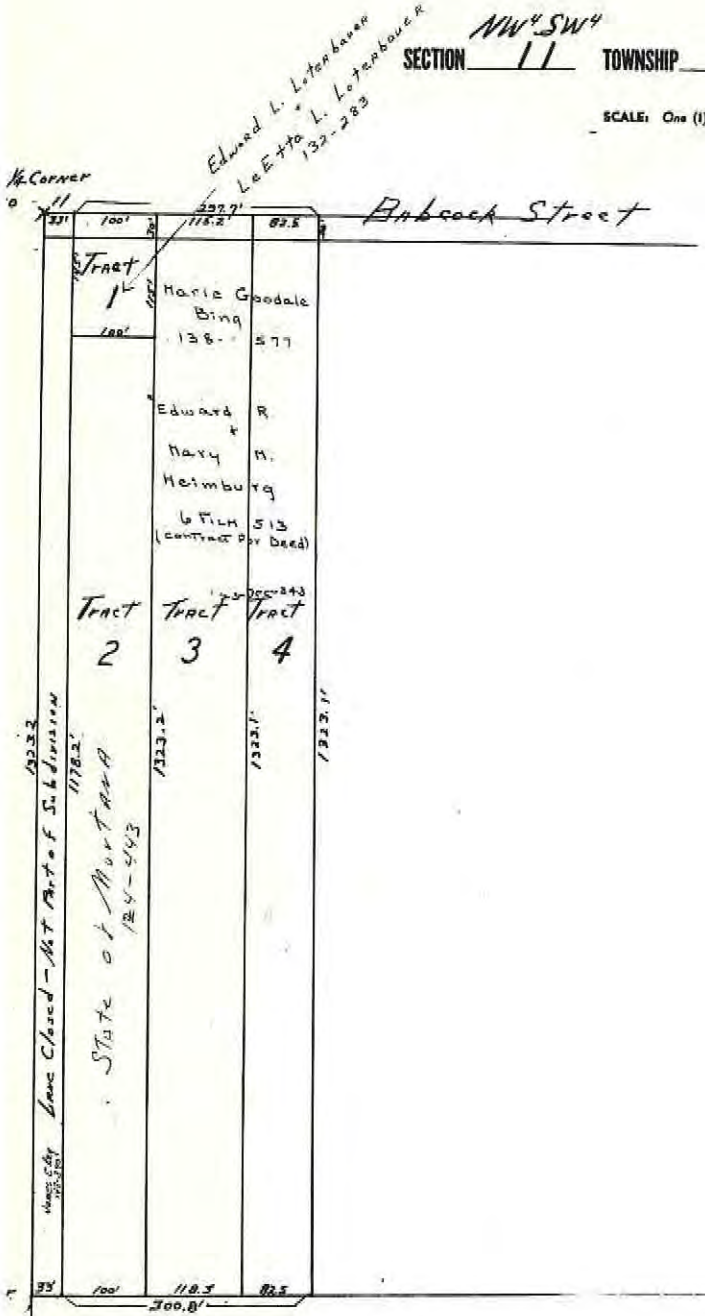
A SUBDIVISION OF PART OF THE SE 1/4 NW 1/4 SEC. 11
T2S R5E MPM

SCALE 1"=50

NW¼ SW¼

SECTION 11 TOWNSHIP 2 S RANGE 5 E

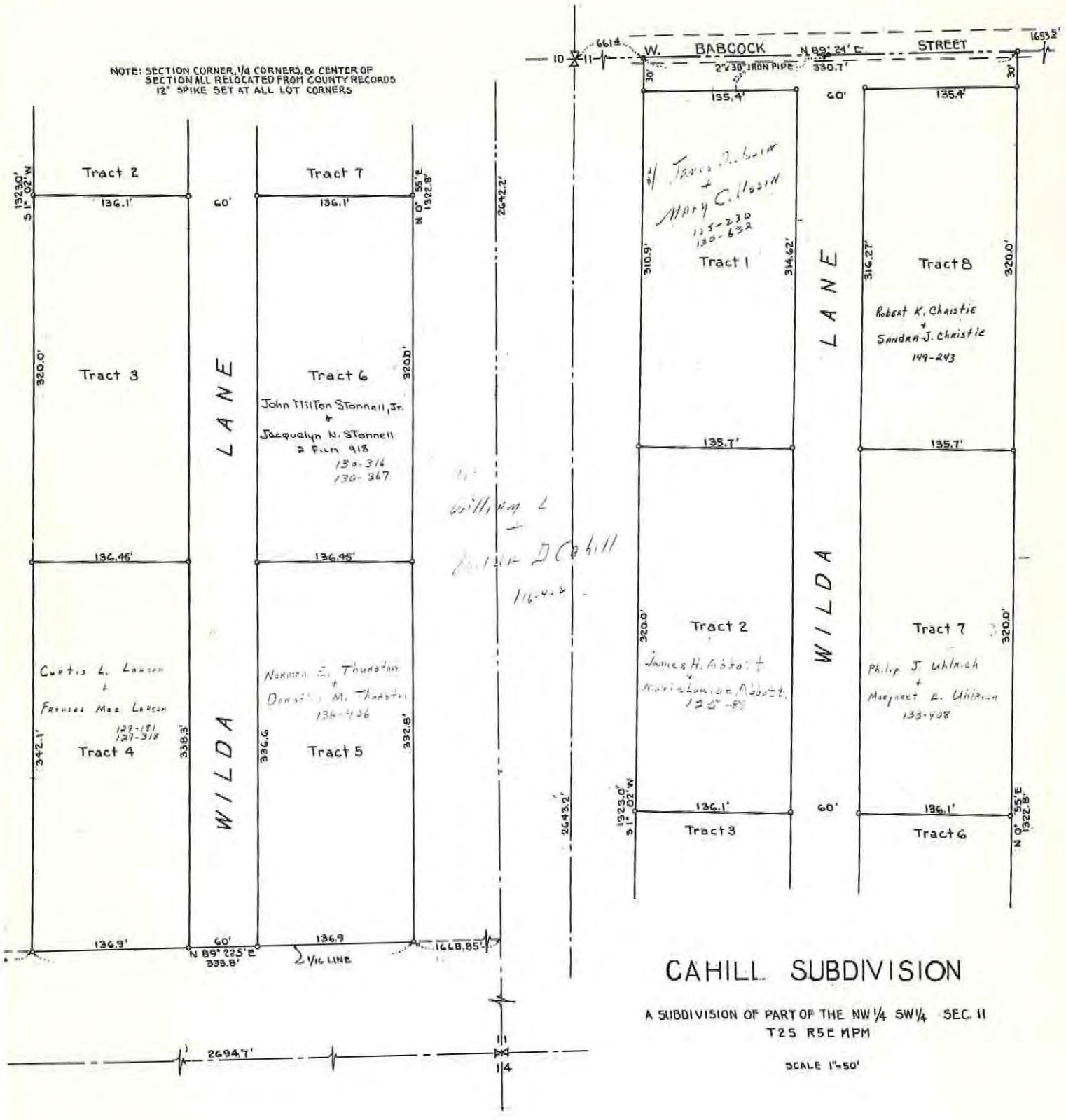
SCALE: One (1) Inch Equals 100 Feet



VAN HORN SUBDIVISION

A Subdivision of Part of The NW¼SW¼ Sec 11 T2S R5E M.P.M. Gallatin County, Montana

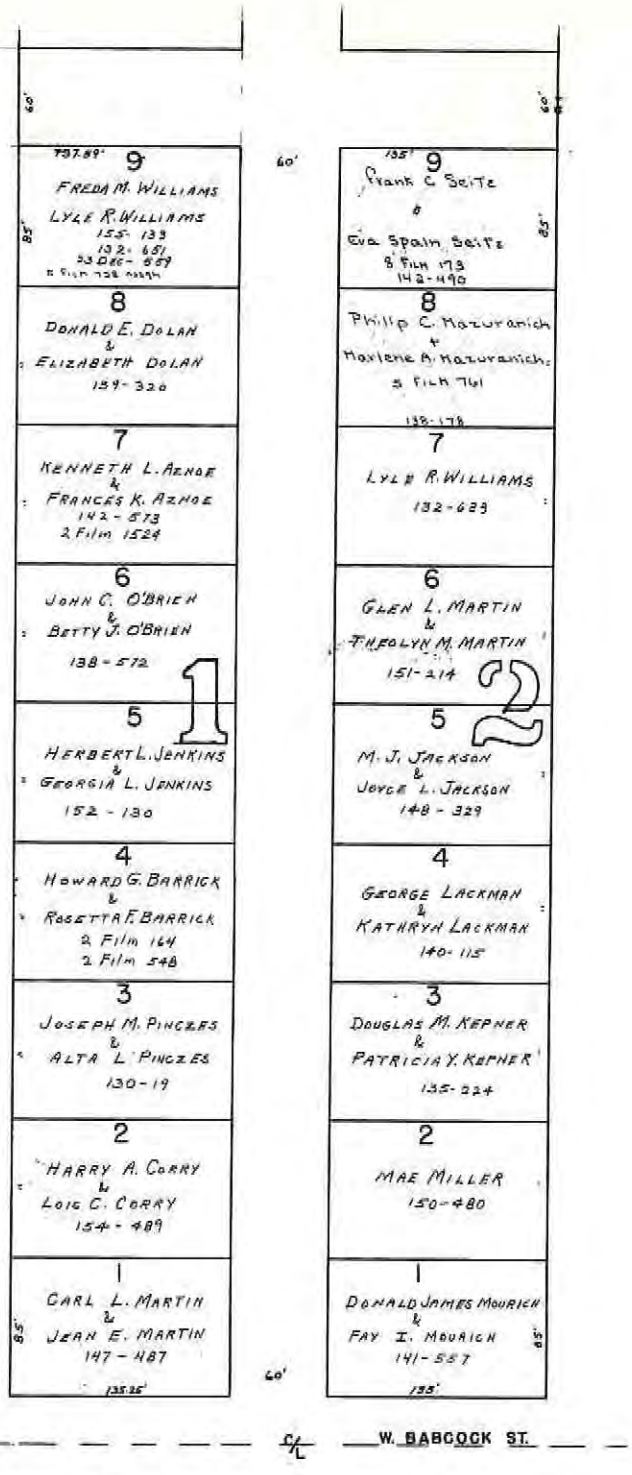
Van Horn Sub-Div. in N.W.¼ of SW¼ Sec. 11.



CAHILL SUBDIVISION

A SUBDIVISION OF PART OF THE NW 1/4 SW 1/4 SEC. 11
T2S R5E MPM

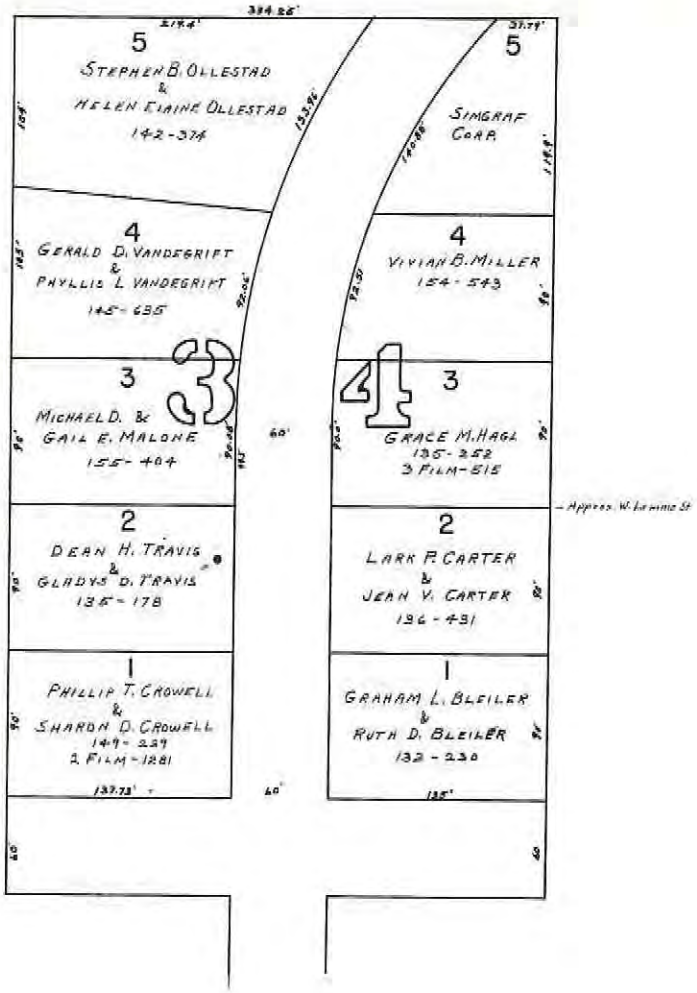
SCALE 1"=50'



FARWESTERN SUB-DIVISION

A PORTION OF NE.1/4, SECTION 11, T.2 S., R.5E.

SCALE 1"=60'



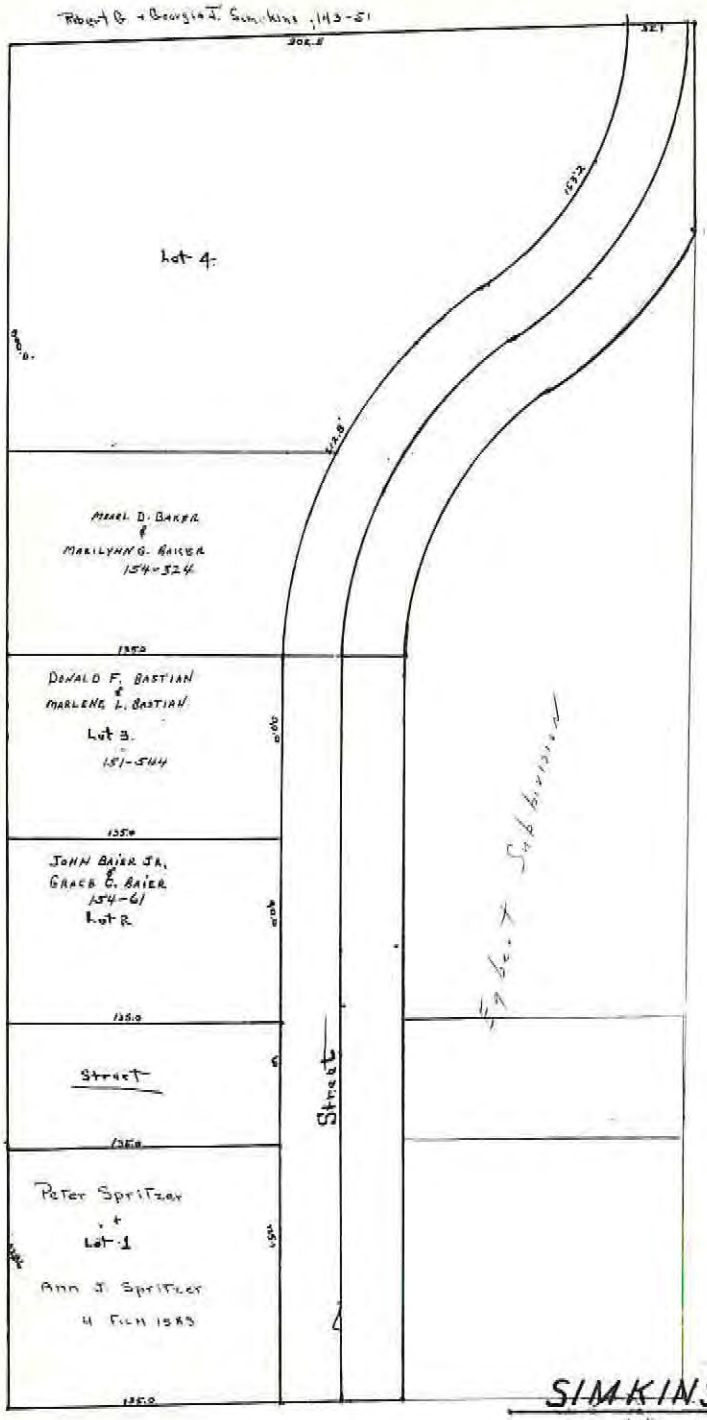
FARWESTERN SUB-DIVISION

A PORTION OF N E 1/4, SECTION 11, T. 2 S., R. 5 E.

SCALE—1" = 50'

SECTION 11 TOWNSHIP 2-S RANGE 5-E

SCALE: One (1) Inch Equals 40 Feet

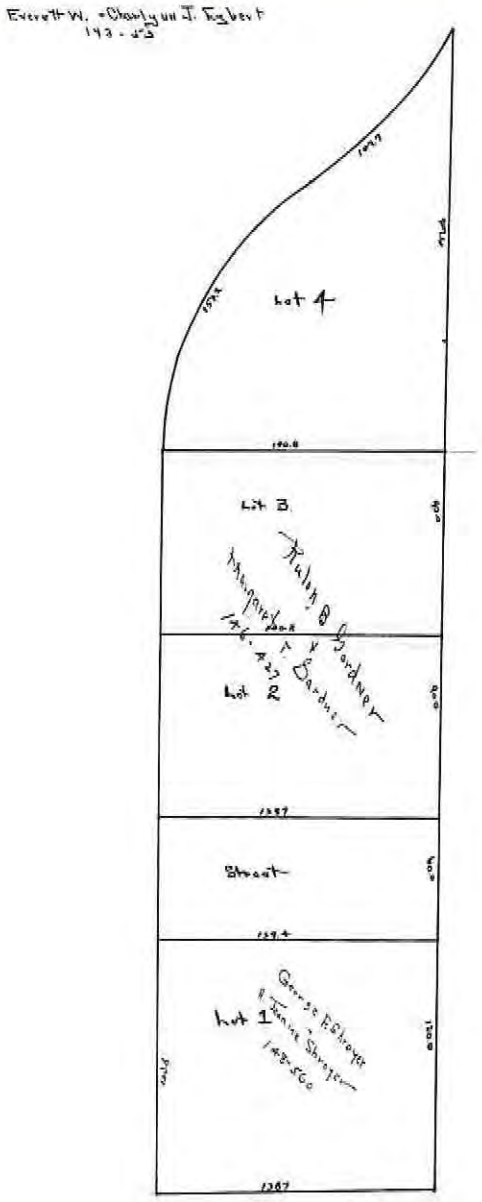


SIMKINS SUB-DIVISION

SEC. 11 - 2S. - 5E.

SECTION 11 TOWNSHIP 2-S RANGE 5-E

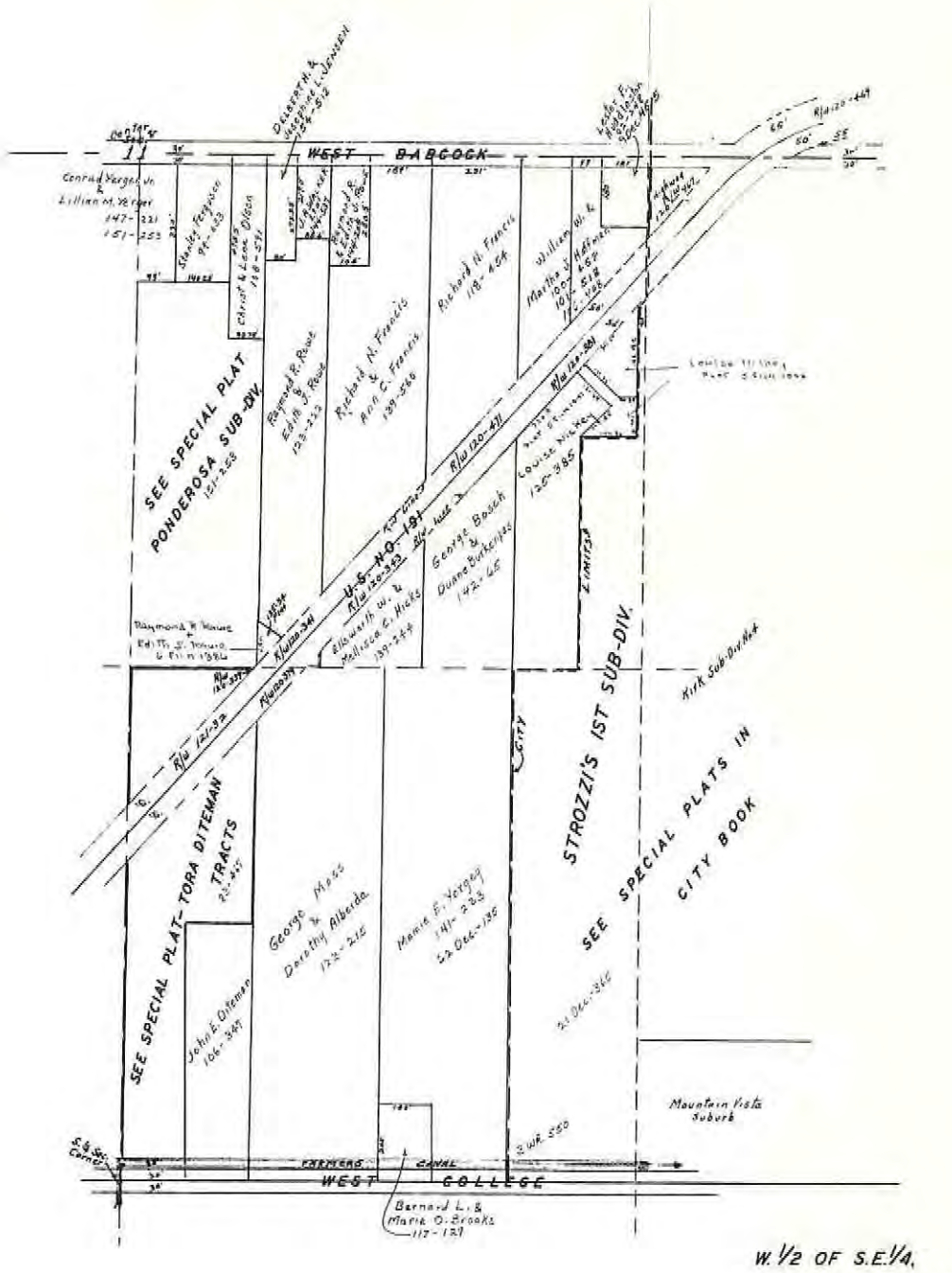
SCALE: One (1) Inch Equals 40 Feet



EGBERT SUB-DIVISION
SEC. 11 - 2 S - 5E

WEST HALF OF SOUTHEAST QUARTER
SECTION 11 TOWNSHIP 2 SOUTH RANGE 5 EAST

SCALE: One (1) Inch Equals 200 Feet



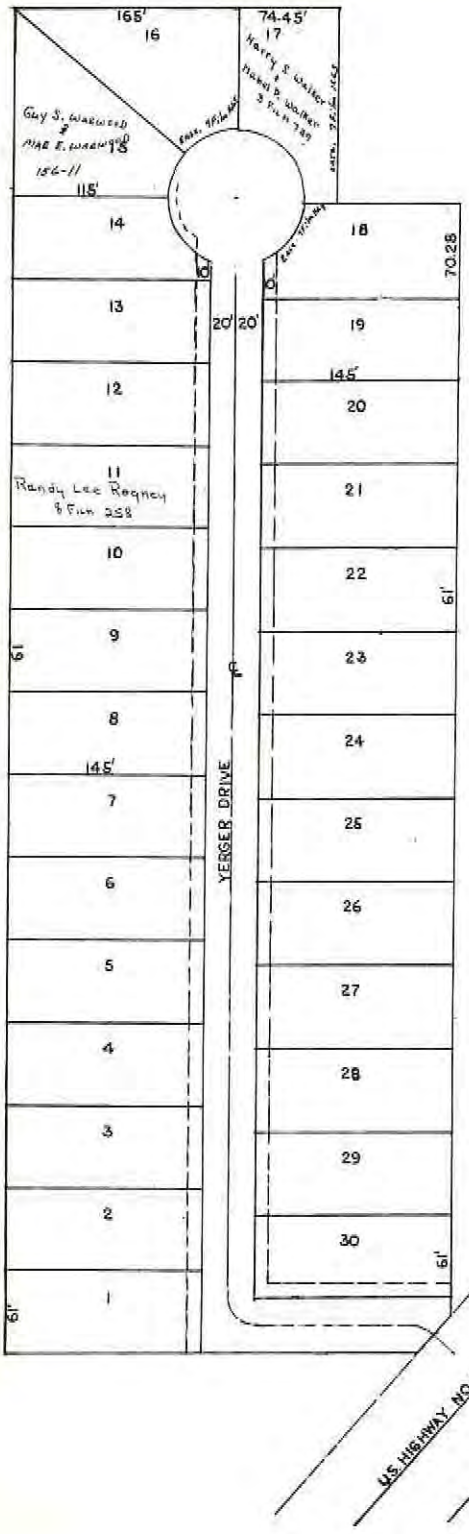
W. 1/2 OF S.E.1/4, SEC. 11, T. 2 S., R. 5 E.

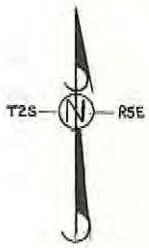
SECTION 11 TOWNSHIP 2S RANGE 5E

W1/2 NW1/4 SE1/4

SCALE: One (1) Inch Equals 60 Feet

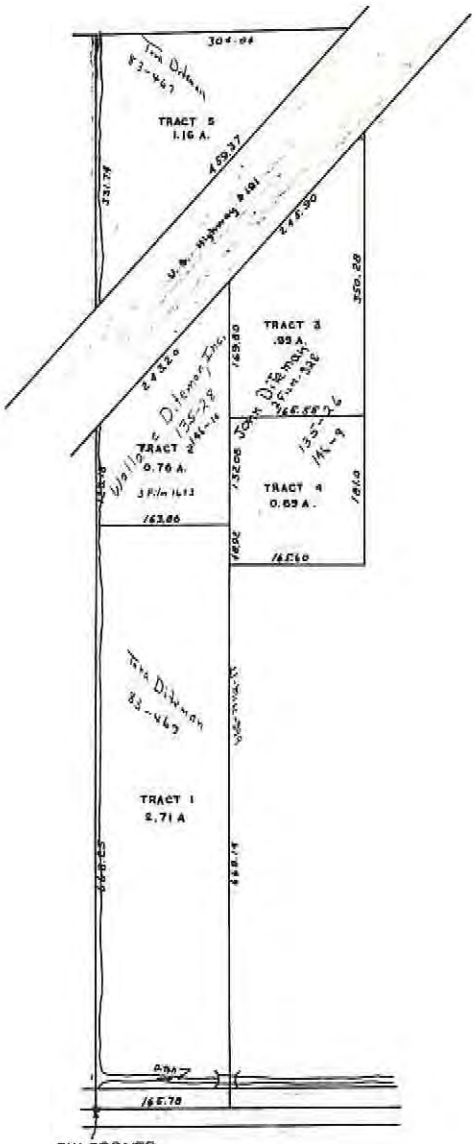
PONDEROSA MOBILE HOME SUB-DIVISION





W½ SW¼ SE¼ SECTION 11 TOWNSHIP 2' SOUTH RANGE 5 EAST

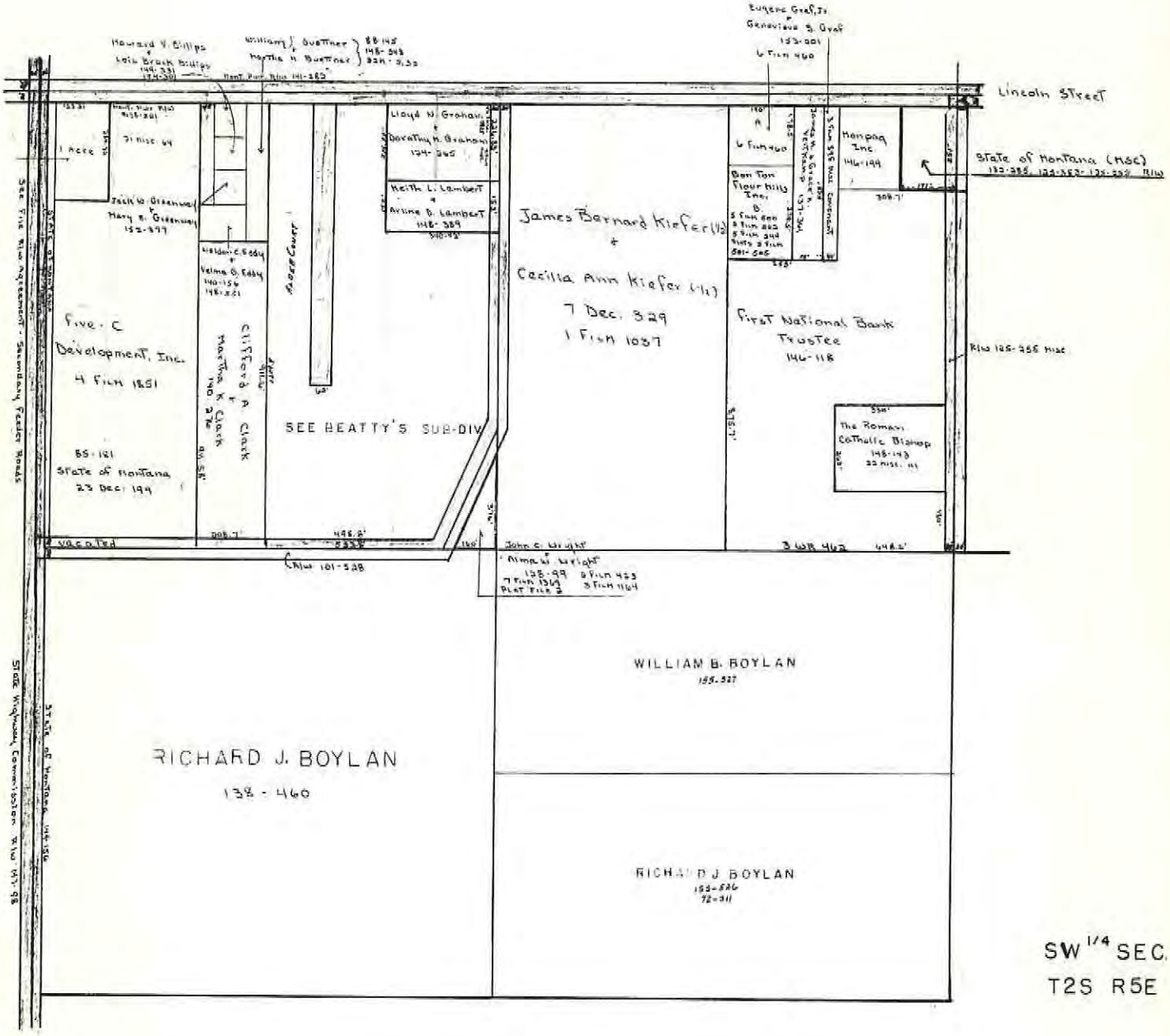
SCALE: One (1) Inch Equals 100 Feet



TORA DITEMAN
PROPERTY

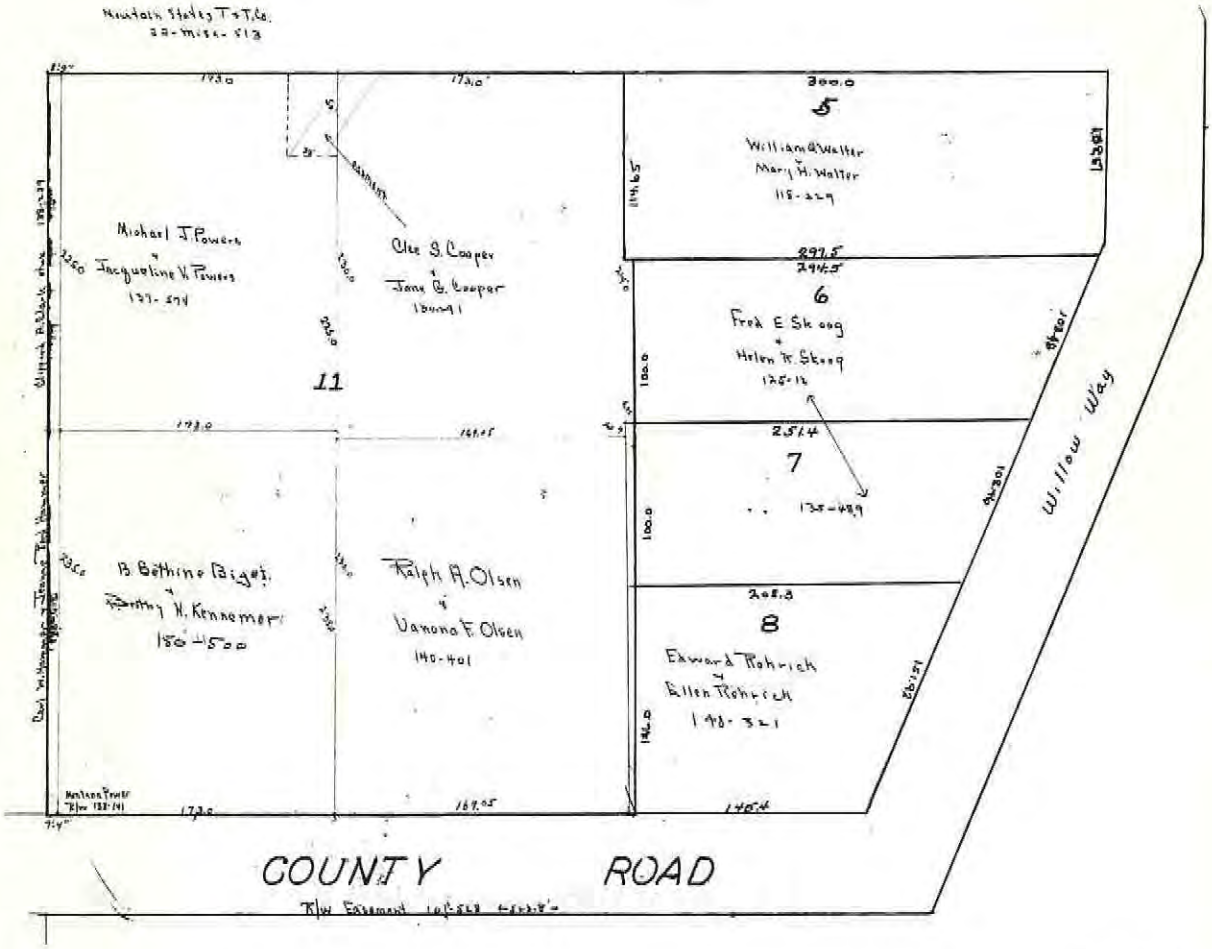
SECTION SW 1/4 **TOWNSHIP** 2S **RANGE** 5E

SCALE: One (1) Inch Equals 200 Feet



SECTION 13 TOWNSHIP 2S RANGE 5E

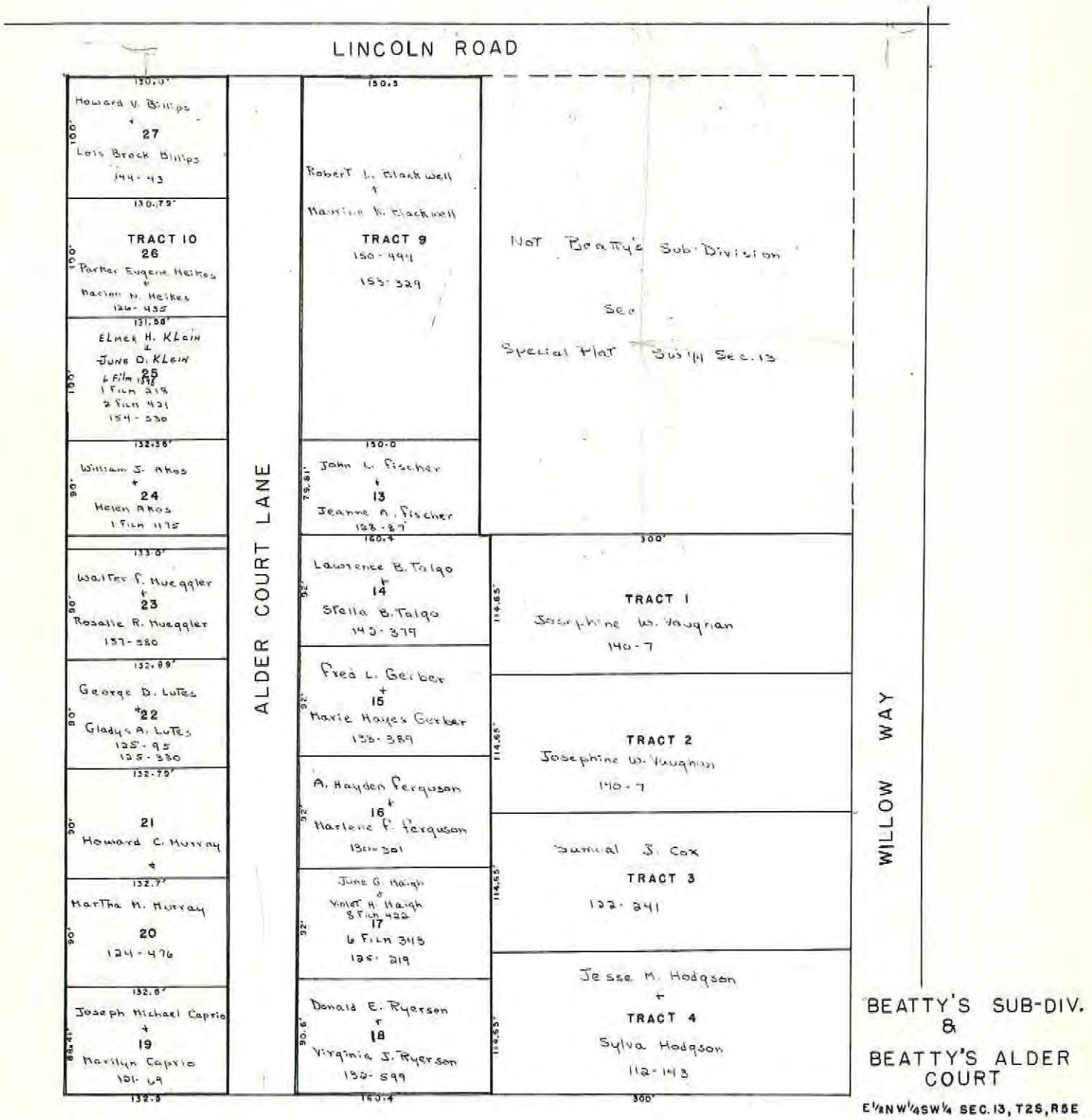
SCALE: One (1) Inch Equals 50 Feet



BEATTY'S SUB-DIVISION

E. HALF N.W. QUARTER S.W. QUARTER

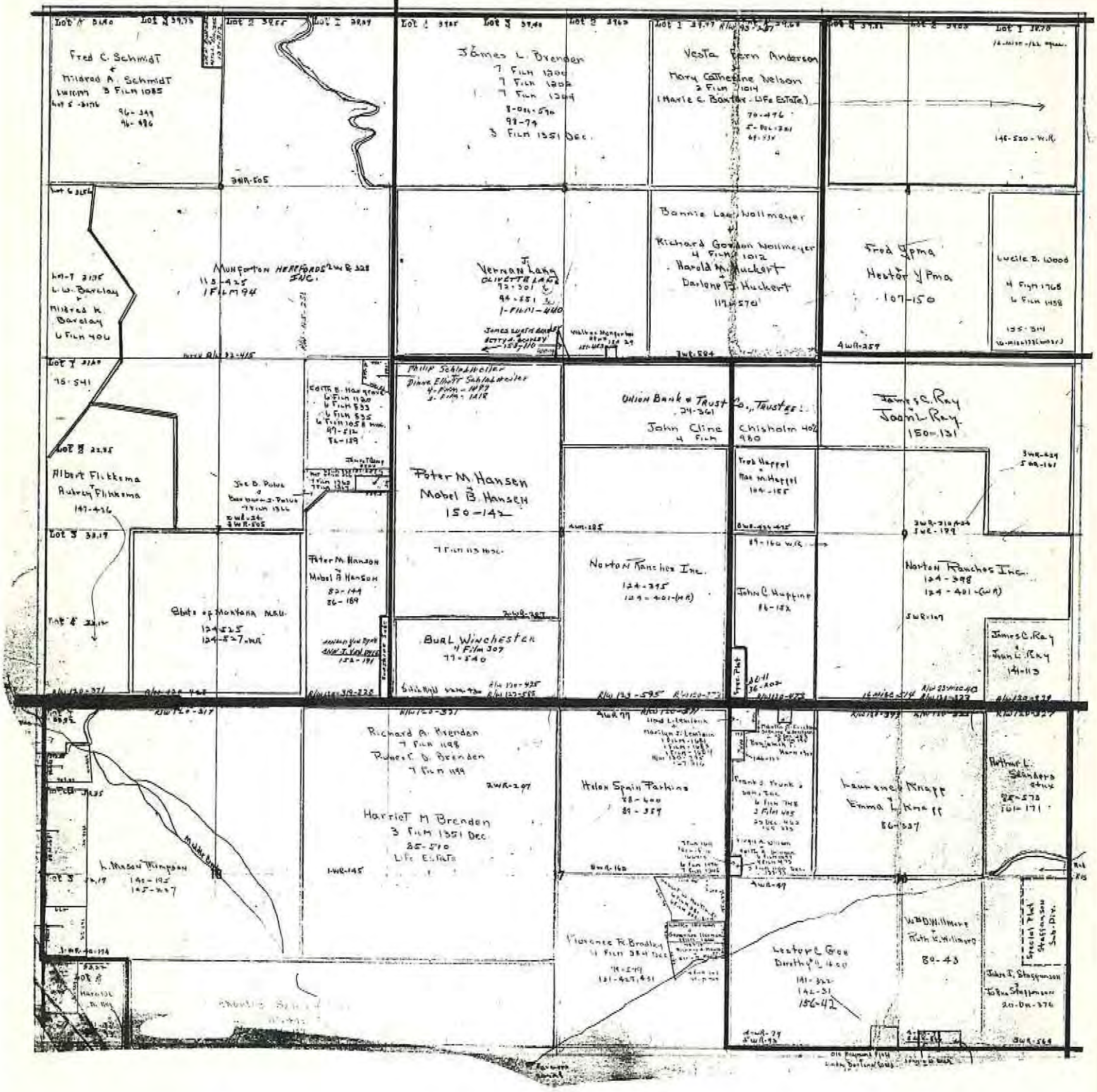
PART OF SECTION 13 T2S R5E



BEATTY'S SUB-DIV. & BEATTY'S ALDER COURT

E½NW¼SW¼ SEC. 13, T2S, R5E

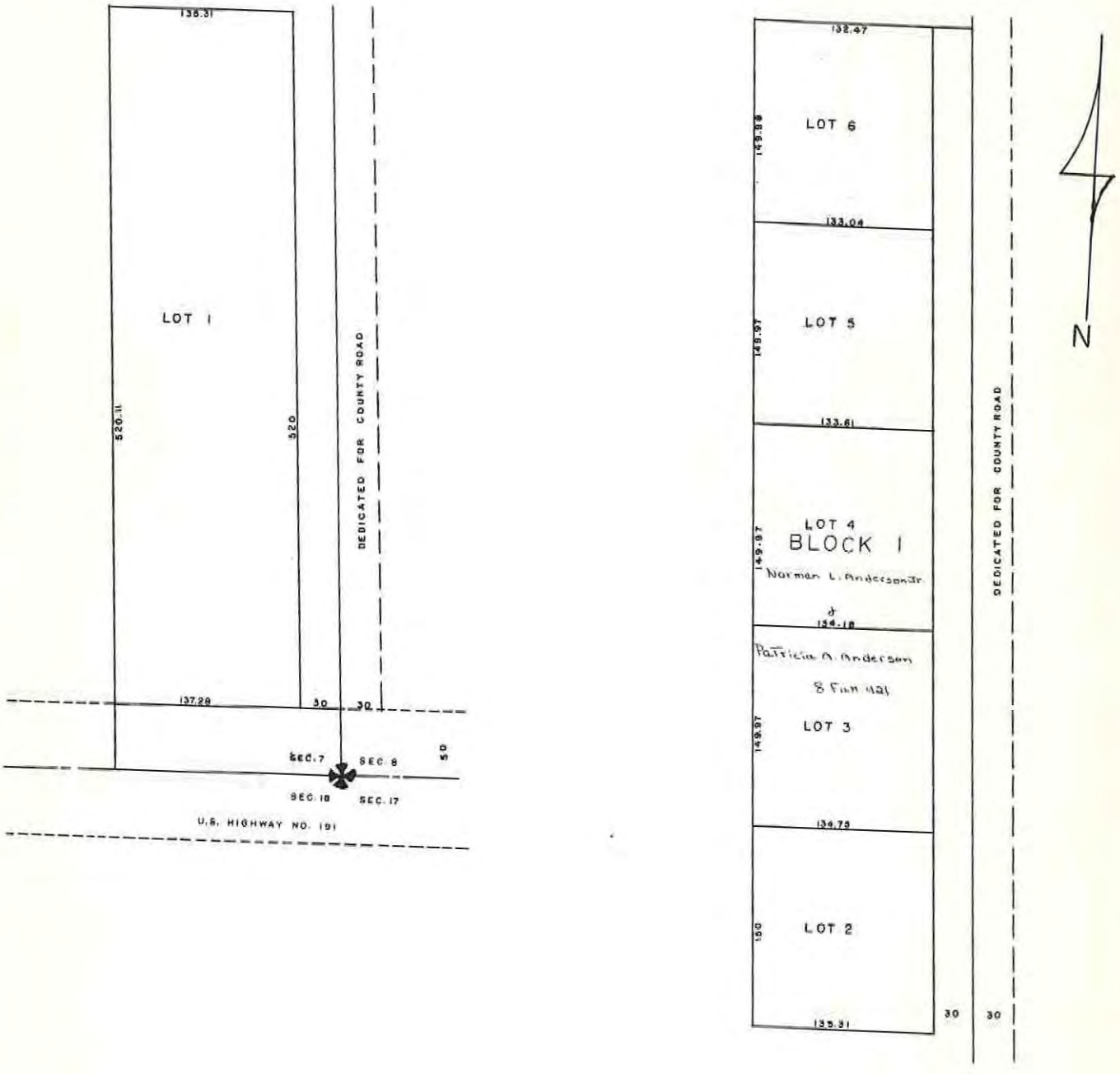
TOWNSHIP 2 SOUTH RANGE 5 EAST OF M. P. M.

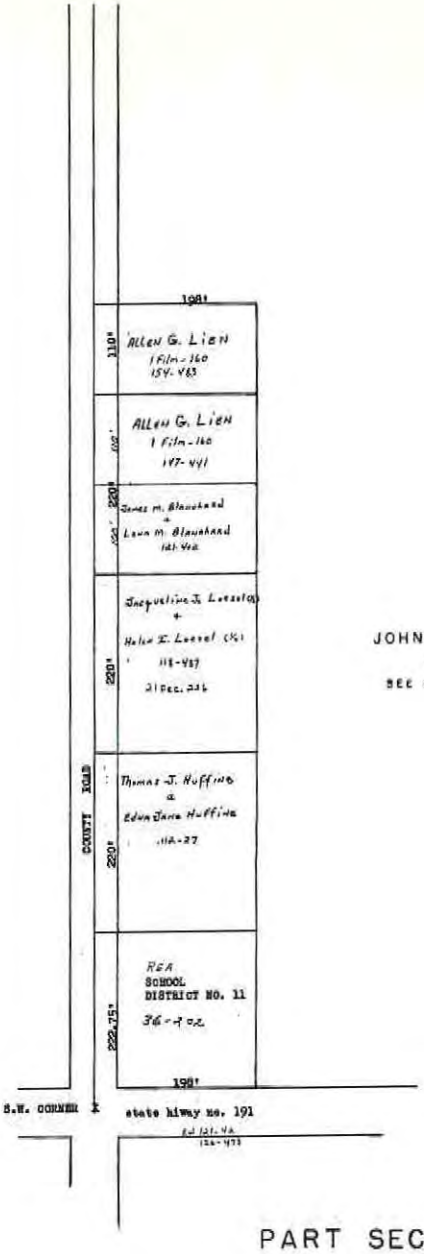


SE 1/4 SE 1/4 **SECTION** 7 **TOWNSHIP** 2S **RANGE** 5E

SCALE: One (1) Inch Equals 60 Feet

SUNSHINE SUBDIVISION



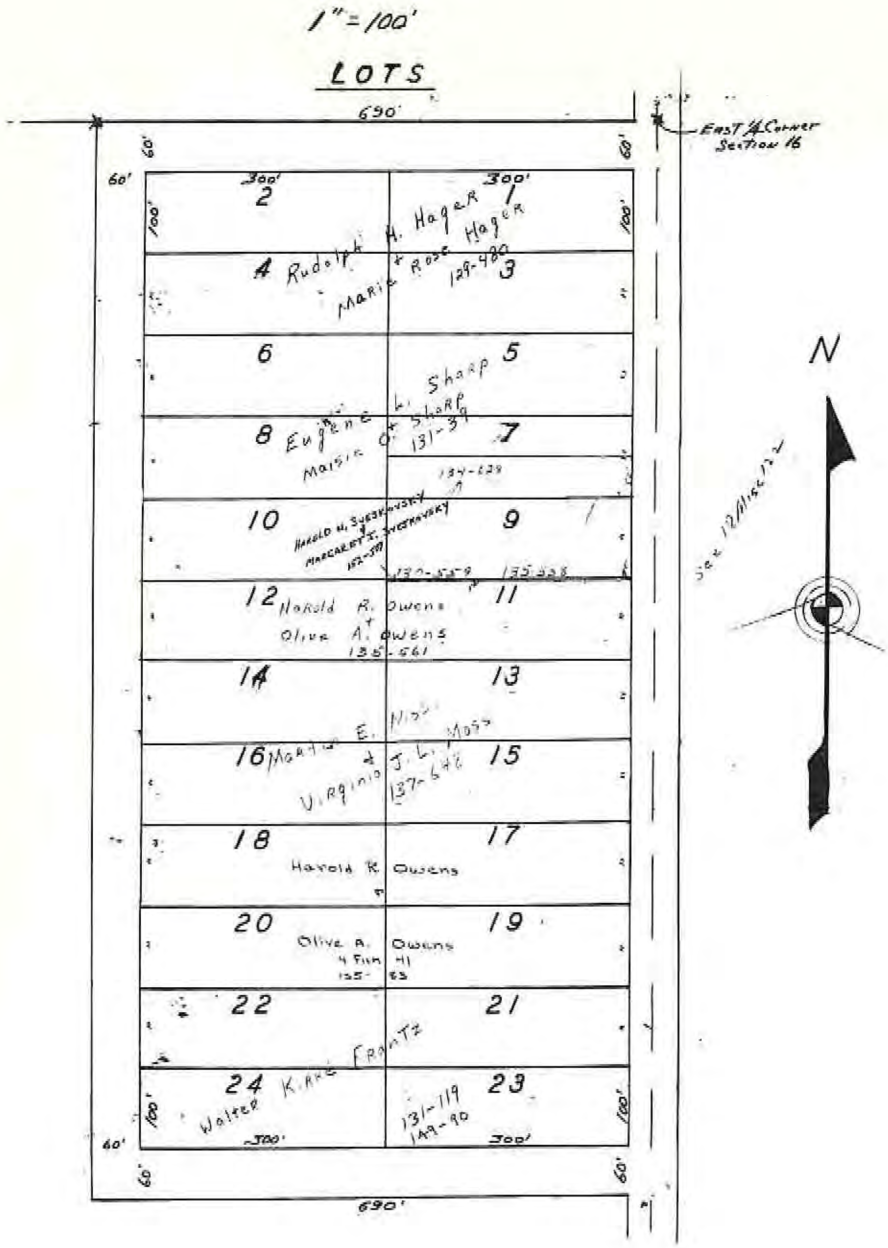


SCALE 1" = 100'

JOHN C. HUFFINE
86-152
SEE REGULAR PLAT

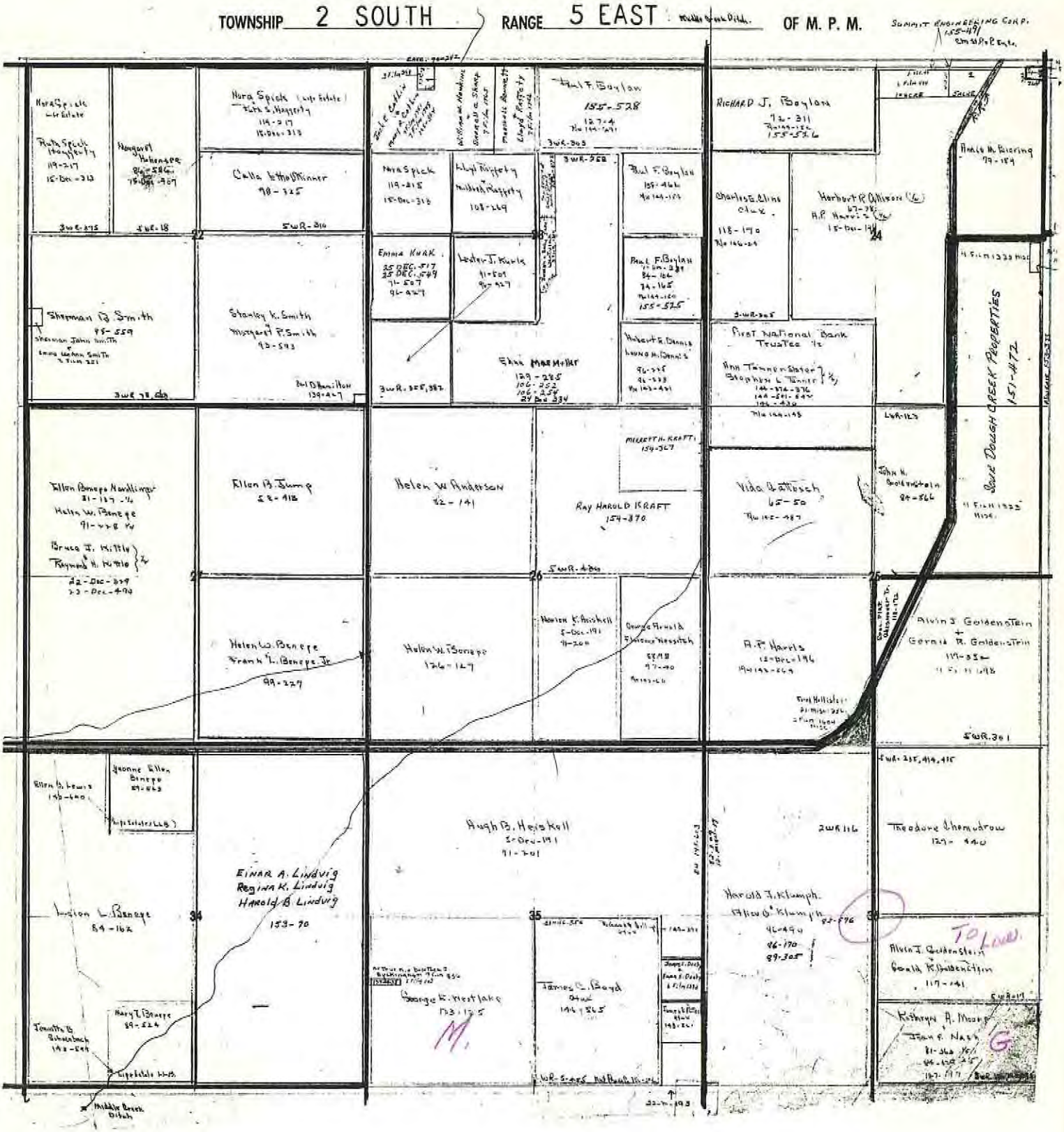
Plat by Wayne H. Babcock
Mont. Reg. No. 1158
July 1955

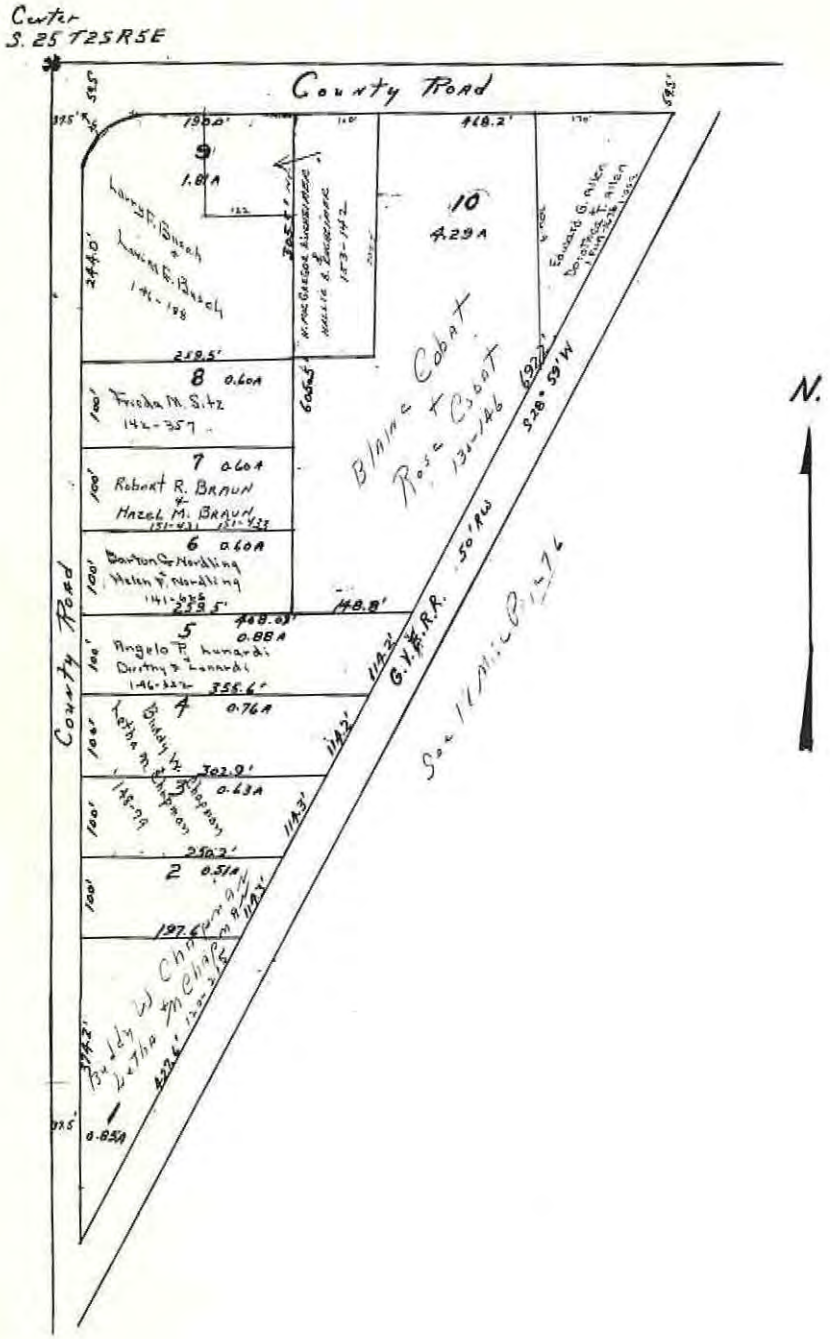
PART SEC. 9 T2S R5E



STAFFANSON
SUB-DIVISION NO. 1
A PORTION OF S.E. SEC. 16
T 2

TOWNSHIP 2 SOUTH RANGE 5 EAST OF M. P. M.



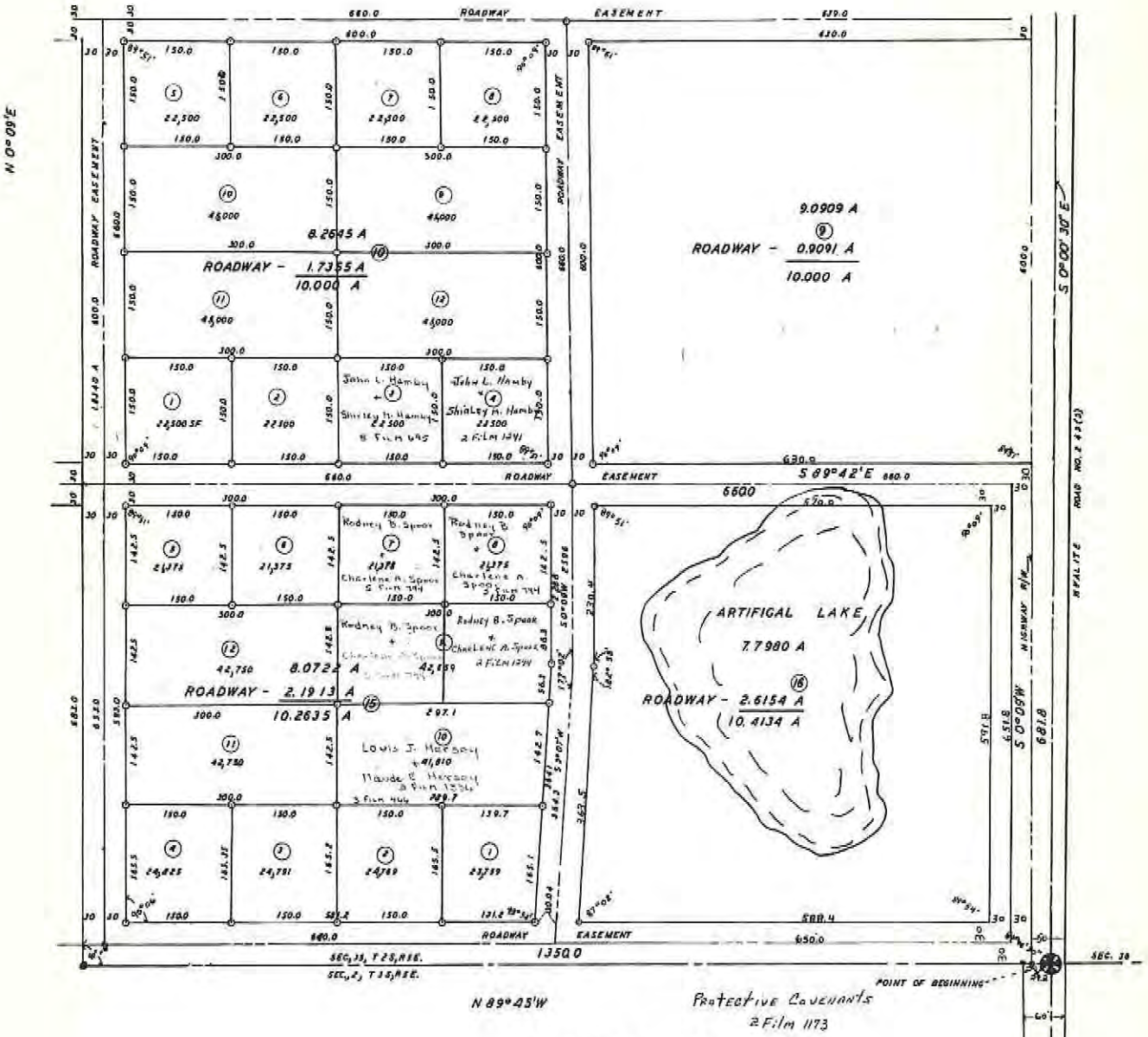


Chesapeake Tracts
A Subdivision in Gallatin County
State of Montana

Portion of W½ SE¼ S25 T2[redacted]

SECTION 35 TOWNSHIP 2S RANGE 5E

SCALE: One (1) Inch Equals 100 Feet

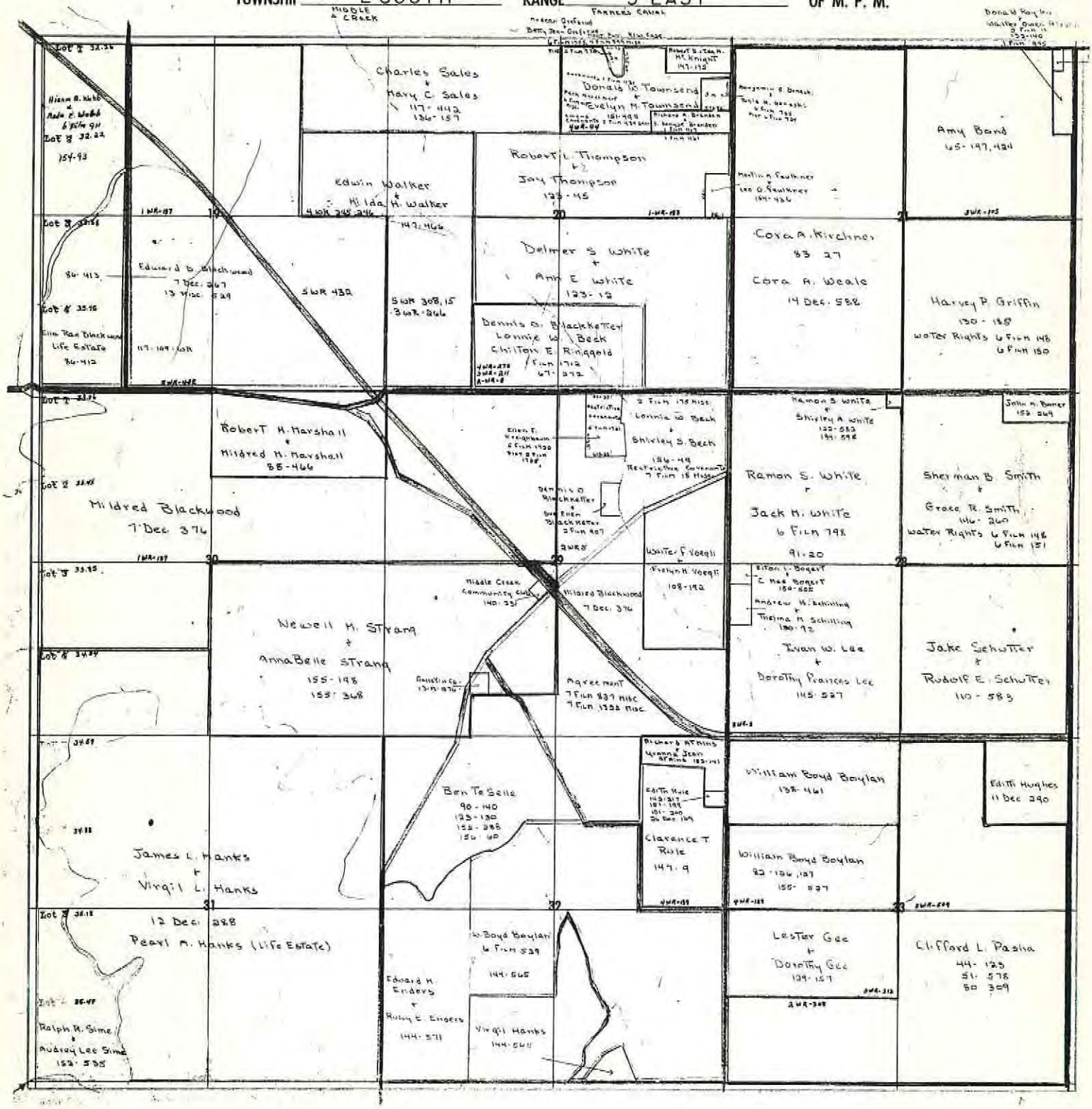


SE 1/4 SE 1/4

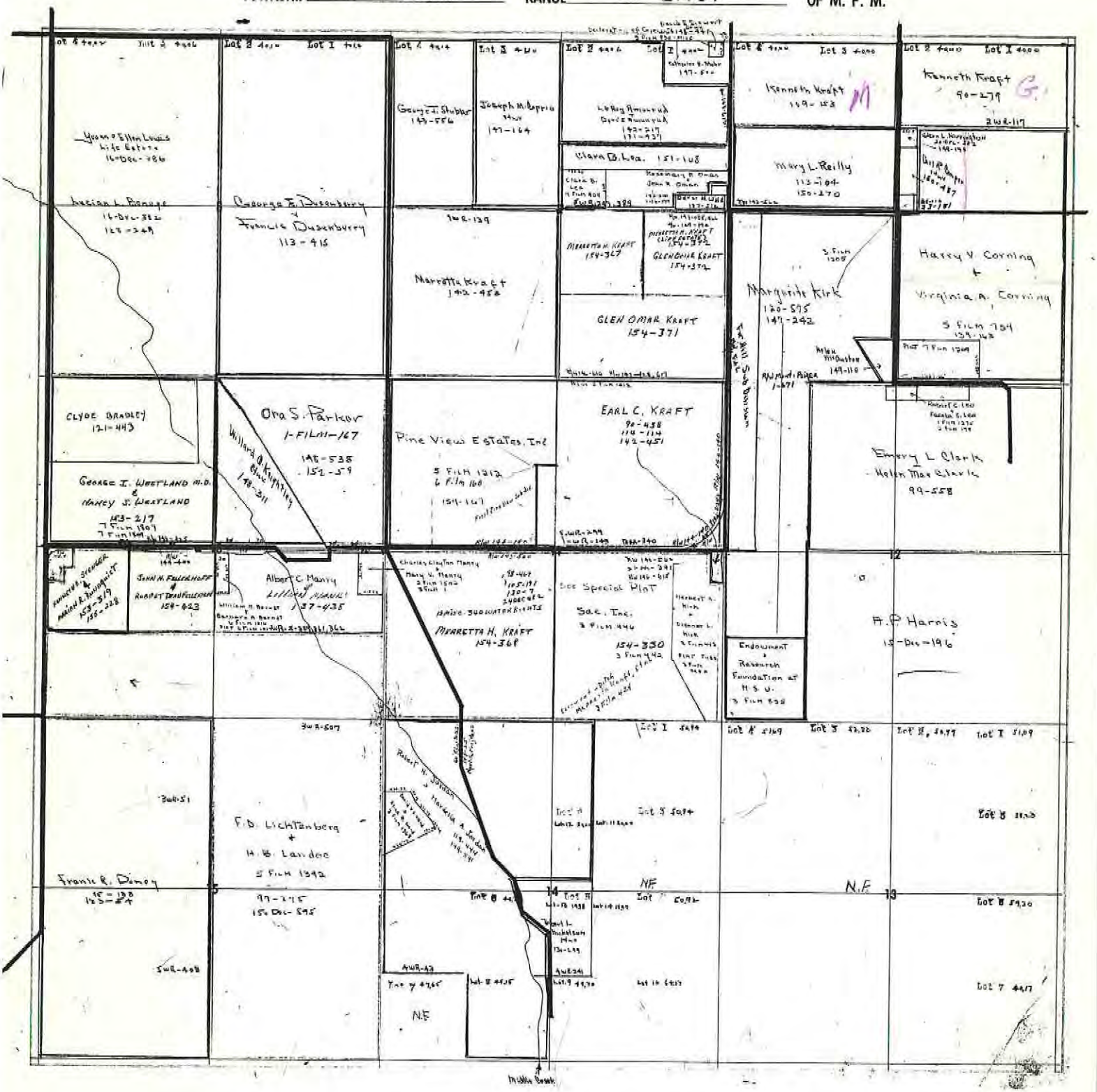
PART OF JAMES C. BOYD

SUB-DIVISON

TOWNSHIP 2 SOUTH RANGE 5 EAST OF M. P. M.



TOWNSHIP 3 SOUTH RANGE 5 EAST OF M. P. M.

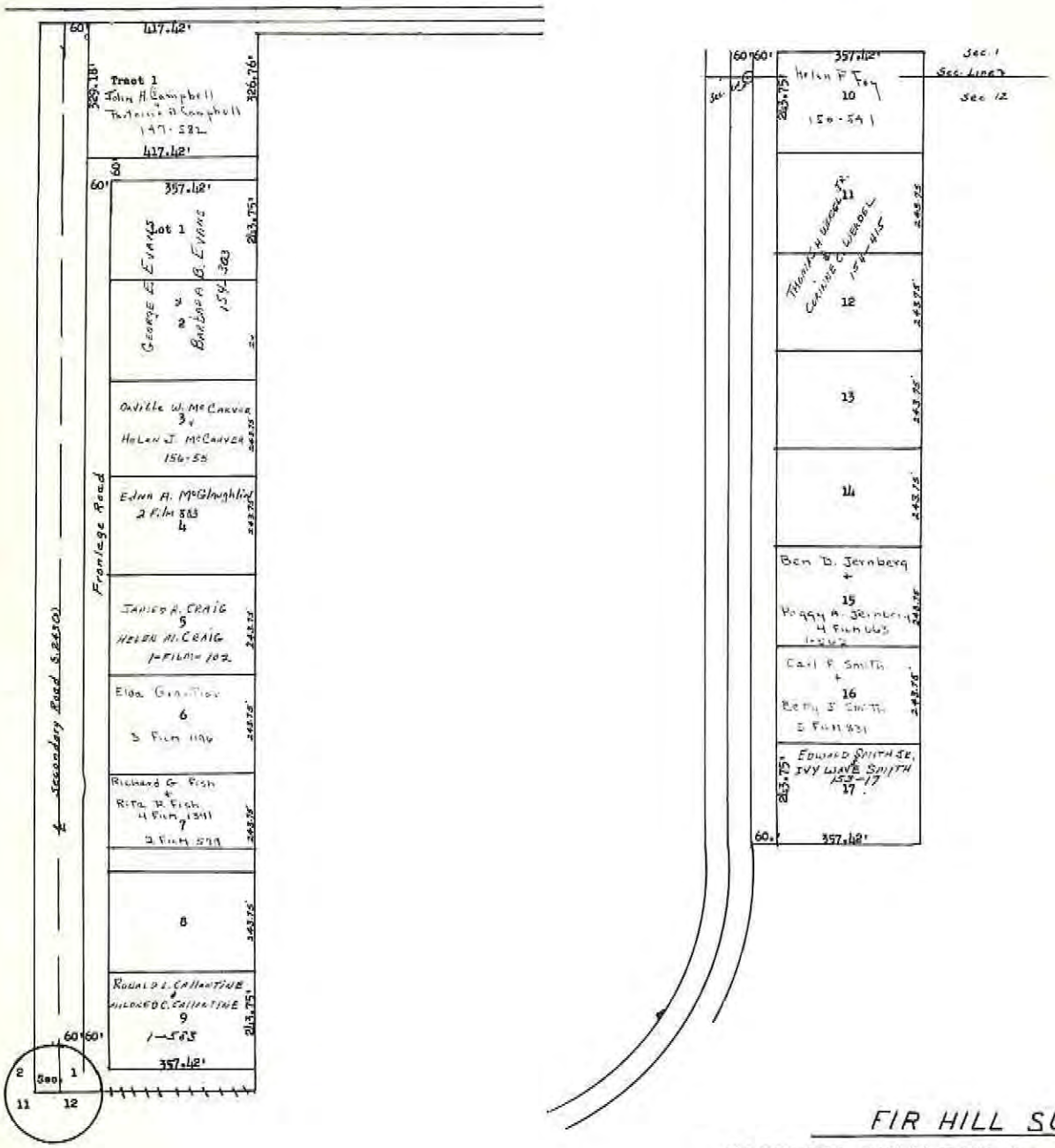


FIR HILL SUB-DIVISION

A TRACT OF LAND IN THE W½ OF THE W½ of THE SW¼ OF SECTION ONE 1, AND THE W½ OF THE W½ OF SECTION 12 ALL IN TOWNSHIP 3 SOUTH, RANGE 5 EAST, M.P.M., GALLATIN COUNTY, MONTANA.

SCALE - - - 1" -- 200. Ft.

Restrictive Covenants
22-Misc.-38
Modification of above
23-Misc.-82



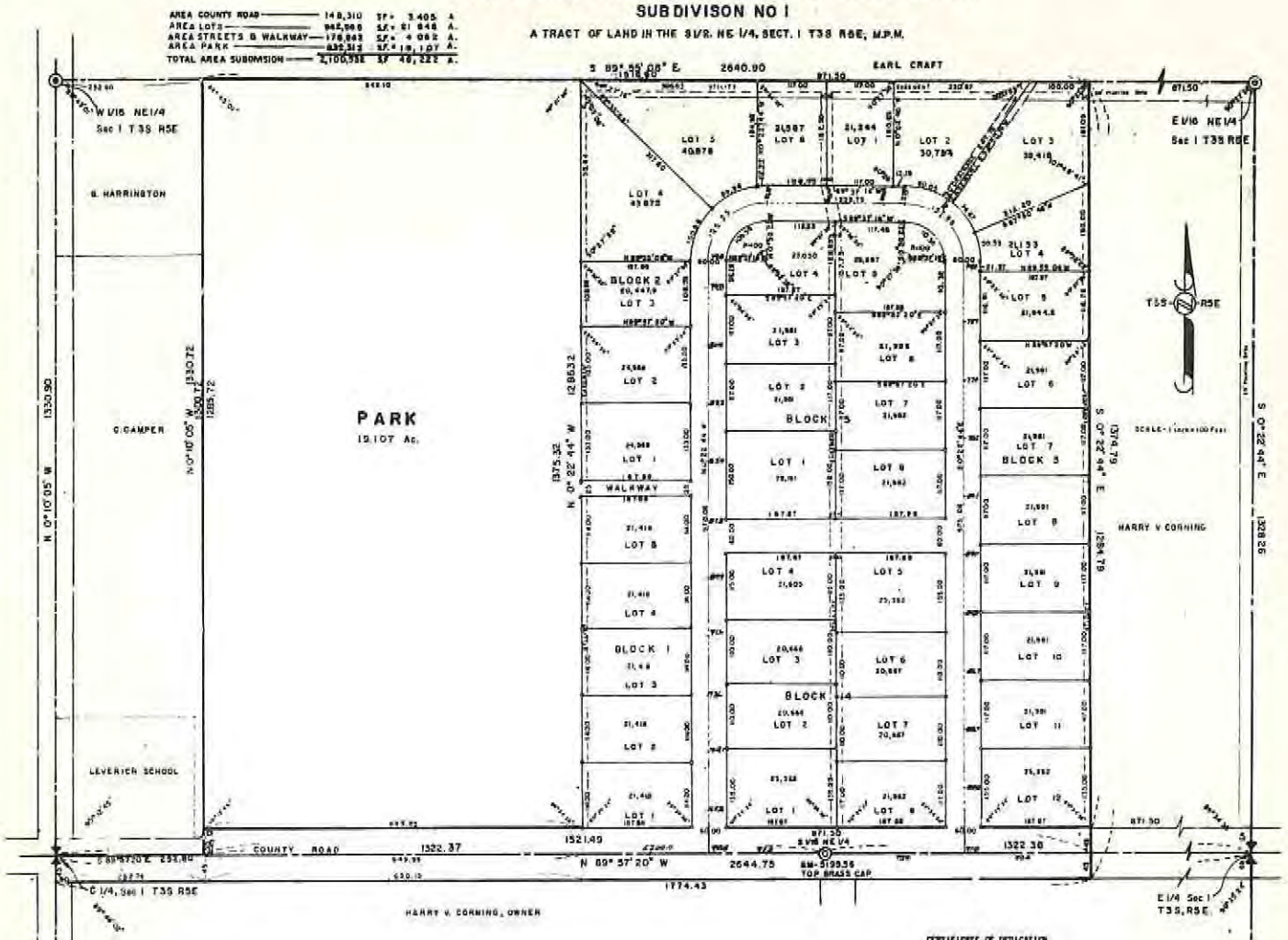
FIR HILL SUB-DIVISION
PART OF SW. ¼ SEC. 1 & N.W. ¼ SEC. 12.
T. 3 S, R. 5 E.

MOUNTAIN SHADOWS ESTATES

SUBDIVISON NO I

A TRACT OF LAND IN THE S1/2 NE 1/4, SECT. 1 T3S R5E, M.P.M.

AREA COUNTY ROAD ——— 148,310 SF= 3.405 A.
AREA LOTS ——— 942,988 SF= 21.646 A.
AREA STREETS & WALKWAY ——— 178,843 SF= 4.082 A.
AREA PARK ——— 830,313 SF=19.107 A.
TOTAL AREA SUBDIVISION ——— 2,100,956 SF 48.222 A.



CERTIFICATE OF CITY-COUNTY PLANNING BOARD

APPROVED IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE CITY-COUNTY PLANNING BOARD.

DATED THIS _____ DAY OF _____ A.D., 1970

_____
PRESIDENT CITY-COUNTY PLANNING BOARD

CERTIFICATE OF COUNTY COMMISSIONERS

STATE OF MONTANA)
:ss
COUNTY OF GALLATIN)

THIS PLAT OF MOUNTAIN SHADOWS ESTATES, SUBDIVISION NO. 1, PARK AND PLAYGROUND PROVIDED, AND HAVING BEEN PRESENTED TO THE BOARD OF COUNTY COMMISSIONERS OF GALLATIN COUNTY FOR APPROVAL, PURSUANT TO THE PROVISIONS OF CHAPTER 8, TITLE 11, SECTIONS 11-601 TO 11-610, RCM 1947, AND SECTION 11-614.1, ENACTED AS SECTION 1, CHAPTER 82, LAWS OF 1953, WAS DULY APPROVED AND SAID APPROVAL ENTERED INTO THE PROCEEDINGS OF THE BOARD OF COUNTY COMMISSIONERS IN REGULAR SESSION ON THE _____ DAY OF _____ A.D., 1970.

IN WITNESS WHEREOF, SAID BOARD OF COUNTY COMMISSIONERS HAVE CAUSED THIS CERTIFICATE TO BE SIGNED BY ITS CHAIRMAN AND ATTESTED BY ITS CLERK, THE COUNTY CLERK AND RECORDER OF GALLATIN COUNTY, MONTANA AS THE DAY AND YEAR FIRST ABOVE WRITTEN.

ATTEST

_____
COUNTY CLERK AND RECORDER
GALLATIN COUNTY, MONTANA

_____
CHAIRMAN, BOARD OF COUNTY COMMISSIONERS
GALLATIN COUNTY, MONTANA

CERTIFICATE OF CLERK AND RECORDER

STATE OF MONTANA)
:ss
COUNTY OF GALLATIN)

I, CARL C. STUCKY, THE DULY ELECTED AND ACTING COUNTY CLERK AND RECORDER OF GALLATIN COUNTY, MONTANA DO HEREBY CERTIFY THAT THE FOREGOING INSTRUMENT WAS FILED FOR RECORD IN MY OFFICE ON THIS _____ DAY OF _____ A.D., 1970, AT _____ O'CLOCK ___ M., AND RECORDED ON PAGE _____ OF BOOK _____ OF PLATS.

_____
COUNTY CLERK AND RECORDER
GALLATIN COUNTY, MONTANA

CERTIFICATE OF DEDICATION

STATE OF MONTANA)
:ss
COUNTY OF GALLATIN)

WE, HARRY V. CORNING AND VIRGINIA ALICE CORNING, HUSBAND AND WIFE, DO HEREBY CERTIFY THAT WE ARE THE OWNERS OF AND AS SUCH HAVE CAUSED TO BE SURVEYED, SUBDIVIDED AND PLATTED INTO LOTS, BLOCKS, STREETS AND PARK, AS SHOWN BY THE PLAT AND CERTIFICATE OF DEDICATION HEREUNTO ANNEXED THE FOLLOWING DESCRIBED TRACT OF LAND LYING IN THE SOUTH ONE-HALF (S½) OF THE NORTHEAST ONE-QUARTER (NE¼) OF SECTION ONE (1), TOWNSHIP THREE (3) SOUTH, RANGE FIVE (5) EAST, MONTANA PRINCIPAL MERIDIAN, GALLATIN COUNTY, MONTANA,

BEGINNING AT THE CENTER ONE-QUARTER CORNER OF SAID SECTION ONE (1),
THENCE SOUTH 89° 55' 08" EAST ON AND ALONG THE SOUTH LINE OF THE NORTHEAST ONE-QUARTER (NE¼) A DISTANCE OF 2640.0 FEET,
THENCE NORTH 00° 10' 05" WEST PARALLEL TO THE WEST LINE OF THE NORTHEAST ONE-QUARTER (NE¼) A DISTANCE OF 1330.72 FEET TO THE NORTH LINE OF THE SOUTH ONE-HALF (S½) OF THE NORTHEAST ONE-QUARTER (NE¼) OF SECTION ONE (1),
THENCE SOUTH 89° 55' 08" EAST ON AND ALONG SAID NORTH LINE A DISTANCE OF 1818.00 FEET,
THENCE SOUTH 0° 22' 44" EAST PARALLEL TO THE EAST LINE OF SAID NORTHEAST ONE-QUARTER (NE¼), A DISTANCE OF 1274.76 FEET TO A POINT 45 FEET SOUTH OF THE SOUTH LINE OF SAID NORTHEAST ONE-QUARTER (NE¼),
THENCE NORTH 89° 57' 20" WEST, 45 FEET SOUTH AND PARALLEL TO THE SOUTH LINE OF THE NORTHEAST ONE-QUARTER (NE¼) A DISTANCE OF 1774.43 FEET TO THE WEST LINE OF THE SOUTHEAST ONE-QUARTER (SE¼) OF SAID SECTION ONE (1),
THENCE NORTH 0° 11'10" WEST ON AND ALONG THE WEST LINE OF THE SOUTHEAST ONE-QUARTER (SE¼), A DISTANCE OF 45.0 FEET TO THE POINT OF BEGINNING,

THE ABOVE DESCRIBED TRACT OF LAND IS TO BE KNOWN AND DESIGNATED AS MOUNTAIN SHADOWS ESTATES, SUBDIVISION NO 1, THAT ALL STREETS, WALKWAYS AND PARK SHOWN BY THIS PLAT/MAP ARE HEREBY DONATED, GRANTED AND DEDICATED TO THE USE OF THE PUBLIC FOREVER.

SIGNED THIS _____ DAY OF _____ A.D., 1970

_____
HARRY V. CORNING, HUSBAND

_____
VIRGINIA ALICE CORNING, WIFE

ON THIS _____ DAY OF _____ A.D., 1970, BEFORE ME, A NOTARY PUBLIC FOR THE STATE OF MONTANA, PERSONALLY APPEARED HARRY V. CORNING AND VIRGINIA ALICE CORNING, HUSBAND AND WIFE, KNOWN TO ME TO BE THE PERSONS WHOSE NAMES ARE SUBSCRIBED TO THE FOREGOING CERTIFICATE OF DEDICATION, AND ACKNOWLEDGED TO ME THAT THEY EXECUTED THE SAME FOR THE USES AND PURPOSES THEREIN SET FORTH.

IN WITNESS WHEREOF, I HAVE SET MY HAND AND AFFIXED MY NOTARIAL SEAL AT MY OFFICE IN _____, _____, THE DAY AND YEAR IN THIS CERTIFICATE FIRST ABOVE WRITTEN.

_____
NOTARY PUBLIC FOR THE STATE OF MONTANA
RESIDING AT _____
MY COMMISSION EXPIRES _____

CERTIFICATE OF SURVEYOR

STATE OF MONTANA)
:ss
COUNTY OF GALLATIN)

I, CARL H. DEDY, A REGISTERED PROFESSIONAL ENGINEER AND LAND SURVEYOR IN THE STATE OF MONTANA, REGISTRATION NUMBER 1770 ES, DO HEREBY CERTIFY THAT THE ABOVE SURVEY WAS MADE UNDER MY DIRECT SUPERVISION, THAT THE MOUNTAIN SHADOWS ESTATES, SUBDIVISION NO. 1 WAS MADE IN STRICT ACCORDANCE WITH THE PROVISIONS OF CHAPTER 8, TITLE 11, SECTIONS 11-601 11-610 RCM, 1947, AND 11-614.1 ENACTED AS SECTION 2, CHAPTER 82, LAWS OF 1953, THAT THE SURVEY WAS STARTED ON APRIL 22, 1970, AND COMPLETED ON _____, 1970, THAT 5/8" X 24" REINFORCING BAR WITH ALUMINUM CAPS BEING SET AT ALL CORNERS.

_____
CARL H. DEDY 1770 ES
PROFESSIONAL ENGINEER AND LAND SURVEYOR
221 EAST MENDENHALL, BOZEMAN, MONTANA

SUBSCRIBED BEFORE ME THIS _____ DAY OF _____ A.D., 1970

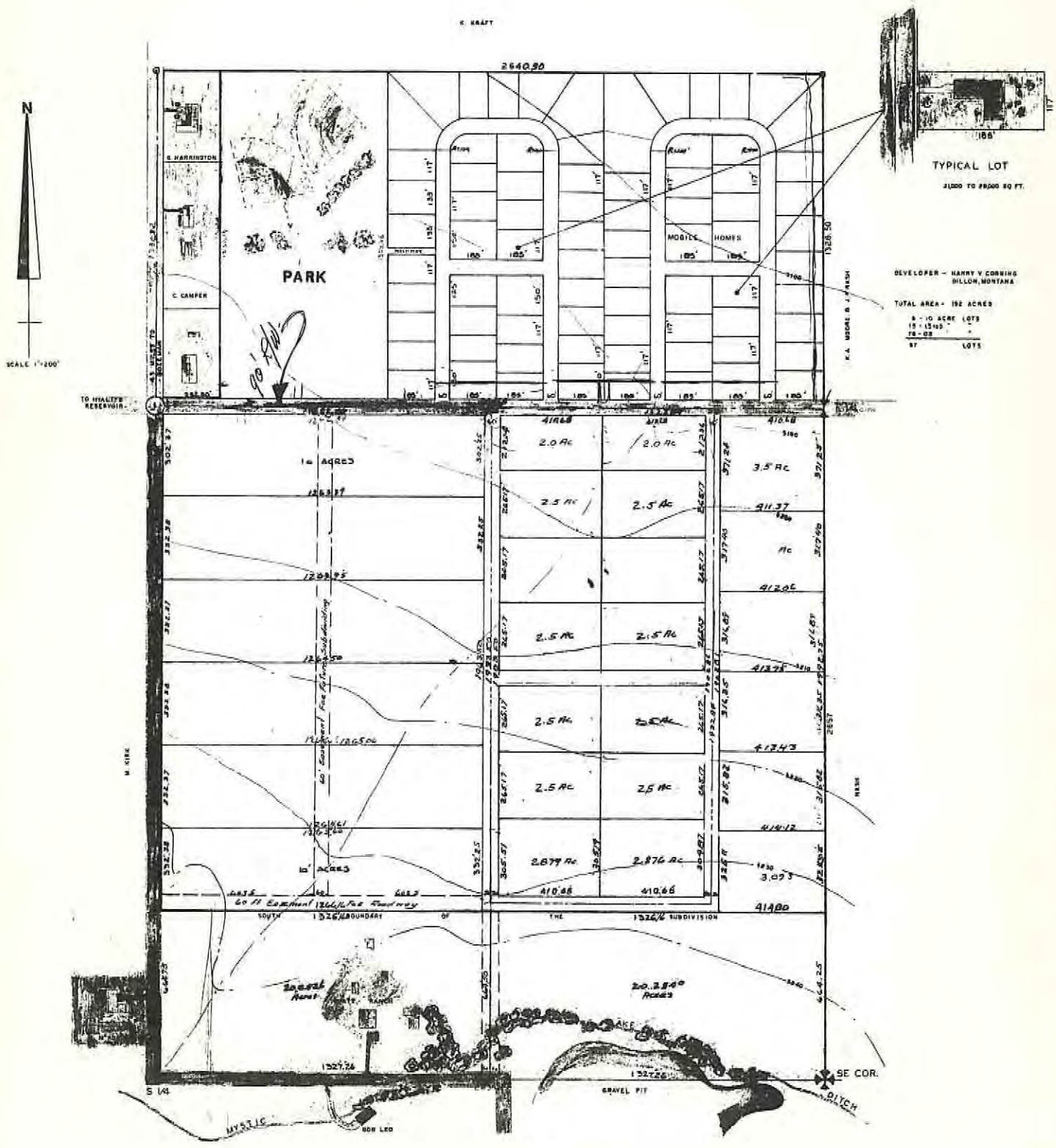
_____
NOTARY PUBLIC FOR THE STATE OF MONTANA
RESIDING AT BOZEMAN, MONTANA
MY COMMISSION EXPIRES _____

MOUNTAIN SHADOWS ESTATES

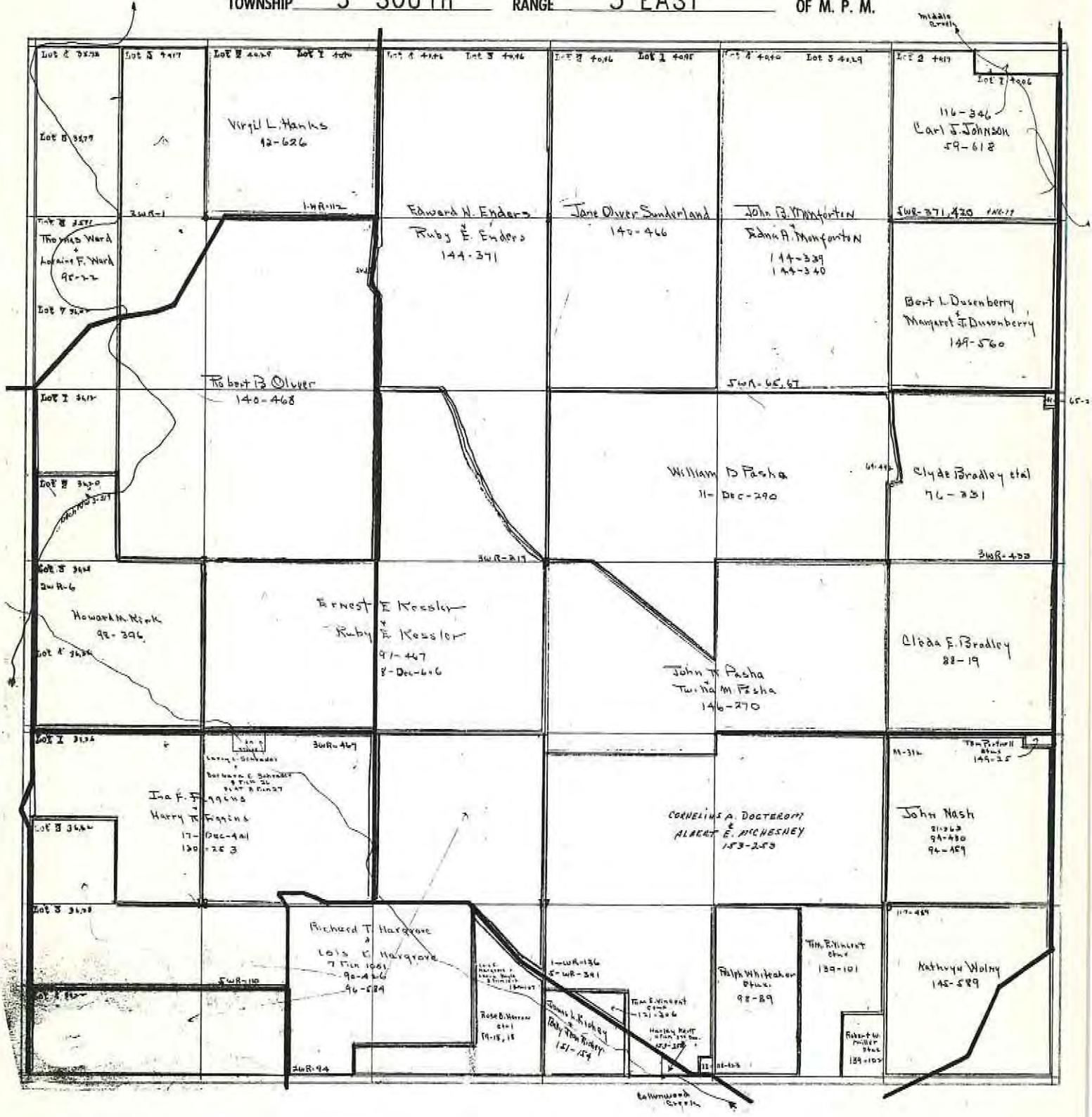
MASTER PLAN

A SUBDIVISION IN GALLATIN COUNTY

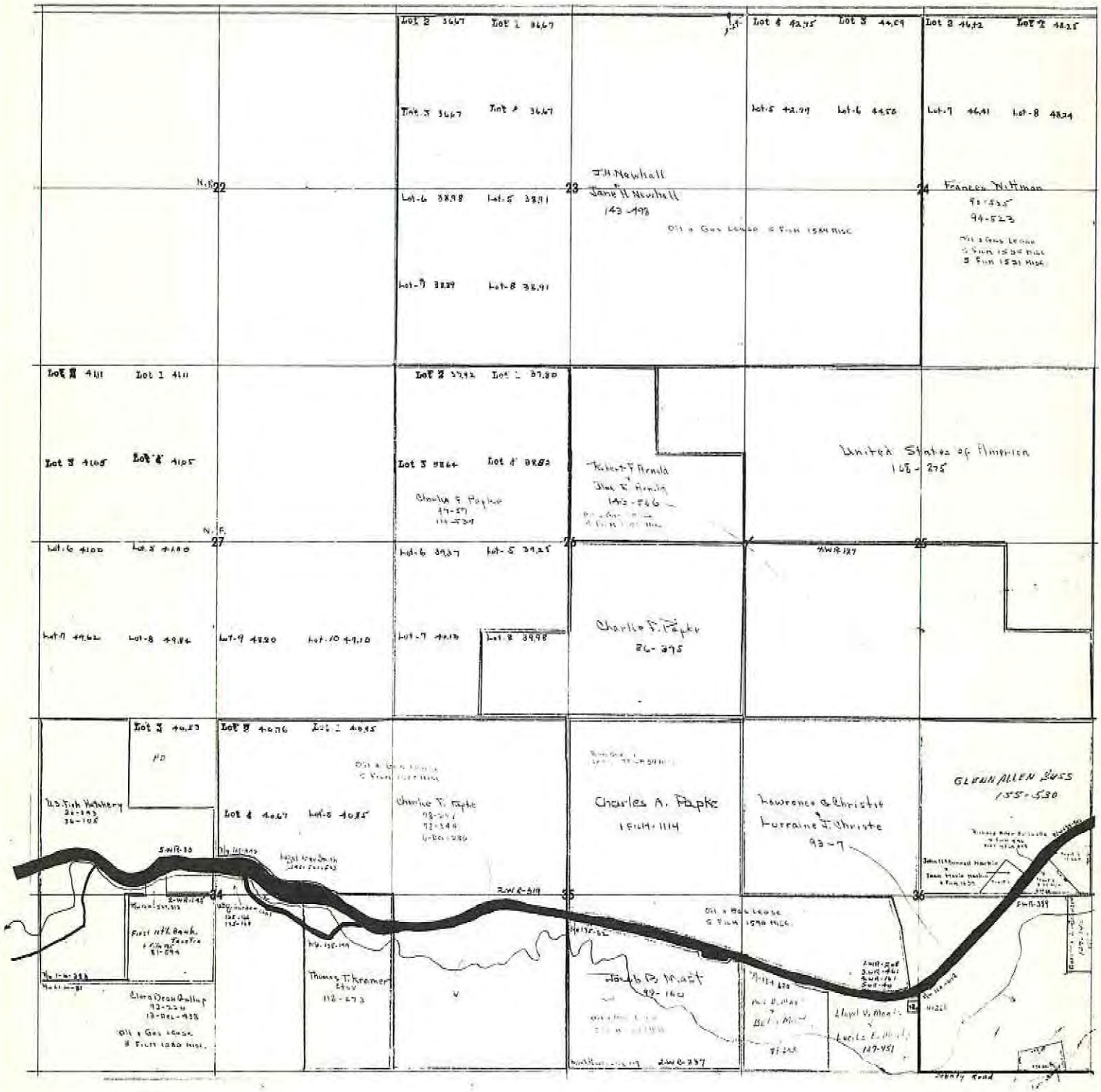
S1/2-NE1/4,N1/2SE1/4,N1/2-S1/2-SE1/4,SEC 1,T3S,R5E,PM M.



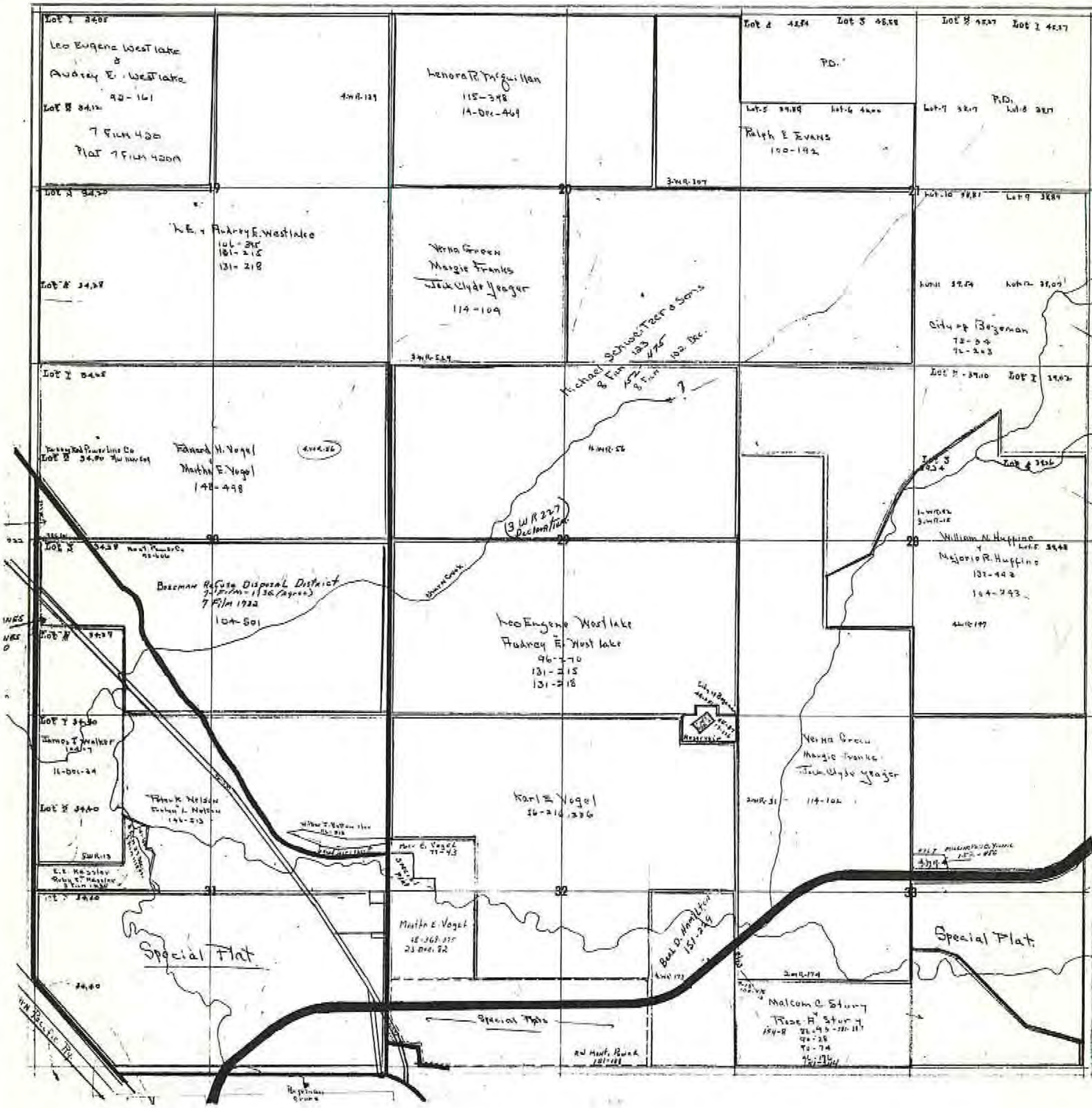
TOWNSHIP 3 SOUTH RANGE 5 EAST OF M. P. M.



TOWNSHIP 1 SOUTH RANGE 6 EAST OF M. P. M.

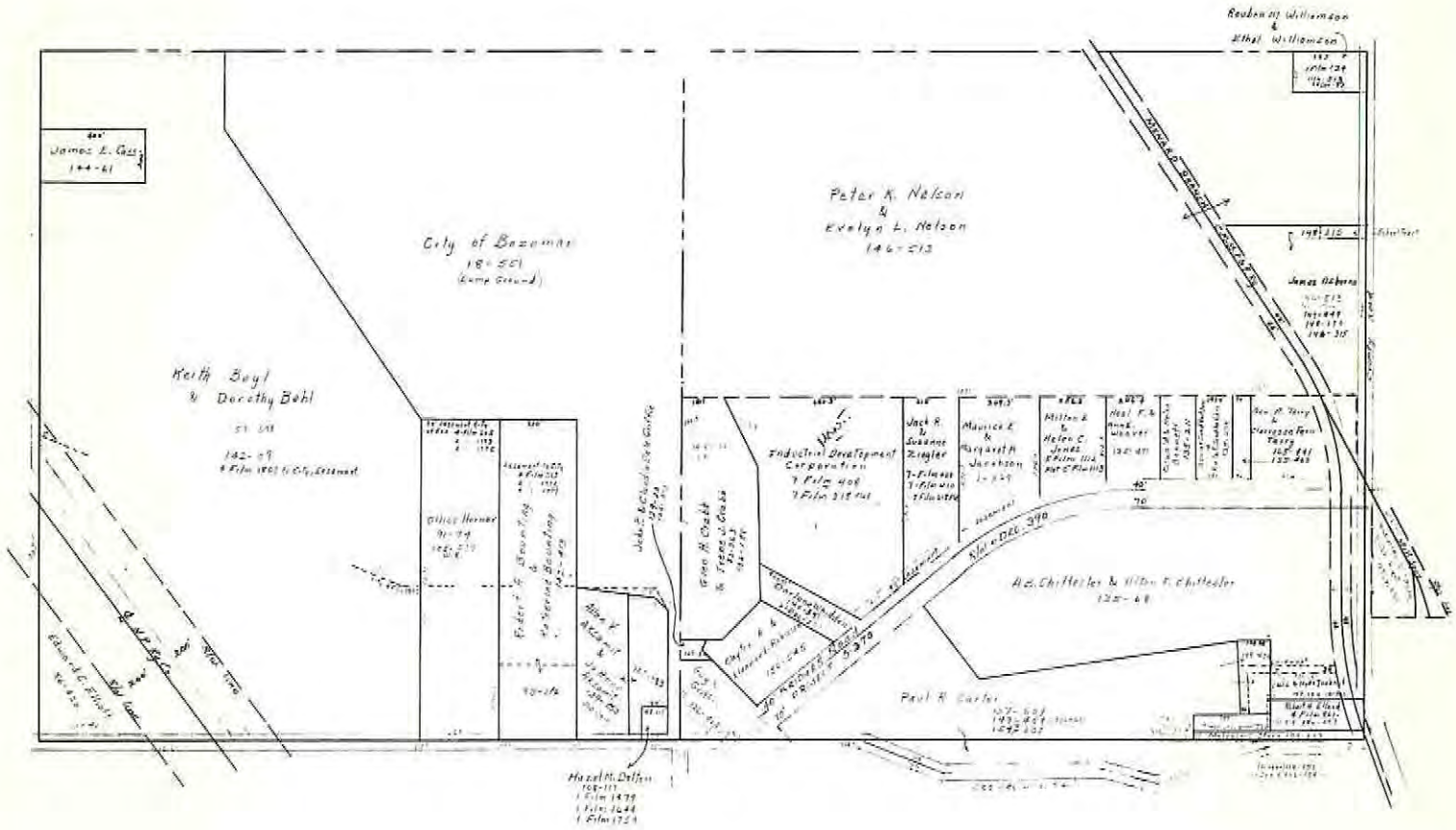


TOWNSHIP 1 SOUTH RANGE 6 EAST OF M. P. M.



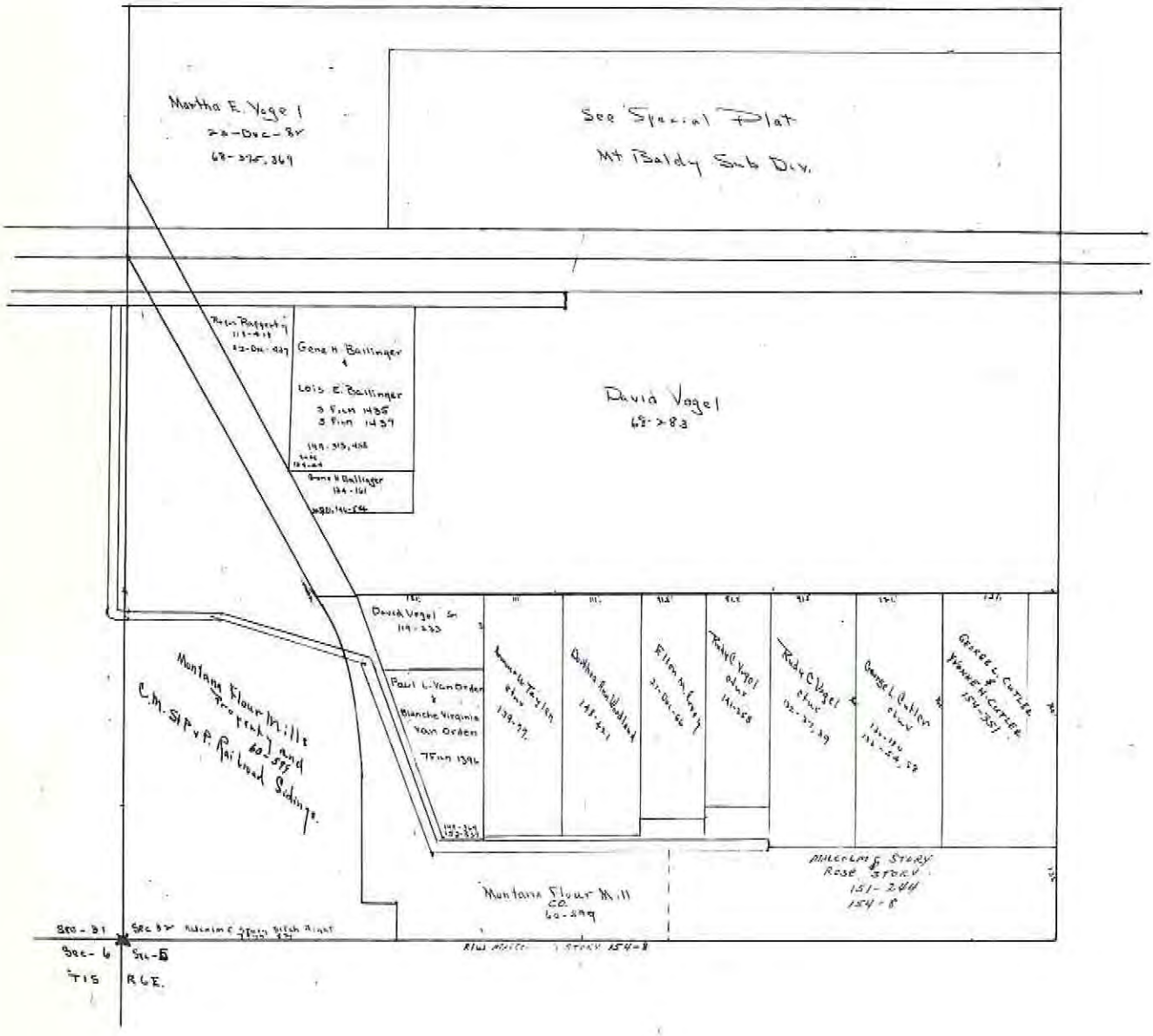
S. 1/2, Section 31, Township 1 South, Range 6 East.

Scale 1" = 300'



SW¼, SW¼, SECTION 32 TOWNSHIP 1 S RANGE 6 E

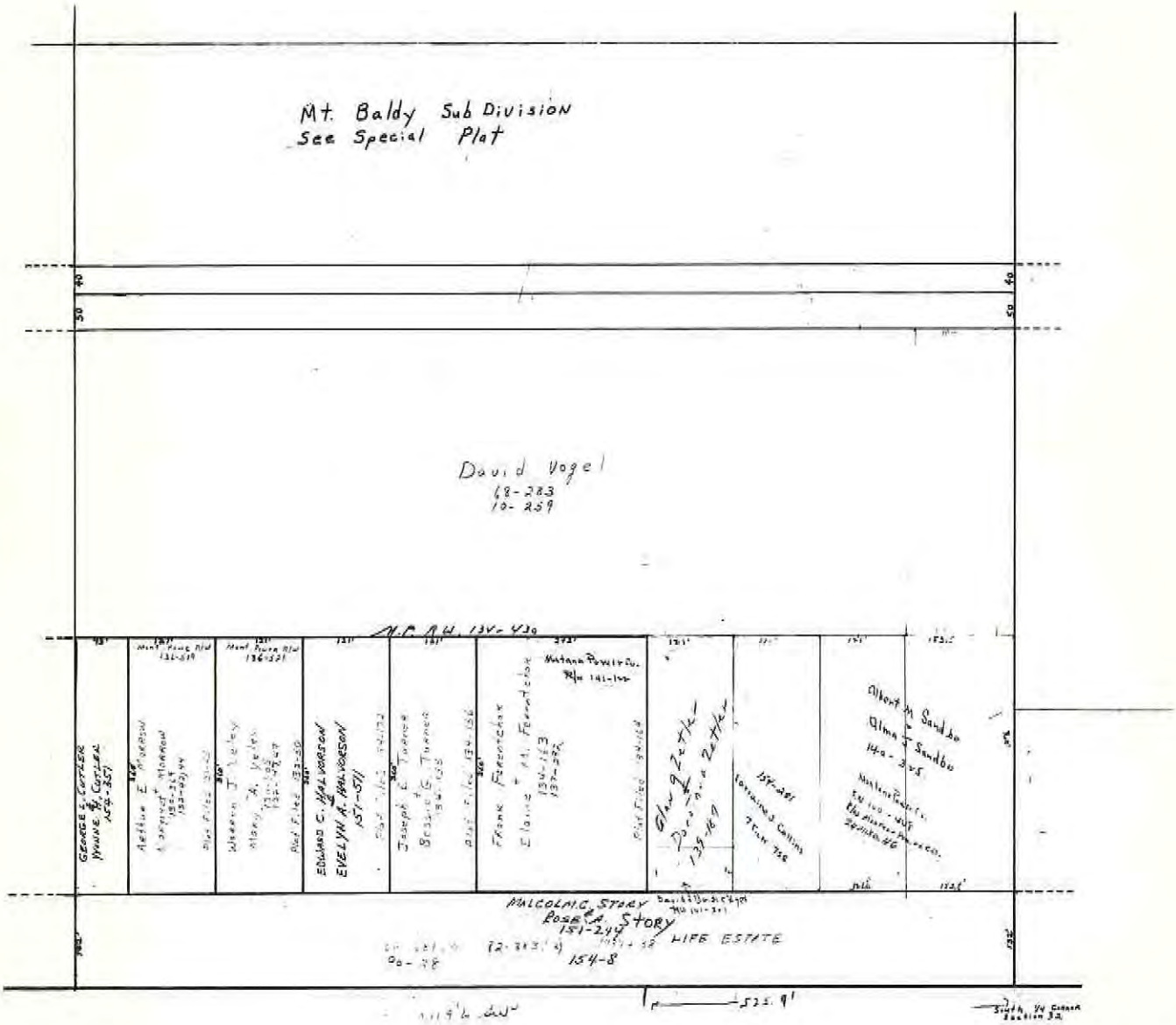
SCALE: One (1) Inch Equals ____ / 000 ____ Feet



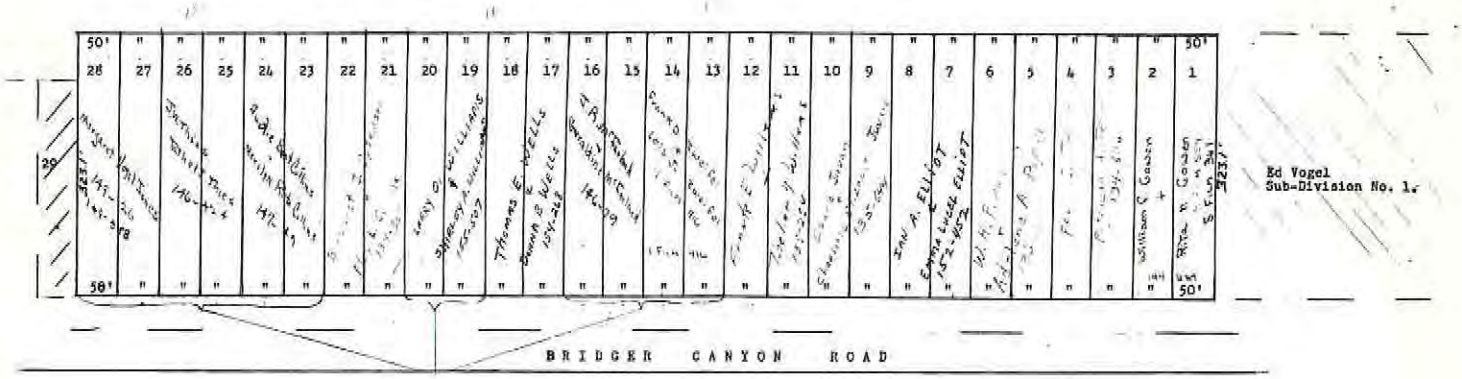
SW¼, SW¼, SEC. 32, T1S, R6E.

SE ¼ SW ¼ SECTION 32 TOWNSHIP 1S RANGE 6E

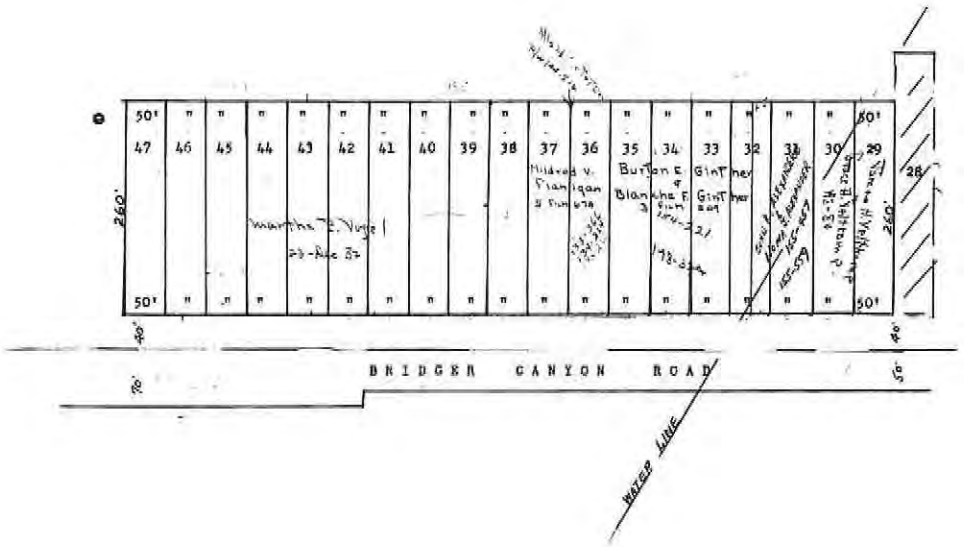
SCALE: One (1) Inch Equals 100 Feet



SE 1/4 SW 1/4
SECTION 32
T1S R6E



"Surveyed and platted into LOTS as shown



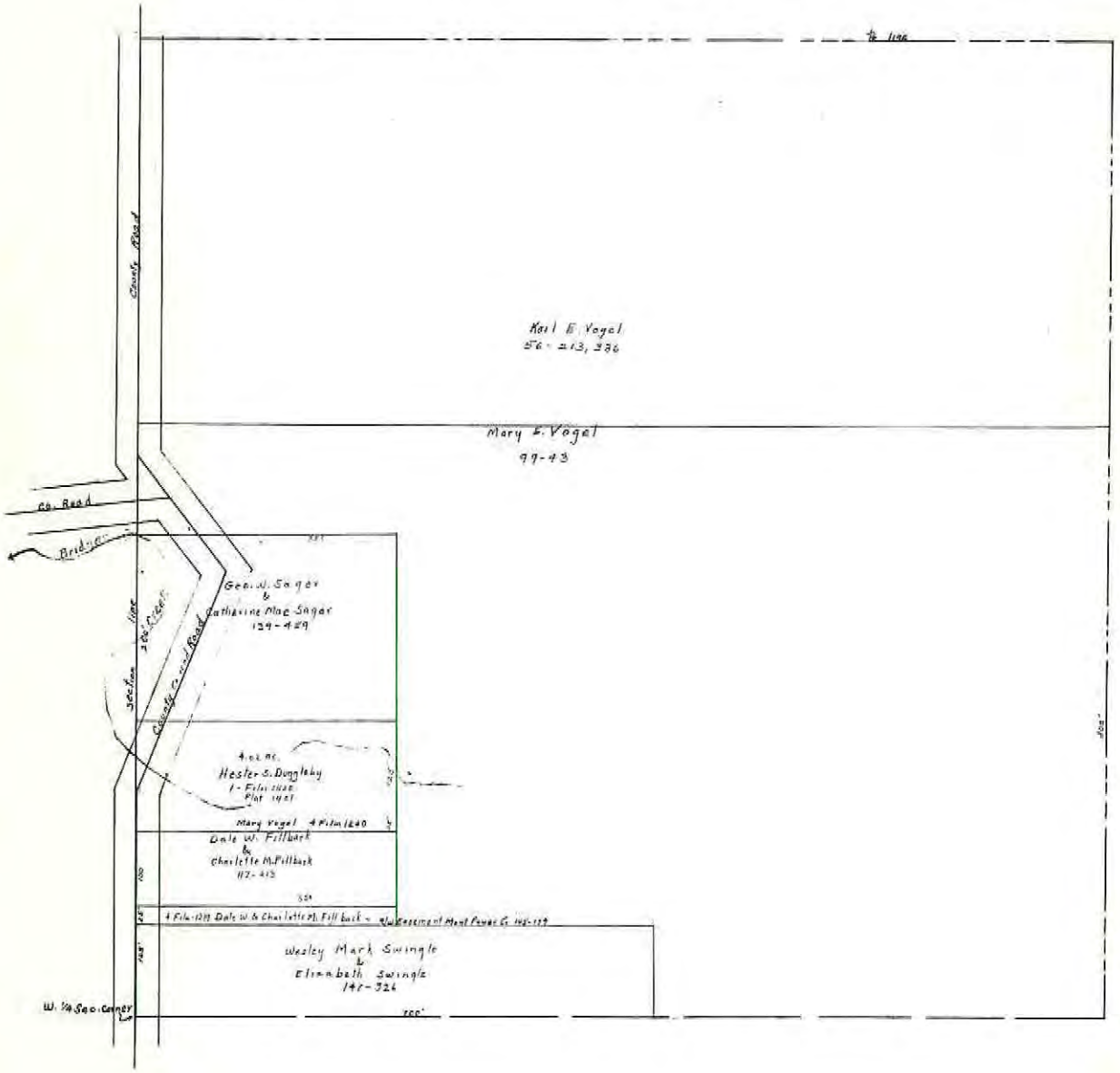
MT. BALDY SUB-DIVISION

A SUB-DIVISION IN GALLATIN COUNTY, STATE OF MONTANA.
A PORTION OF S W 1/4 OF THE S E 1/4 AND S 1/2 OF S W 1/4
OF SECTION 32 - T. 1 S. R. 6 E.
SCALE 1 inch = 100 feet.

S.W.1/4 OF N.W. 1/4 OF

SECTION 32 **TOWNSHIP** 1 SOUTH **RANGE** 6 EAST

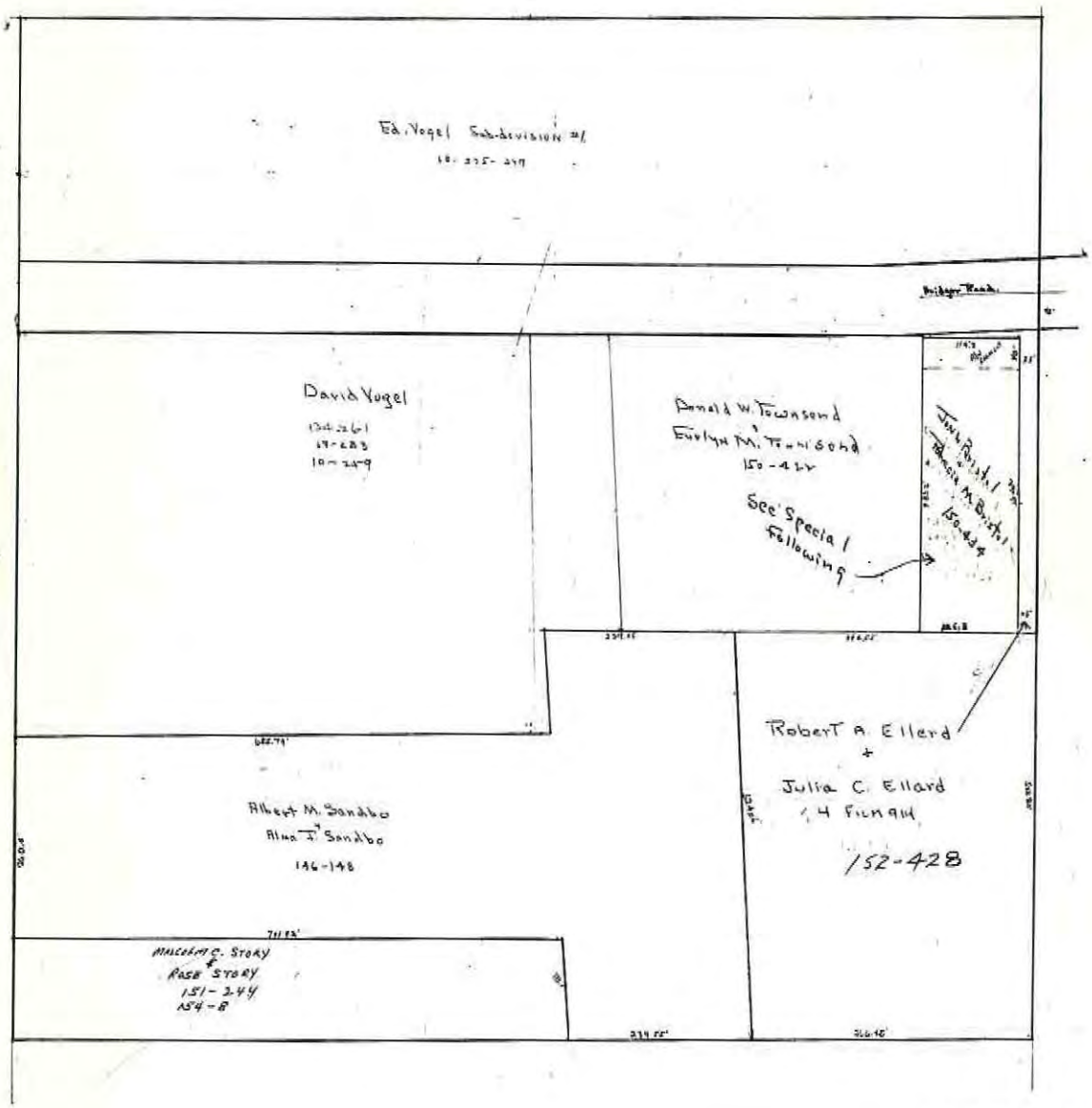
SCALE: One (1) Inch Equals 100 Feet



S.W.1/4 OF N.W.1/4,
SEC. 32.

SW¼SE¼ SECTION 32 TOWNSHIP 1-S RANGE 6E

SCALE: One (1) Inch Equals _____ Feet

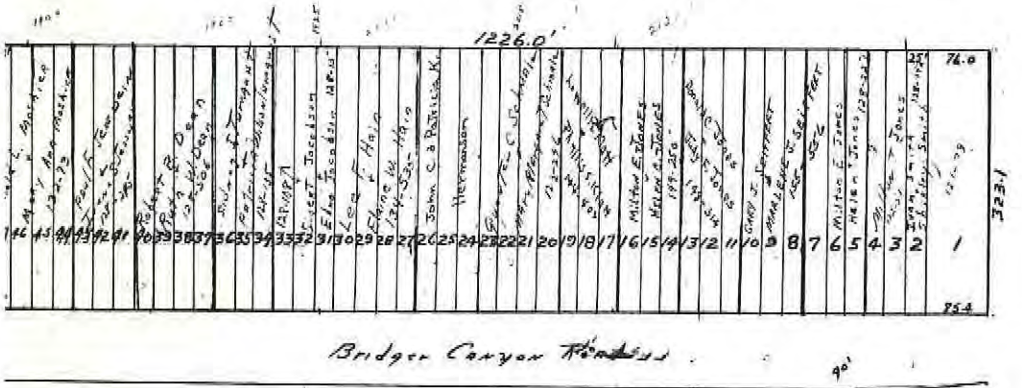


SW¼, SE¼, SEC. 32., T1S, R6E

SECTION Pt 32 TOWNSHIP T1S RANGE R6E

SCALE: One (1) Inch Equals 100 Feet

Scale 1 inch = 100 feet



Martin E Vogel
20-Dec-82

Lots

Lots	Owner	Ref.
1	Ivan H. & Shirley J. Smith	12-79
2.	Ivan H. & Shirley J. Smith	128-442
3-4	Milton Jones	122-57
5-6	Milton E. & Helen Jones	128-227
7-8-9-10	Gary J. & Marlene J. Seiffert	155-556
11-12-13	Donald C. & Judy F. Jones	148-314
14-15-16	Milton E. Jones & Helen C. Jones	149-250
17-18-19	Klatt, Lowell R. & Phyllis S.	144-402
20-21-22-23	Gunther C. Schmalz et ux	123-296
24-25-26	John C. & Patricia K. Hermanson	2 Film 479 7 Jun 1997
27-28-29-30	Lee F. Hain etux	134-535
31-32-33	Sivert Jacobsen etux	128-15
34-35-36	Sidney Turnquist etux	128-155
37-38-39-40	Robert B. Dean etux	124-506
41-42-43	Paul F. Tessmein	128-285
44-45-46-47	Ronald L. & Mary Ann Mosher	132-73

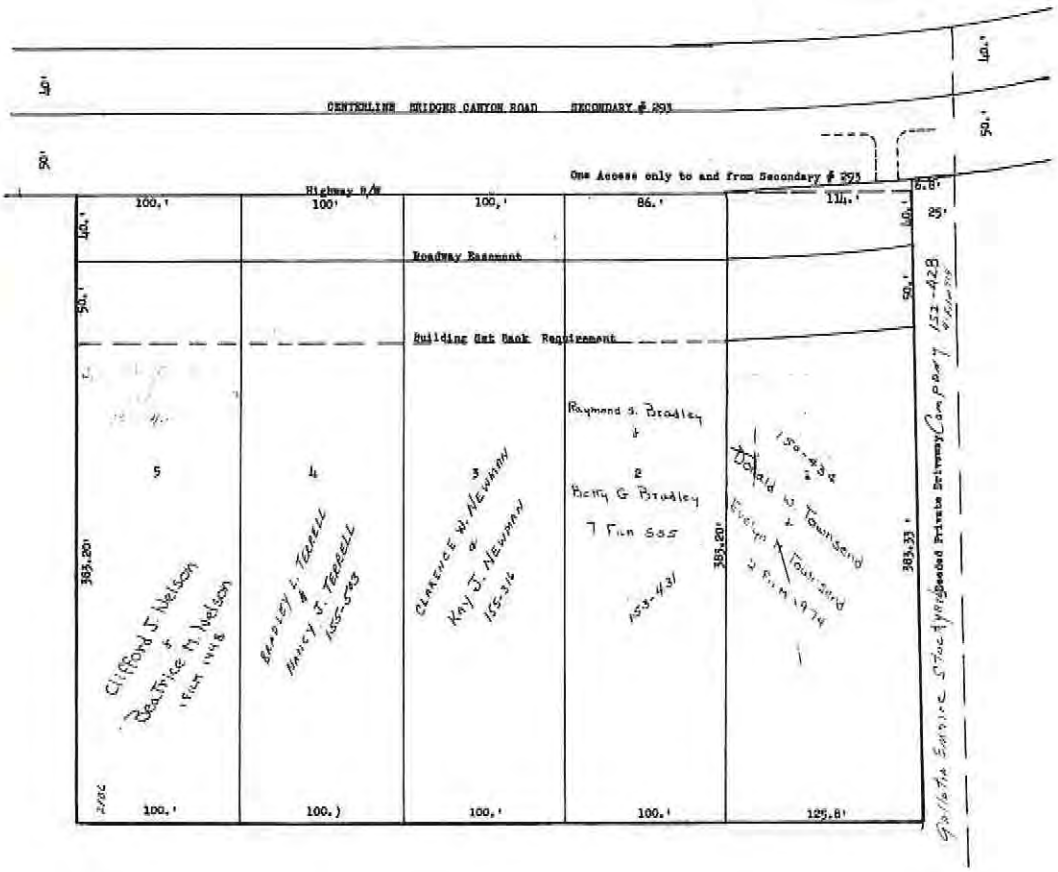
Ed. Vogel Subdivision No. 1

A Portion of N½ SW¼ SE¼ Sec 32 T1S R6E

Gallatin Co. Montana

SECTION 32 TOWNSHIP 1S RANGE 6E

SCALE: One (1) Inch Equals 50 Feet

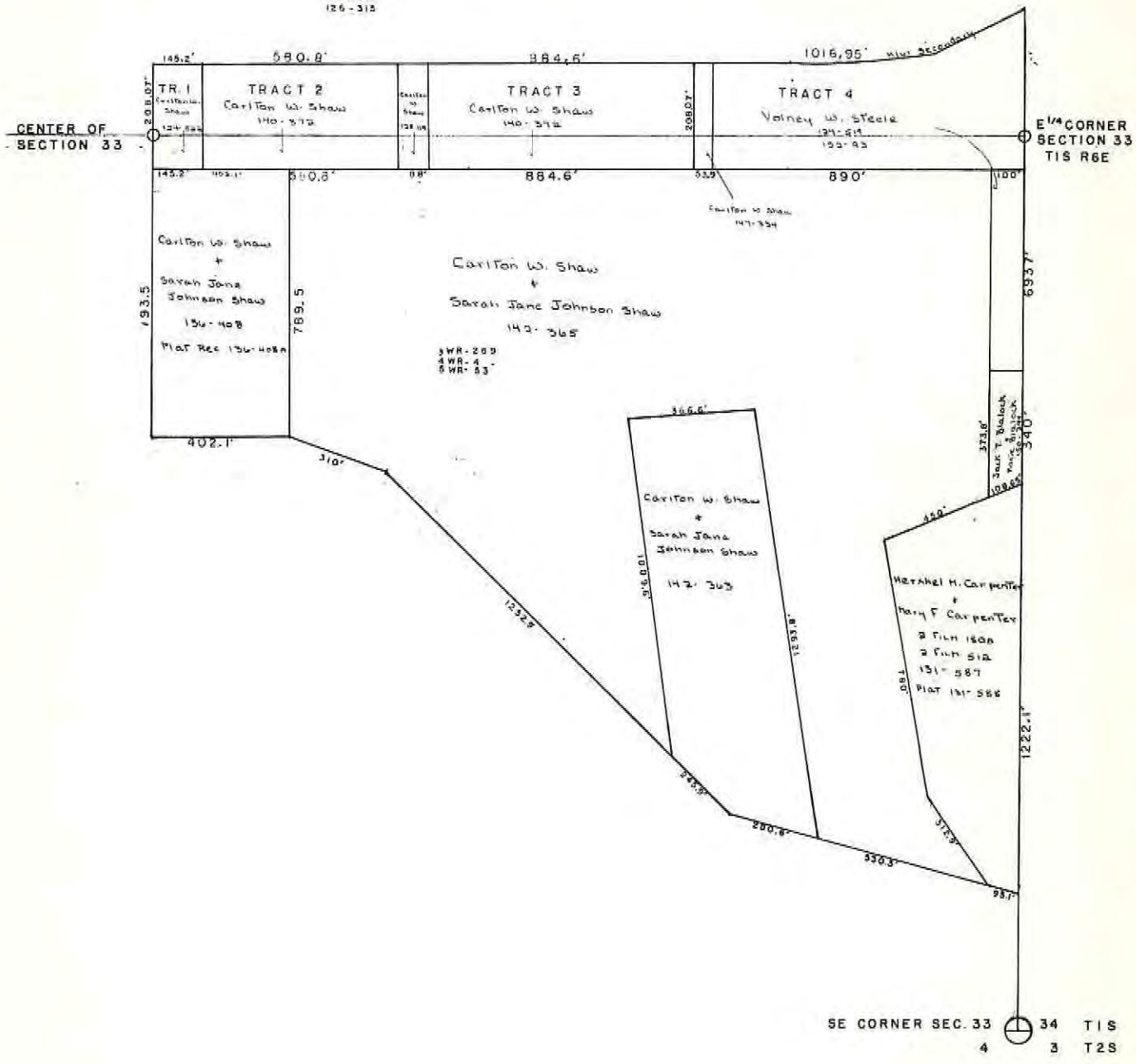


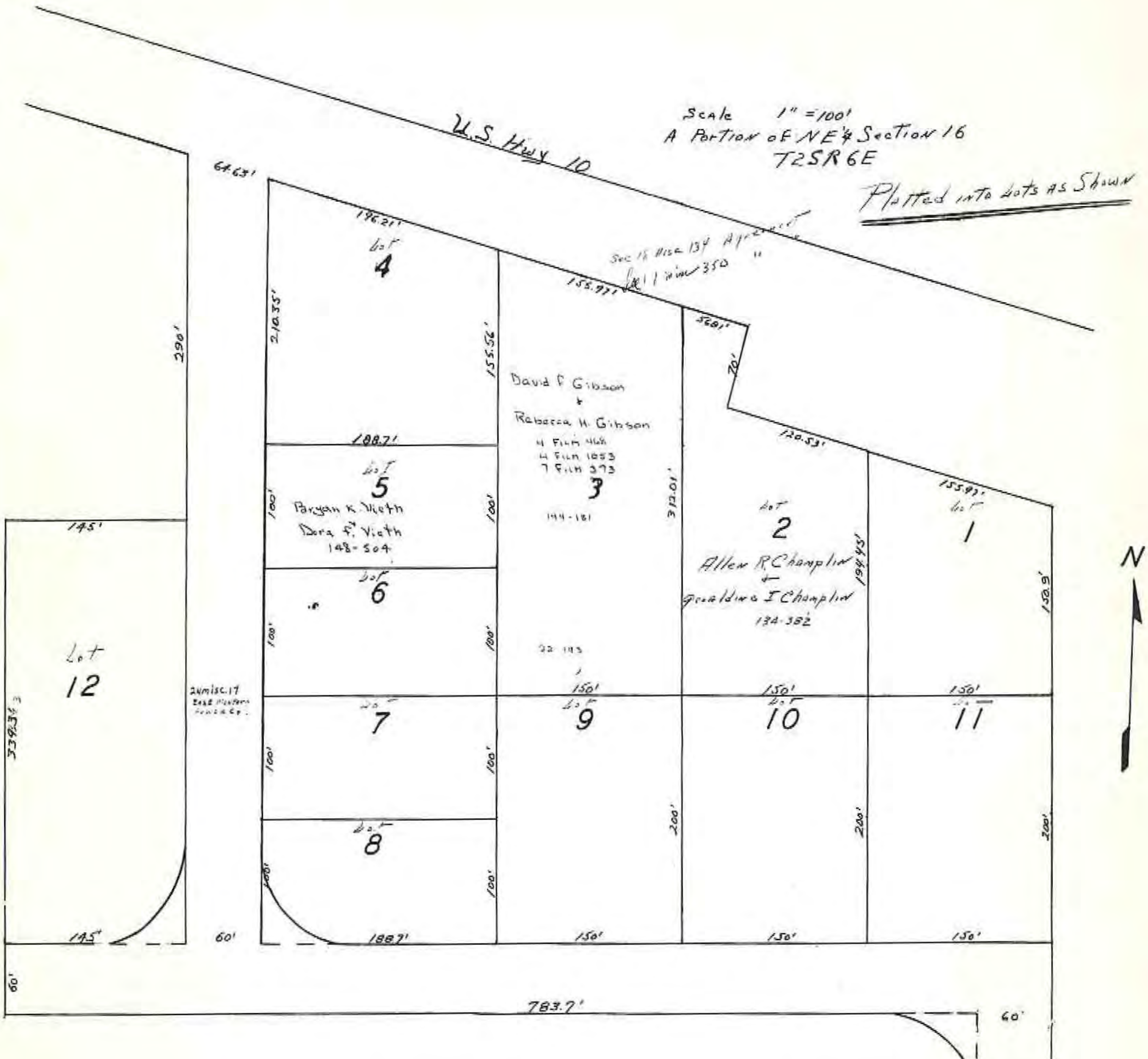
GREEN ACRES SUB-DIVISION
SW¼, SE¼, SEC. 32, T1S, R6E.

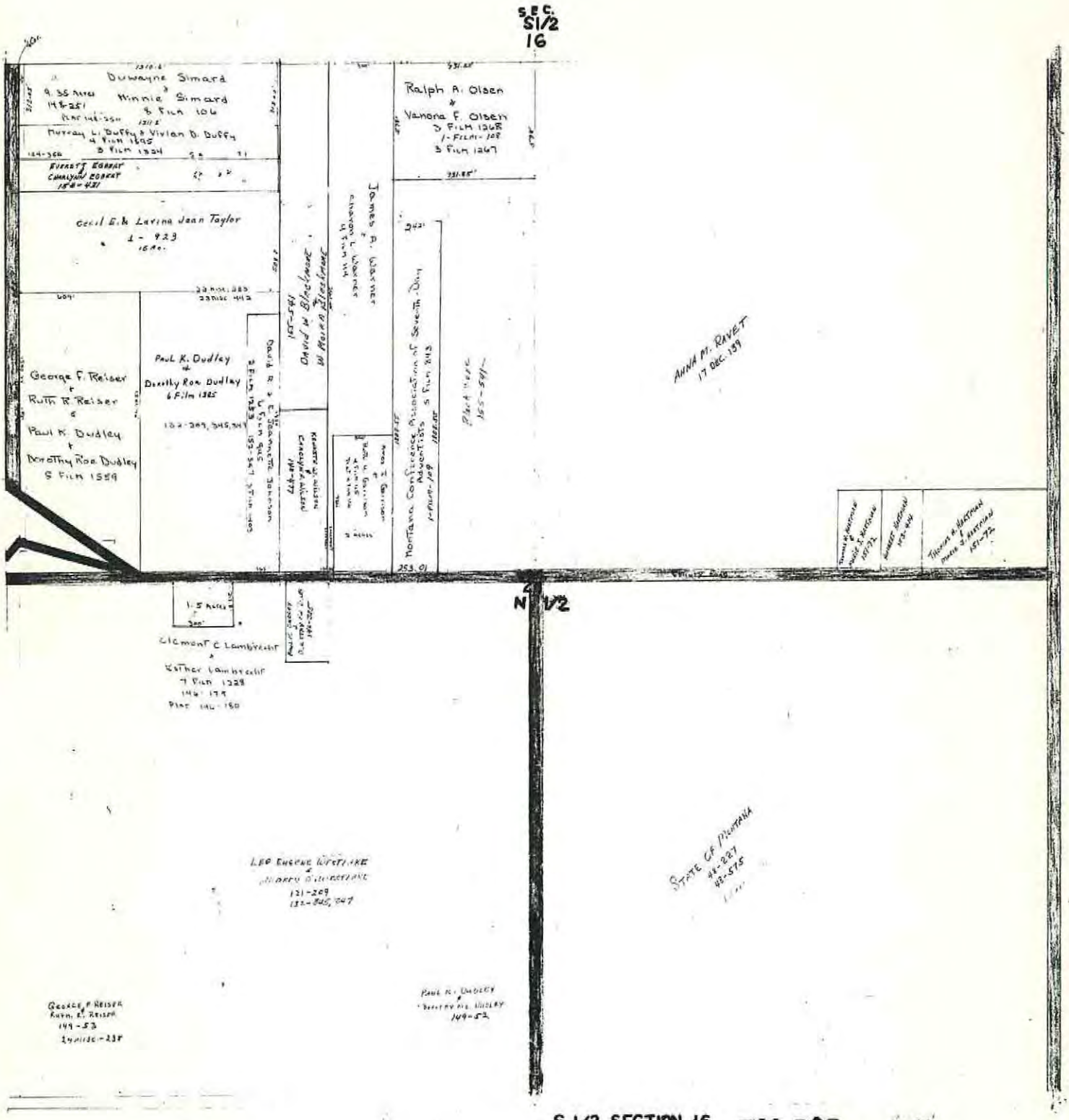
SE 1/4 SECTION 33 TOWNSHIP 1S RANGE 6E

SCALE: One (1) Inch Equals 200 Feet

PLATS FILED
124 - 521
124 - 524
126 - 315




Scale 1" = 100'
A Portion of NE¼ Section 16
T2SR6E
Platted into Lots as Shown
U.S. Hwy 10
Lot 4
Lot 5
Bryan K. Vieth
Dora F. Vieth
148-504
Lot 6
Lot 7
Lot 8
David F. Gibson
&
Rebecca H. Gibson
3
Lot 2
Allen R. Champlin
&
Geraldine I Champlin
134-382
Lot 1
9
10
11
Lot 12
VIRGINIA SUB-DIVISION
N



S 1/2 SECTION 16
N 1/2 SECTION 21 T2S R6E

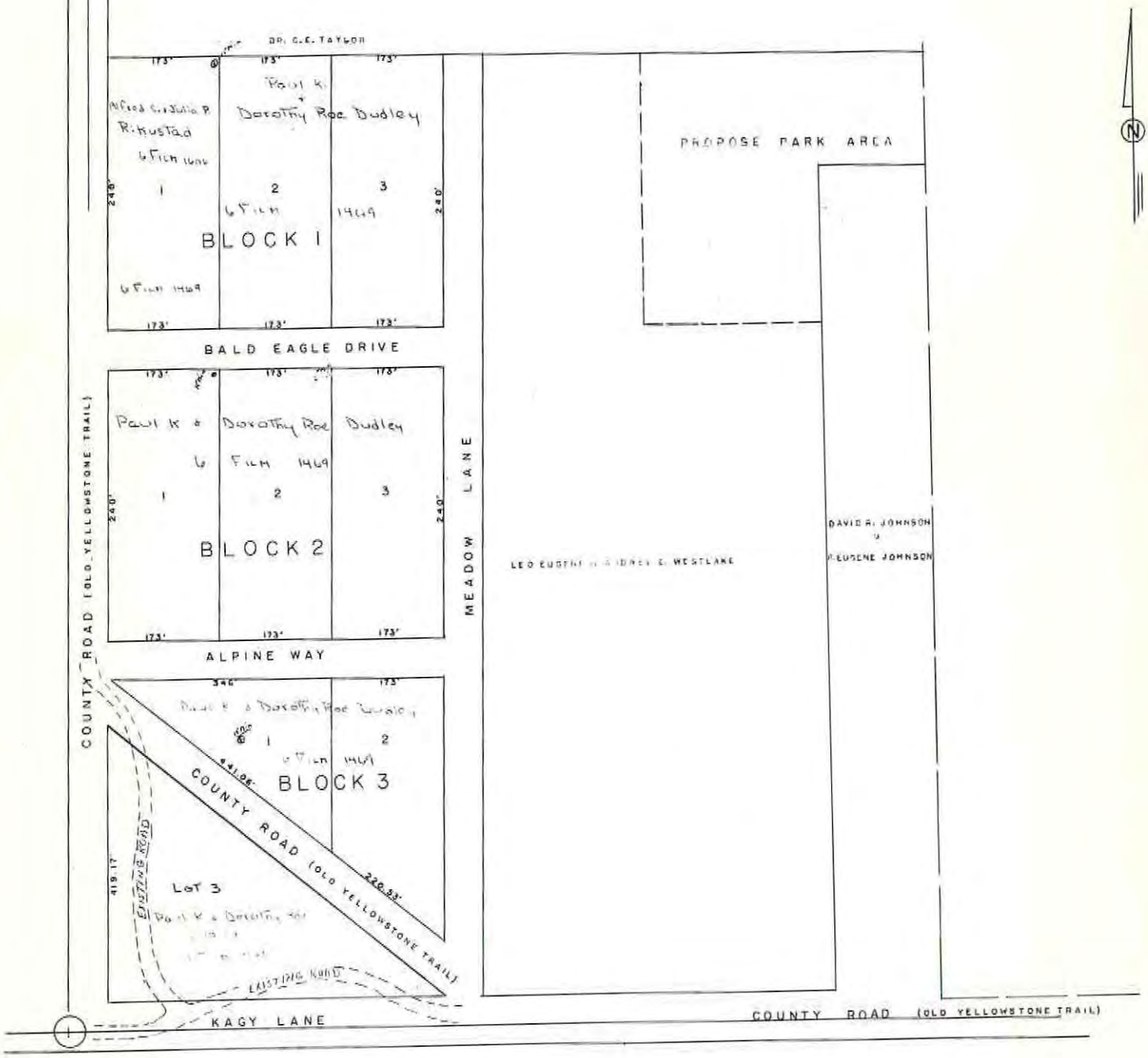
1" = 300'

W1/2 SW1/4 SECTION 16 TOWNSHIP 2S RANGE 6E

SCALE: One (1) Inch Equals 100 Feet

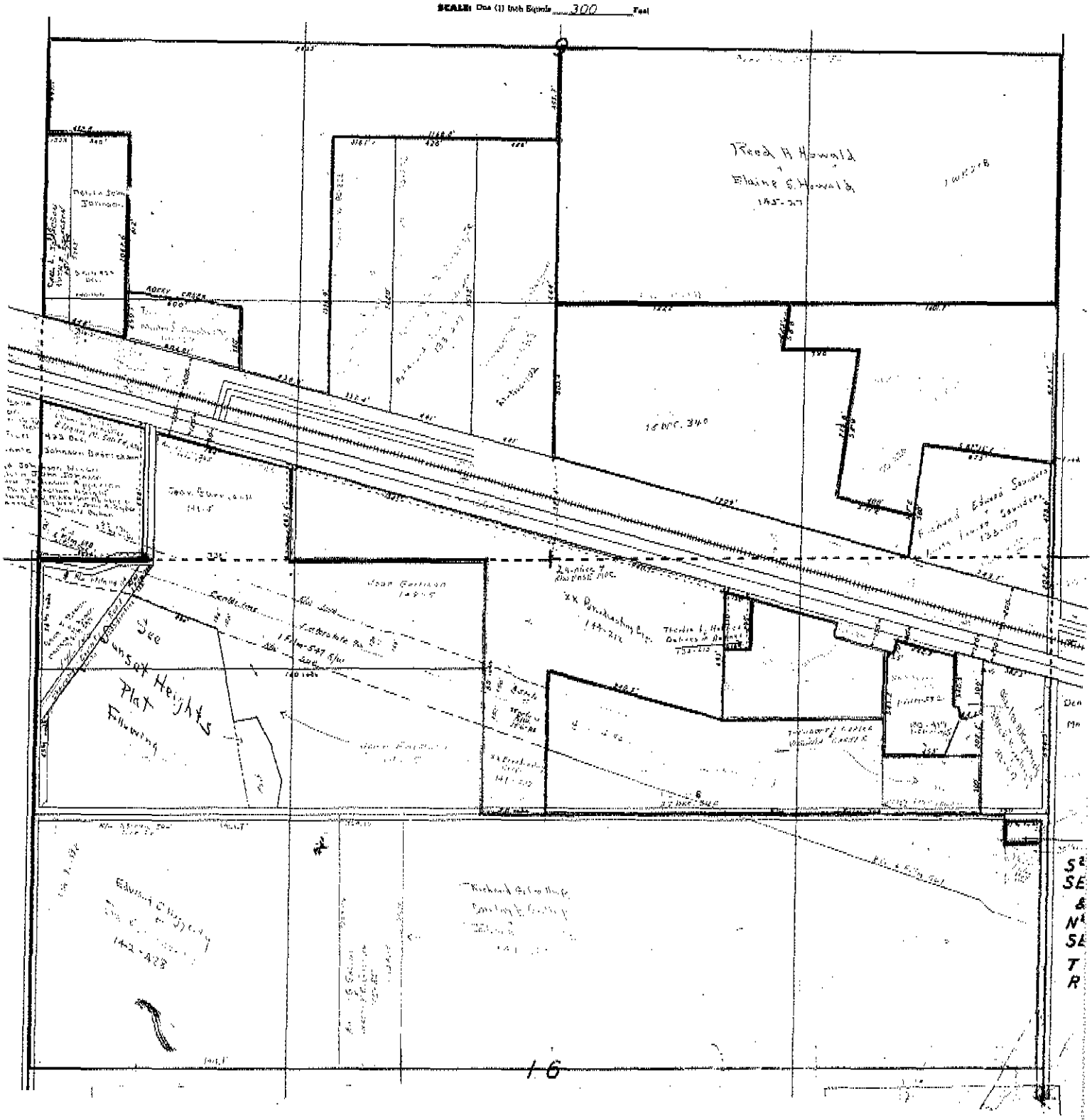
MOUNTAIN MEADOWS SUBDIVISION

Covenants – 23-M16C-442



S½ SECTION 9
N½ SECTION 16 TOWNSHIP 2 SOUTH RANGE 6 EAST

SCALE: One (1) Inch Equals 300 Feet



SCALE 1"=100'

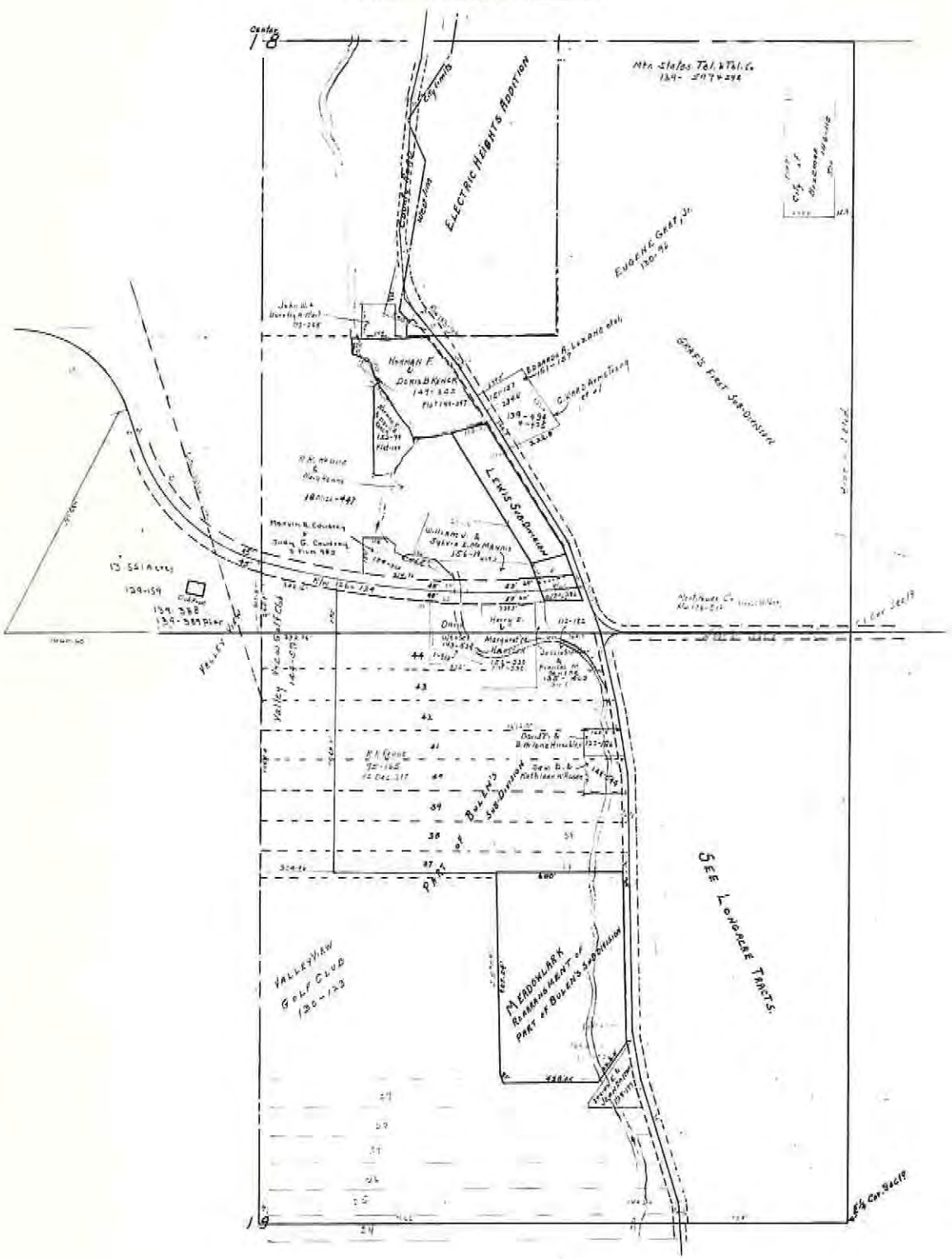
SUNSET HEIGHTS

A SUBDIVISION OF A PORTION OF SEC. 16, T2S, R6E

S.E. ¼ of Sec. 18 & N.E. ¼ of Sec. 19,

SECTION _____ **TOWNSHIP** 2 South **RANGE** 6 East

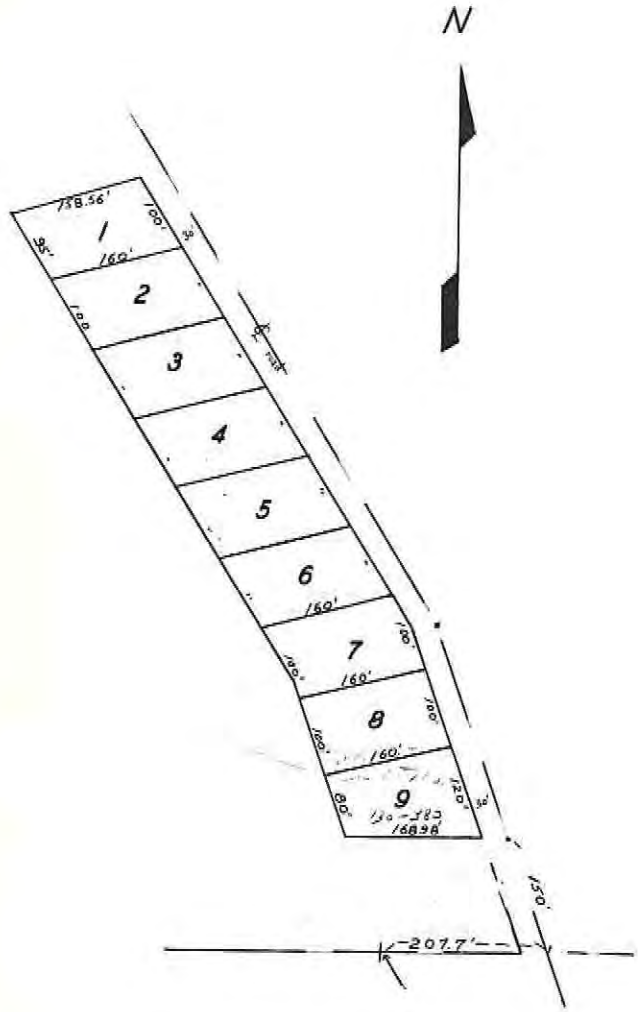
SCALE: One (1) Inch Equals 300 Feet



S.E. ¼ of Sec. 18 & N.E. ¼ of Sec. 19,
T. 2 S., R. 6 E.

SECTION 18 TOWNSHIP T 2 S RANGE R 6 E

SCALE: One (1) Inch Equals 100 Feet

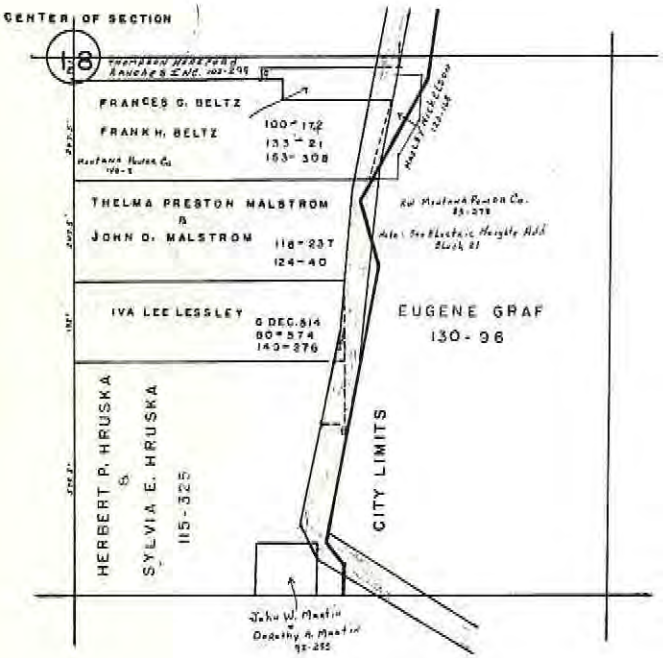


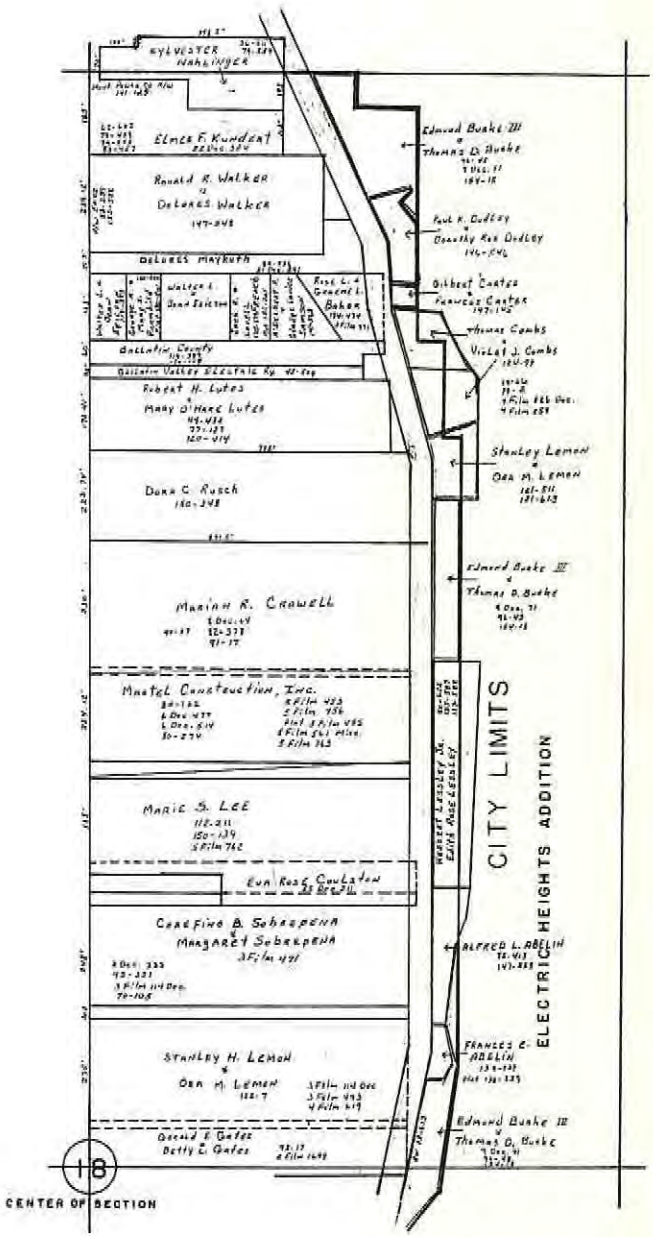
1	Walen F. Lilly + Patricia B. Lilly	140-248
2	S 23' of 2	
3	Walen F. Lilly Patricia S. Lilly	140-383
4	Ernest R. Ahrendes + Jane C. Ahrendes	143-298
5	Ernest R. Ahrendes + Jane C. Ahrendes	140-119
6	William J. & Sylvia E. McManni's	156-19
7	" "	156-19
8	" "	156-19
9	Gallatin County (Road R/W)	

LEWIS SUB-DIVISION
A PORTION OF SE 1/4 SEC 18 T 2 S R 6 E

W 1/2 NE 1/4
NW 1/4 SE 1/4 SECTION 18 TOWNSHIP 2S RANGE 6E

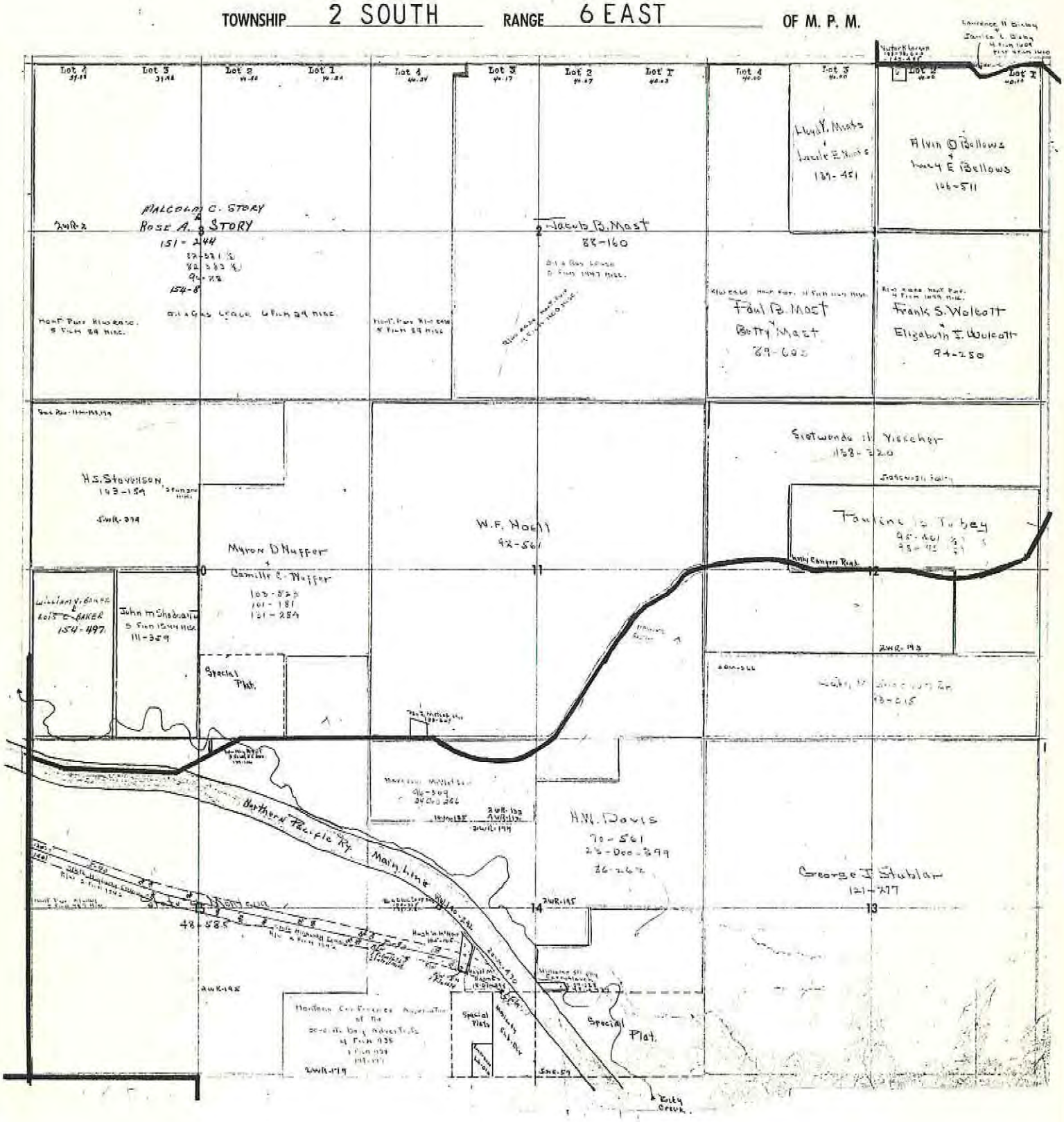
SCALE: One (1) Inch Equals 200 Feet





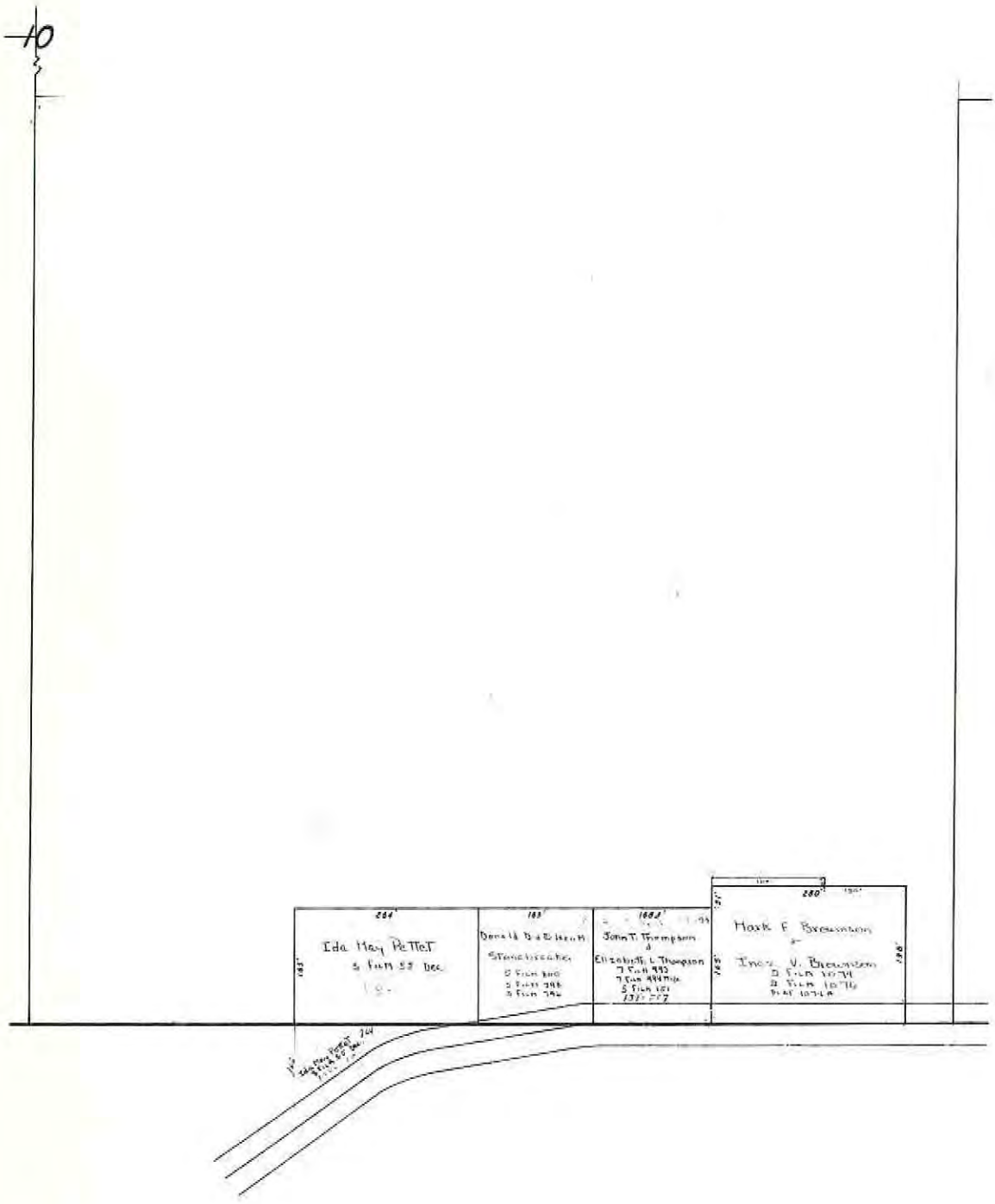
W 1/2 NE 1/4, NW 1/4 SE 1/4 SEC. 18 T2S R6E

TOWNSHIP 2 SOUTH RANGE 6 EAST OF M. P. M.



SW¼ SE¼ SECTION 10 TOWNSHIP 2 SOUTH RANGE 6 EAST

SCALE: One (1) Inch Equals 100 Feet

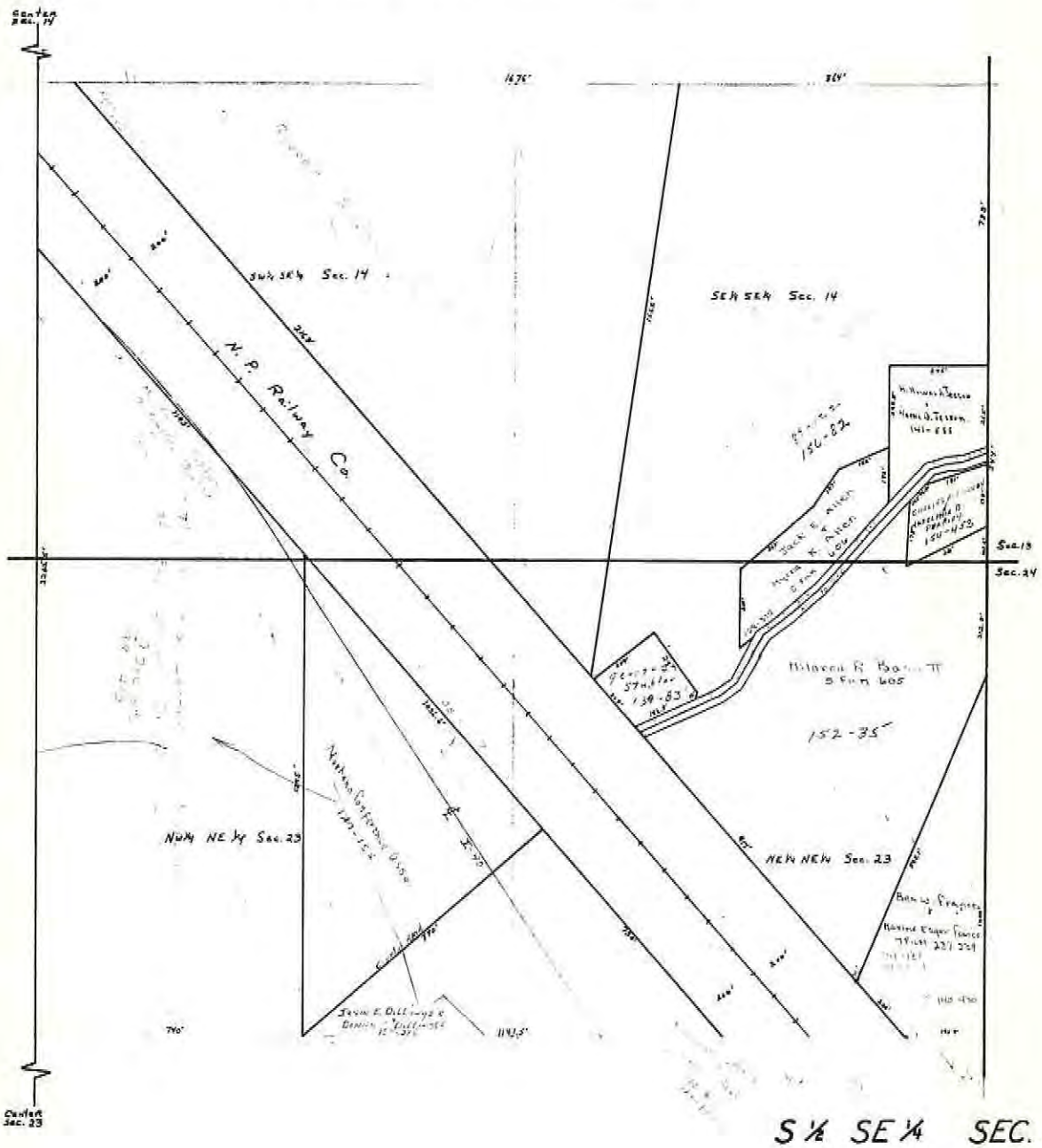


SW¼
SE¼
SEC 10
T 2 S
R 6 E

S ½ SE ¼ SECTION 14 TOWNSHIP 2 SOUTH RANGE 6 EAST
N ½ NE ¼ SECTION 23

SCALE: One (1) Inch Equals 200 Feet

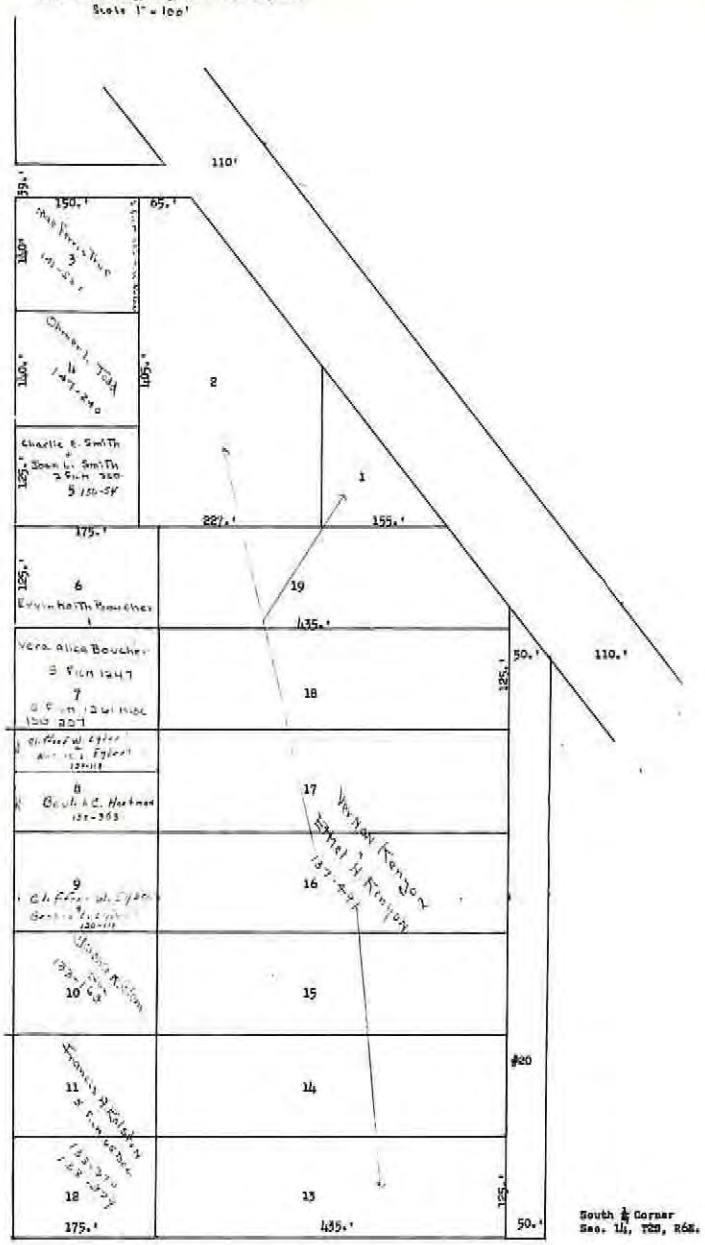
This plat Not accurate due to difference of descriptions of property and different degrees given on Railroad Right of Way



S ½ SE ¼ SEC. 14
N ½ NE ¼ SEC. 23
T 2 S R 6 E.

MORIARTY SUBDIVISION

Part of the SE¼ SW¼, Sec. 14, T2S, R6E.
Scale 1" = 100'

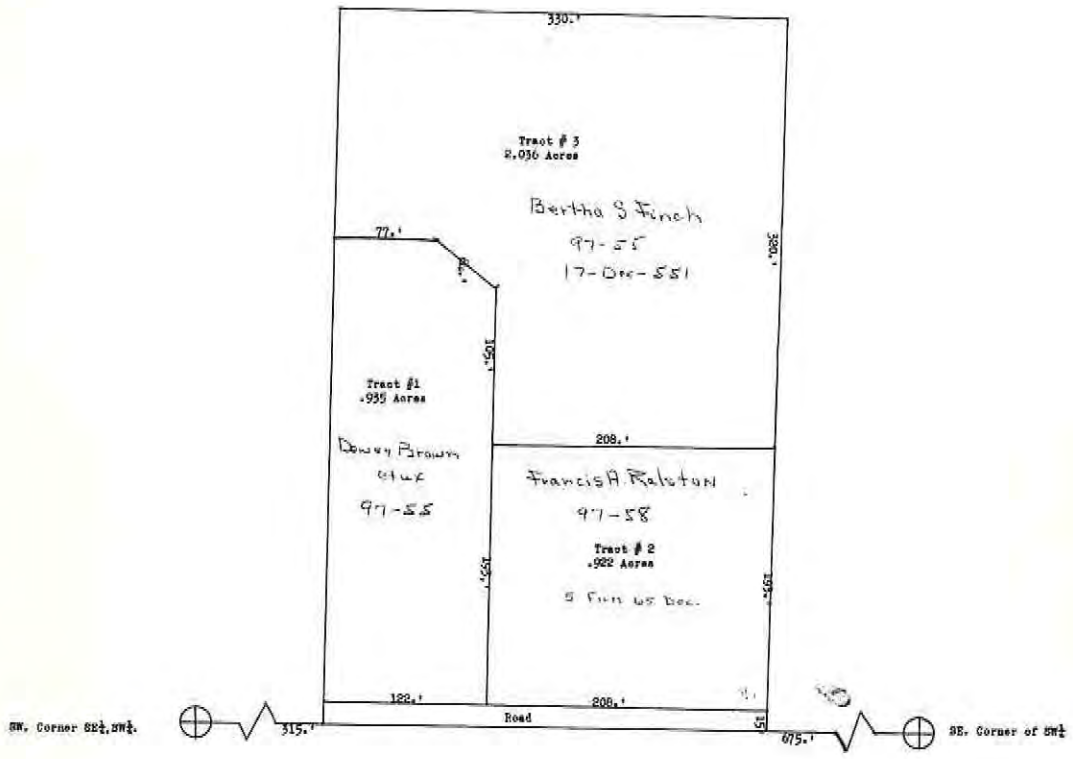


MORIARTY SUB-DIV.
SEC. 14, T2S, R6E.

EMERSON SUB-DIVISION

Part of the SE¼ of the SW¼ Sec. 14, T2S, R6E.

Scale 1"- 100'

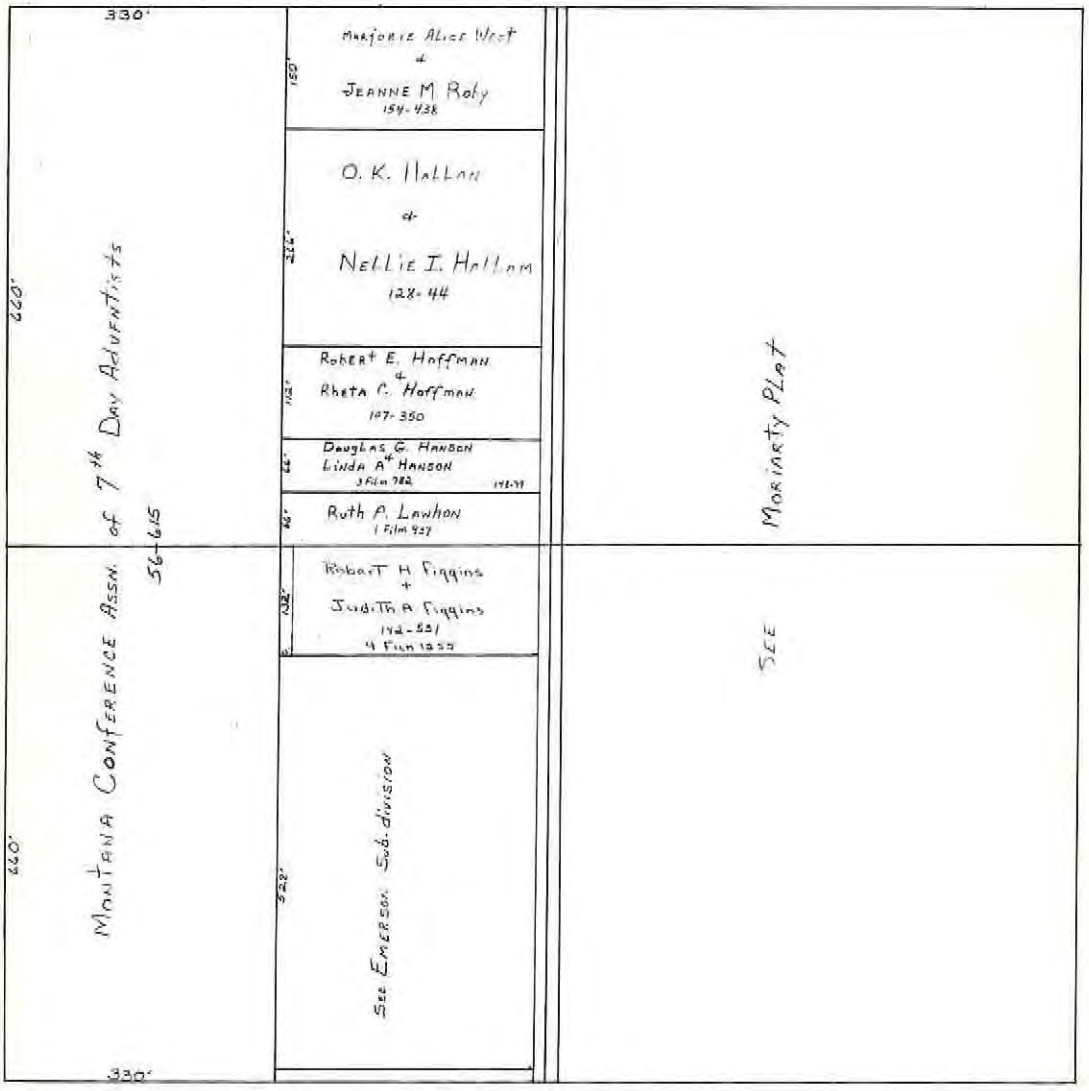


EMERSON SUB-DIVISION

SEC. 14, T2S, R6E.

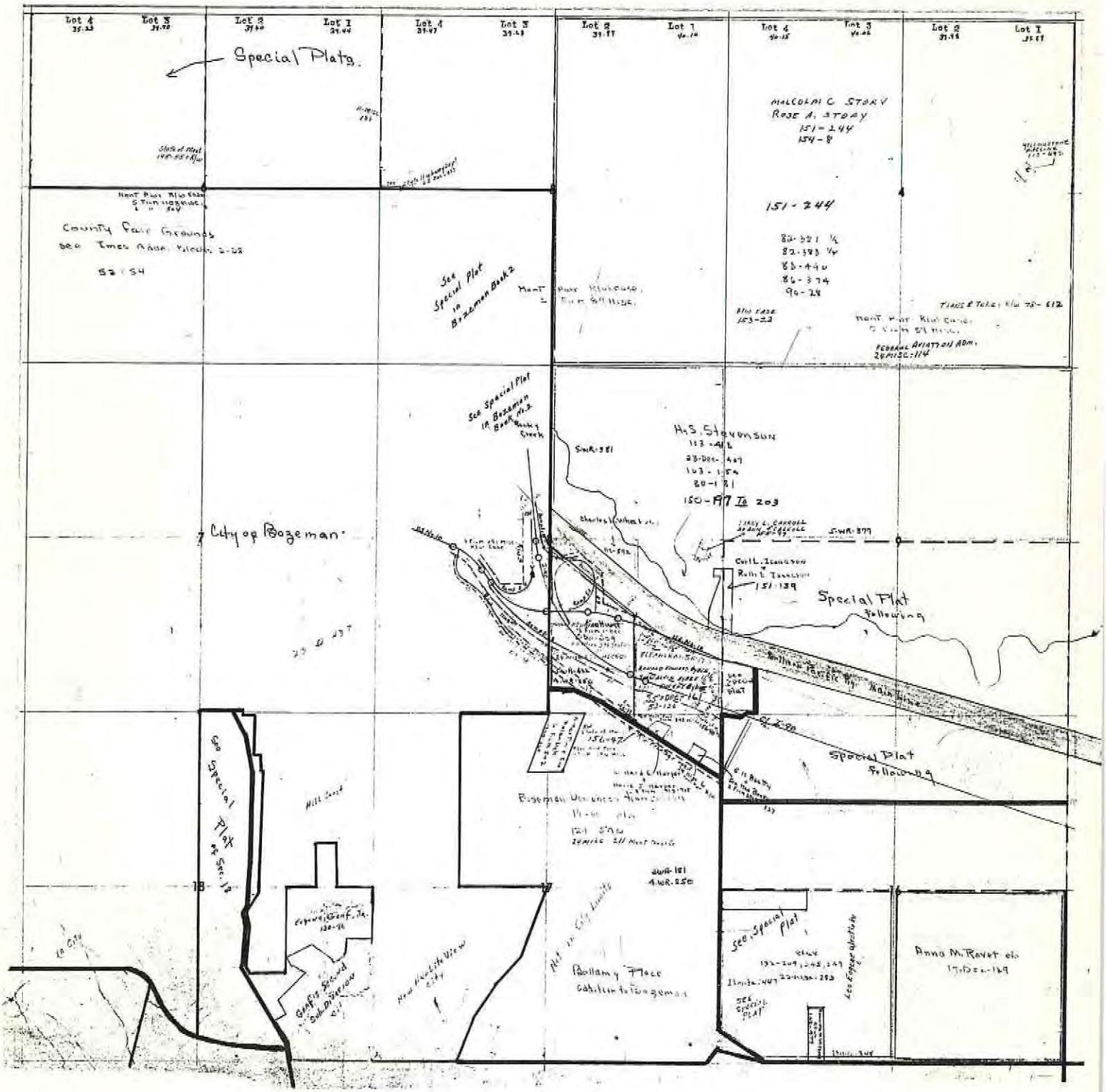
SECTION 14 **TOWNSHIP** 2S **RANGE** 6E

SCALE: One (1) Inch Equals 100 Feet



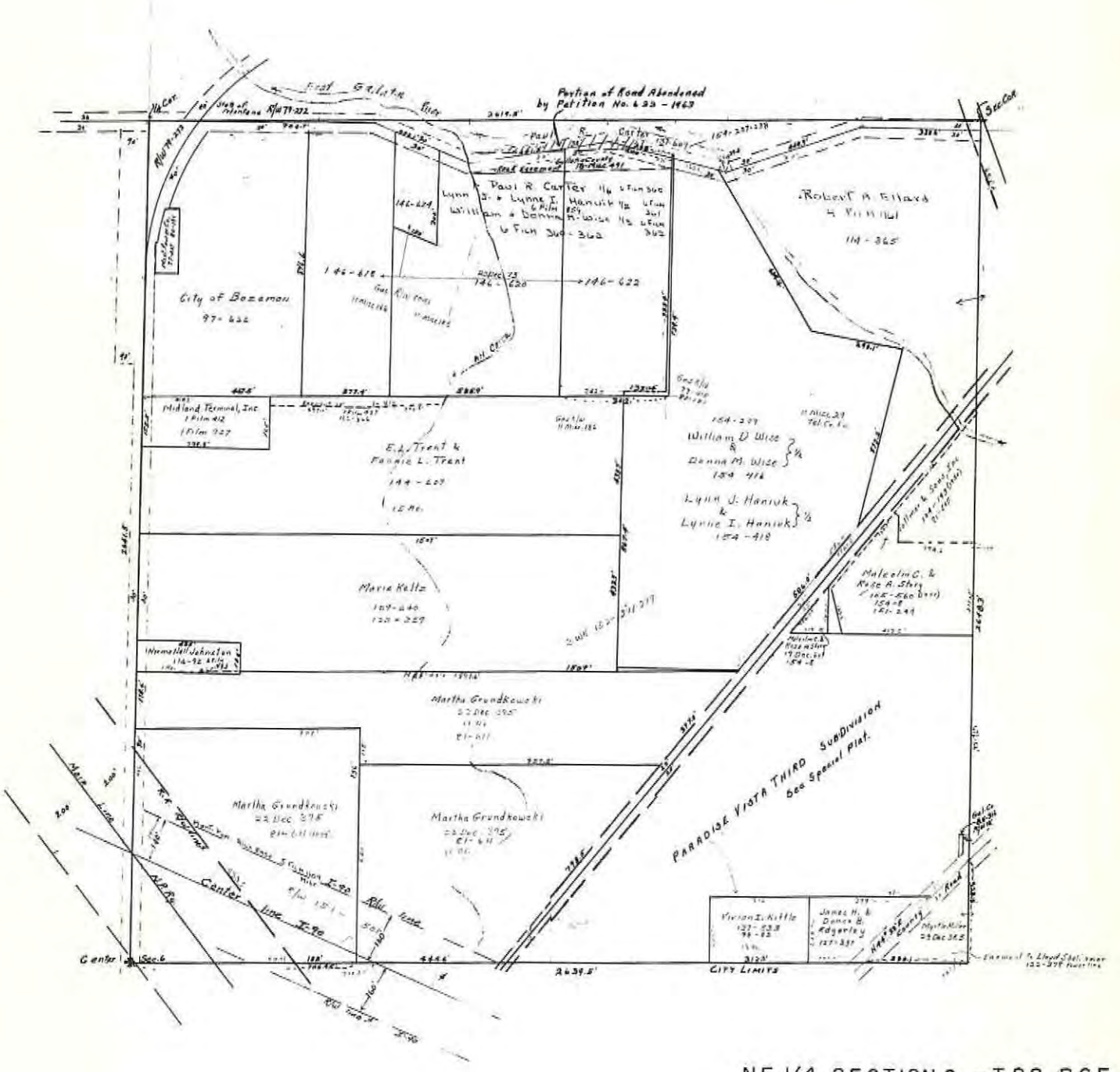
SE 1/4 SW 1/4 SEC. 14 T2S R6E

TOWNSHIP 2 SOUTH RANGE 6 EAST OF M. P. M.



SECTION 6 TOWNSHIP N.E. 1/4, 2 S., RANGE 6 E.

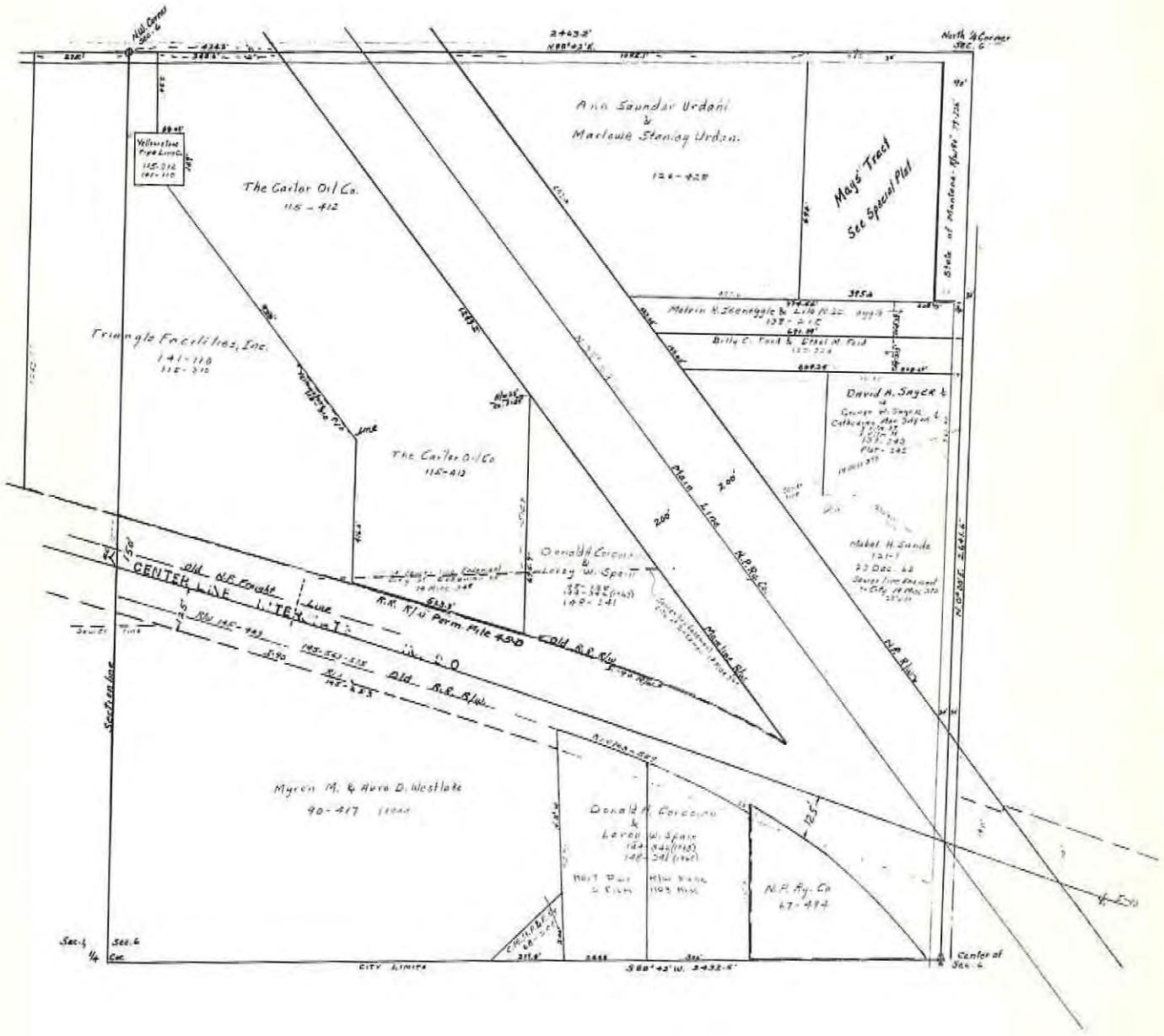
SCALE: One (1) Inch Equals 200 Feet



NE 1/4, SECTION 6, - T. 2S., R. 6E.

N.W. 1/4, SEC. 6 T. 2 SOUTH, R. 6 EAST.

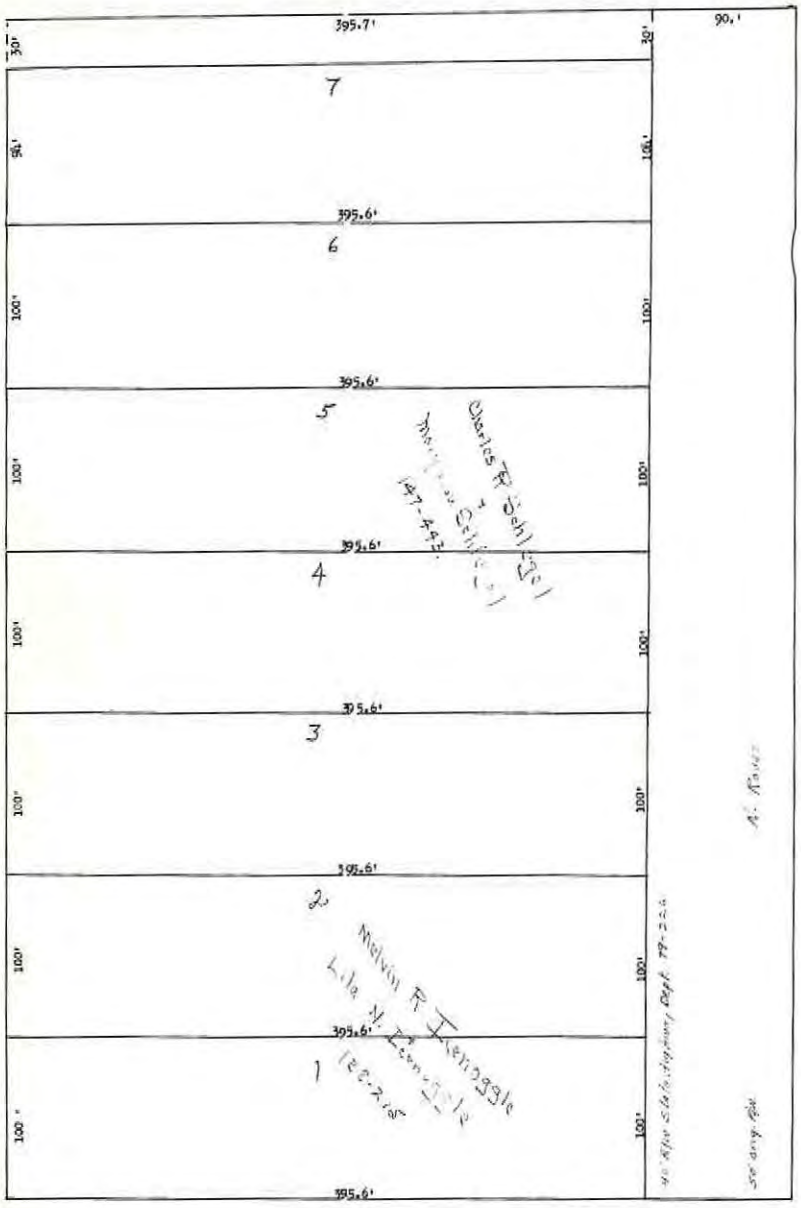
SCALE 1" = 200'



N.W. 1/4, SEC. 6.

MAY'S TRACT

Located in the North East ¼ of the North West ¼
Section 6, T 2S, R 6E.
Scale 1"= 50 Feet

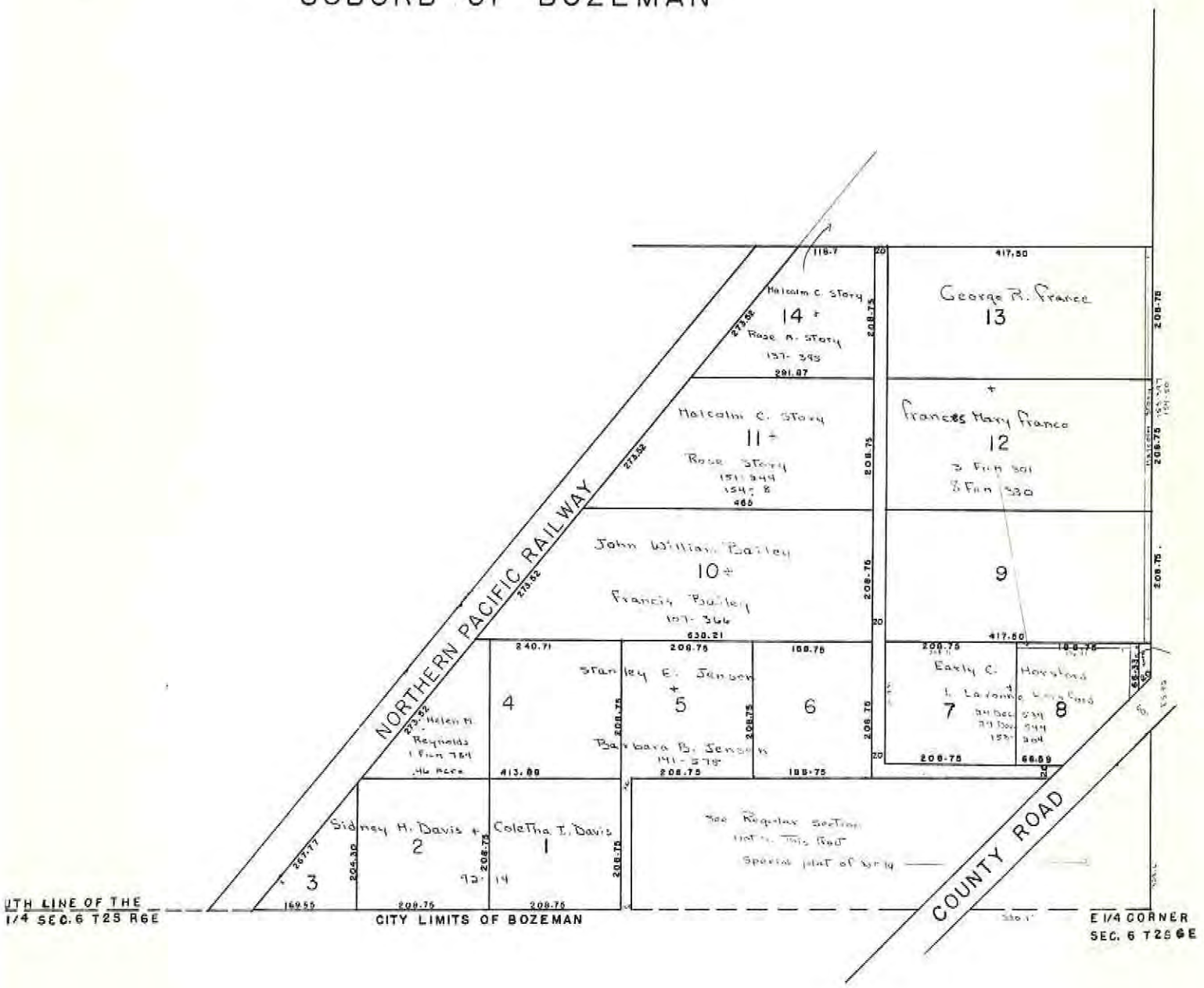


MAY'S TRACT
PT NE¼, NW¼, SEC 6, T2S, R6E

A TRACT IN NE1/4 SECTION 6 TOWNSHIP 2S RANGE 6E

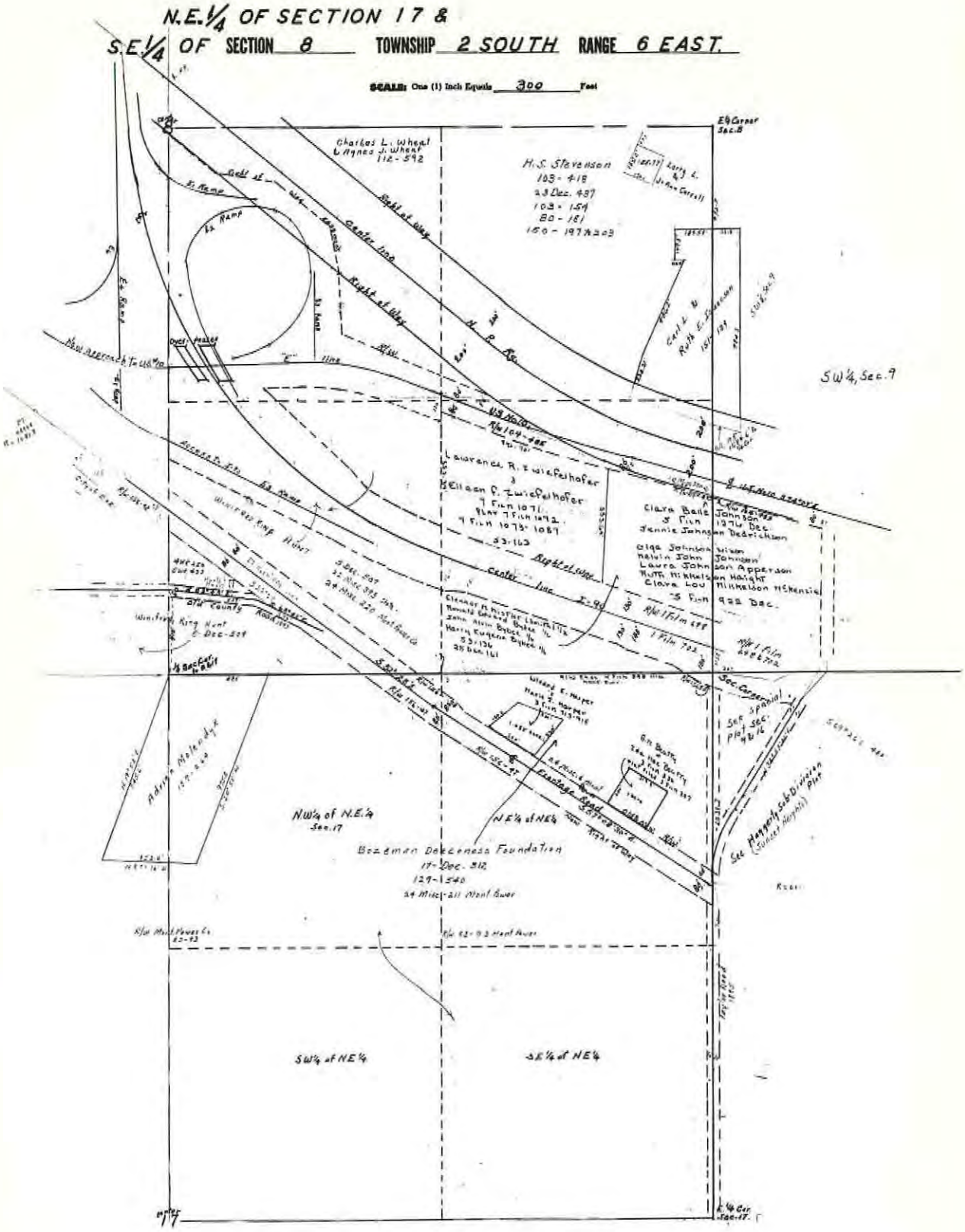
SCALE: One (1) Inch Equals 100 Feet

PARADISE VISTA THIRD
SUBURB OF BOZEMAN

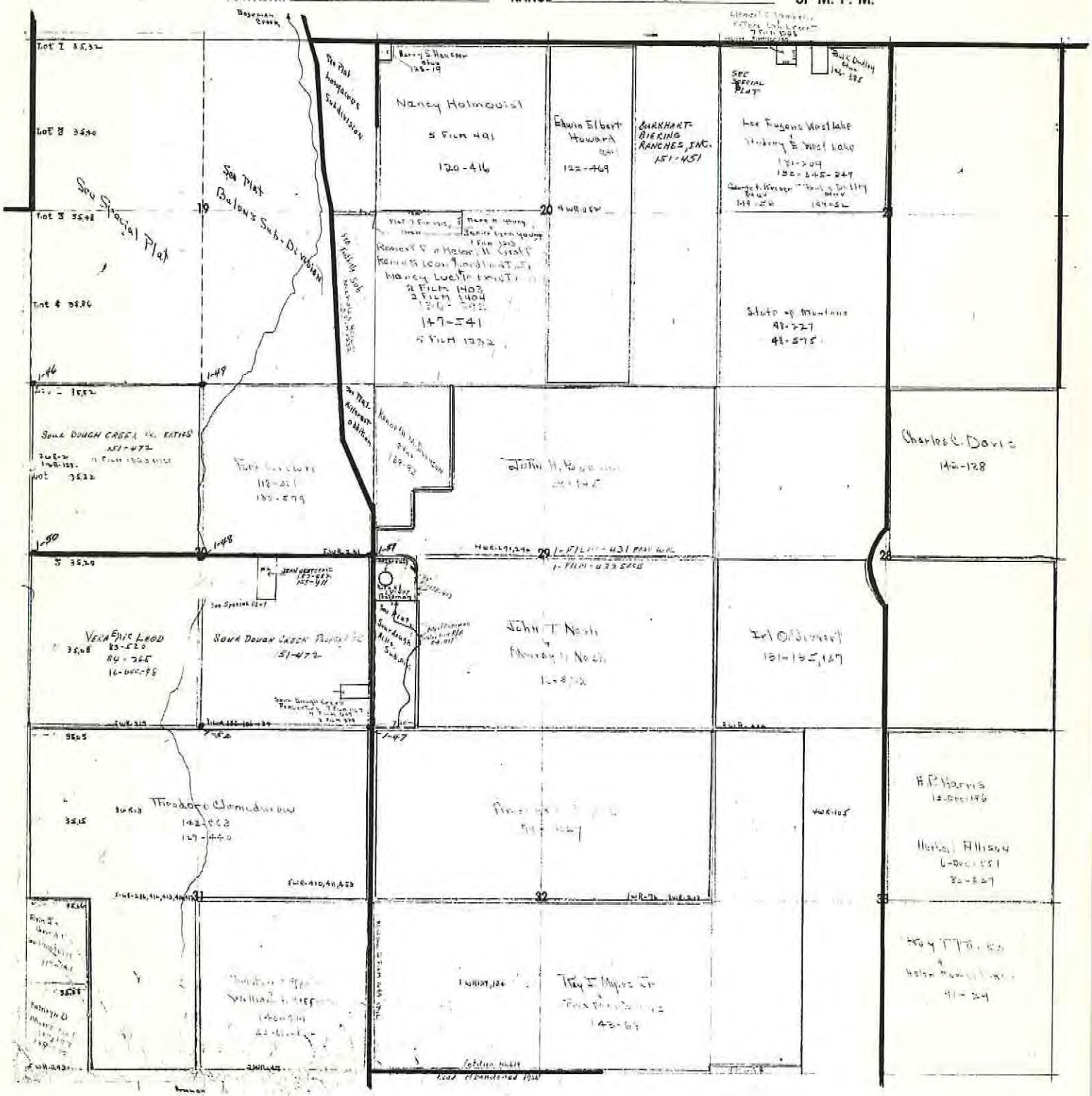


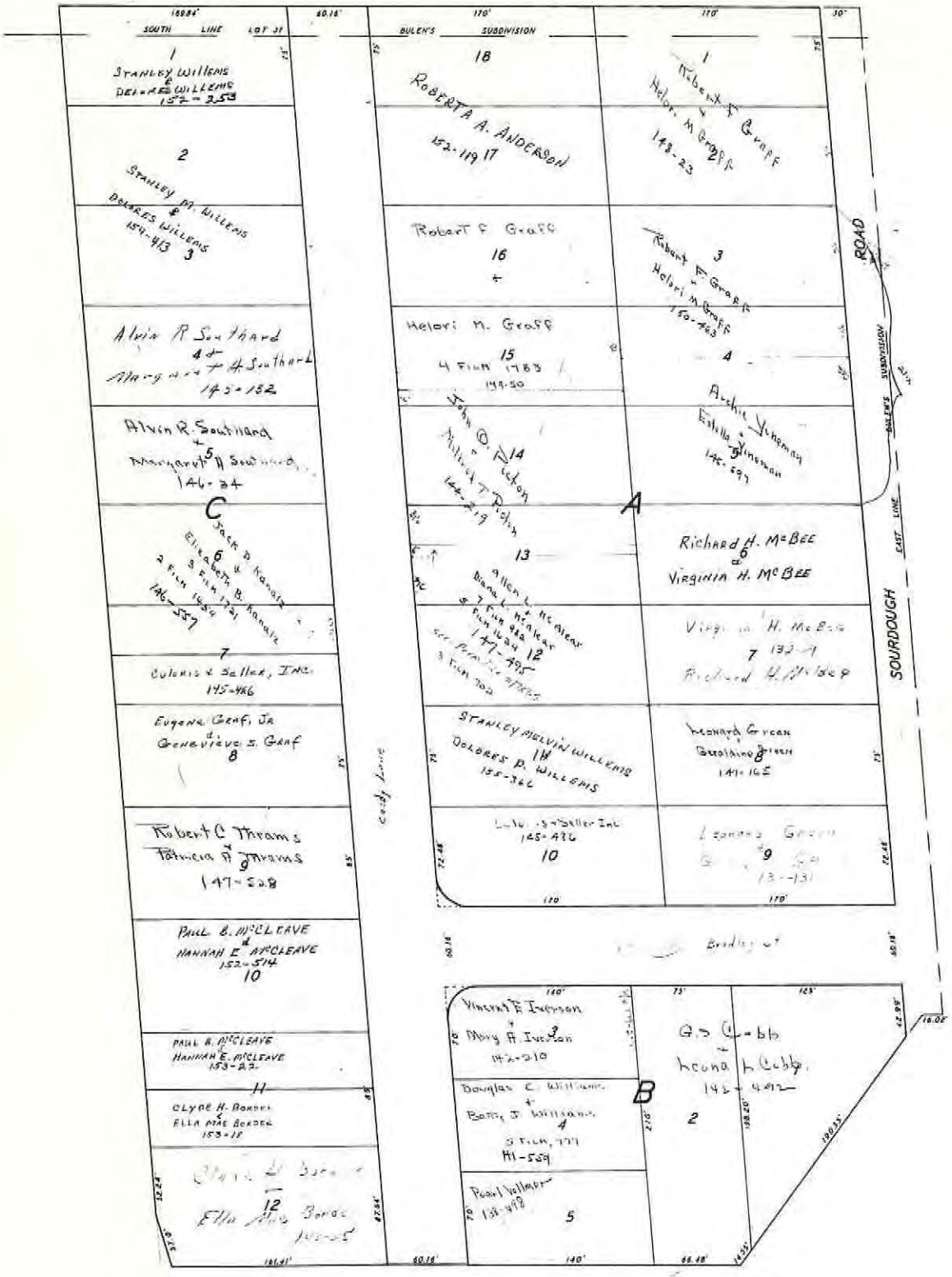
N.E.¼ OF SECTION 17 & S.E.¼ OF SECTION 8 TOWNSHIP 2 SOUTH RANGE 6 EAST.

SCALE: One (1) Inch Equals 300 Feet



TOWNSHIP 2 SOUTH RANGE 6 EAST OF M. P. M.



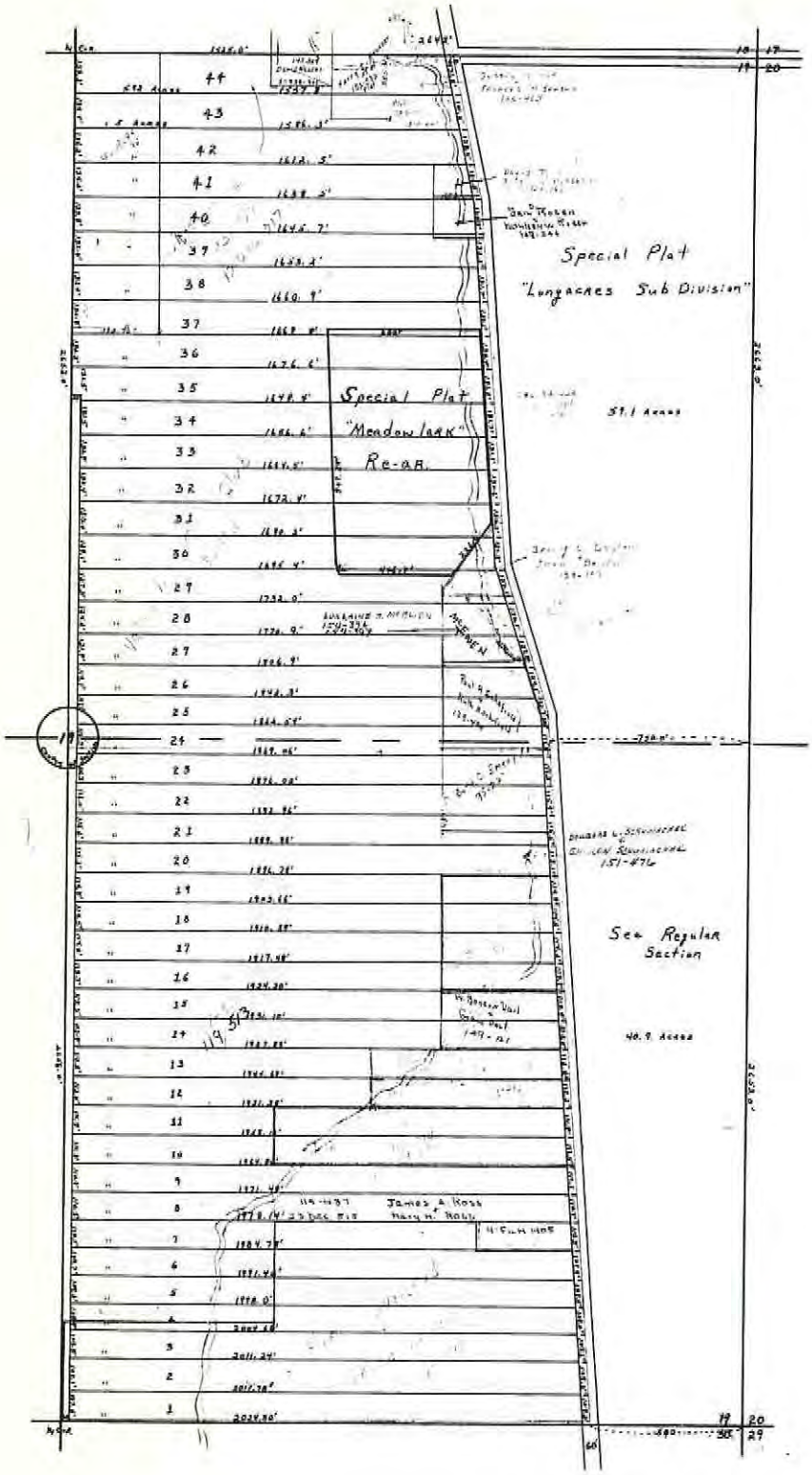


'MEADOWLARK'

A PORTION OF
SEC 19
T 2 S
R 6 E

SCALE
1 INCH = 50 FEET

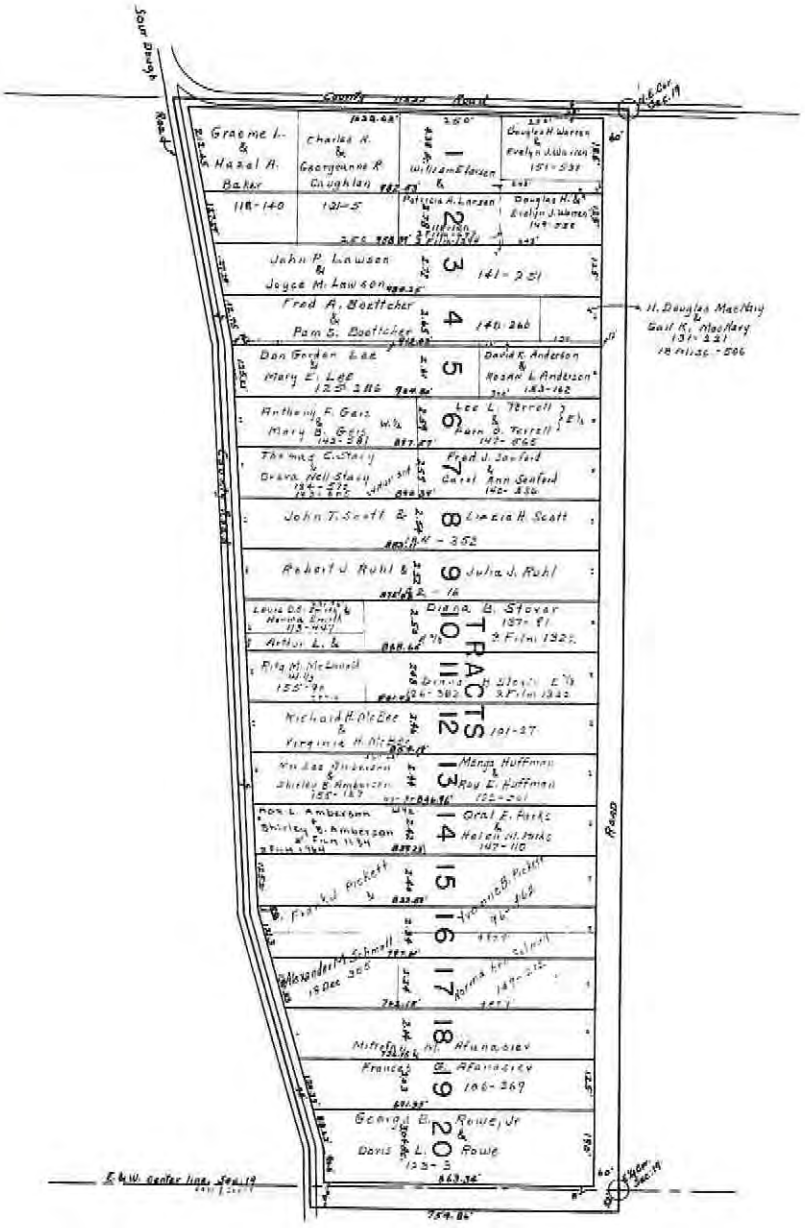
SCALE 1" = 300'



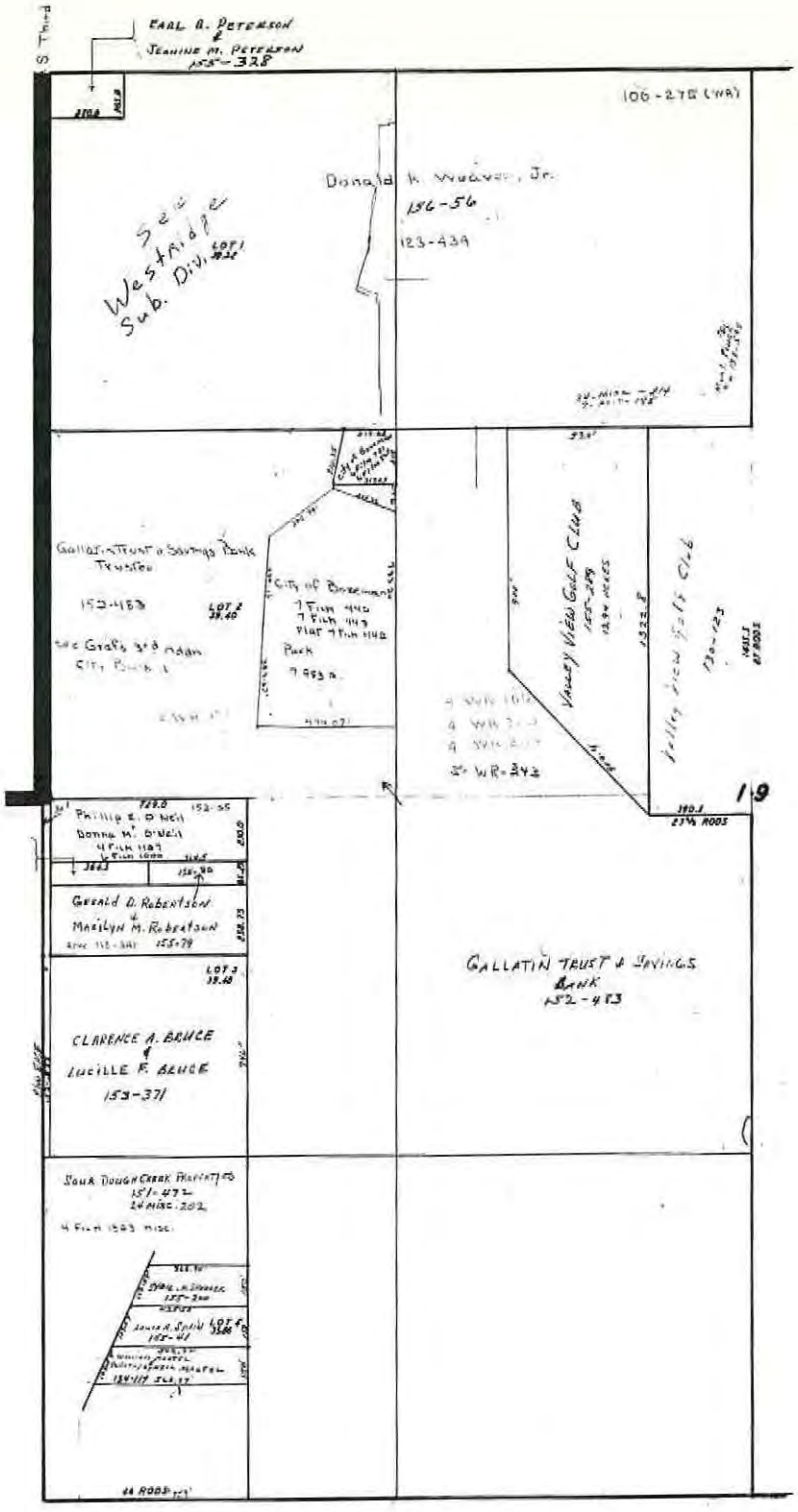
BULEN'S
SUB-DIVISION
PART OF THE E ½ OF
SECTION 19
T2S. R6E

N.W.1/4, **SECTION** 19, **TOWNSHIP** 2 SOUTH **RANGE** 6 EAST.

SCALE: One (1) Inch Equals 200 Feet



LONGACRES
A SUBURB OF BOZEMAN
IN N.W. 1/4, SEC. 19.

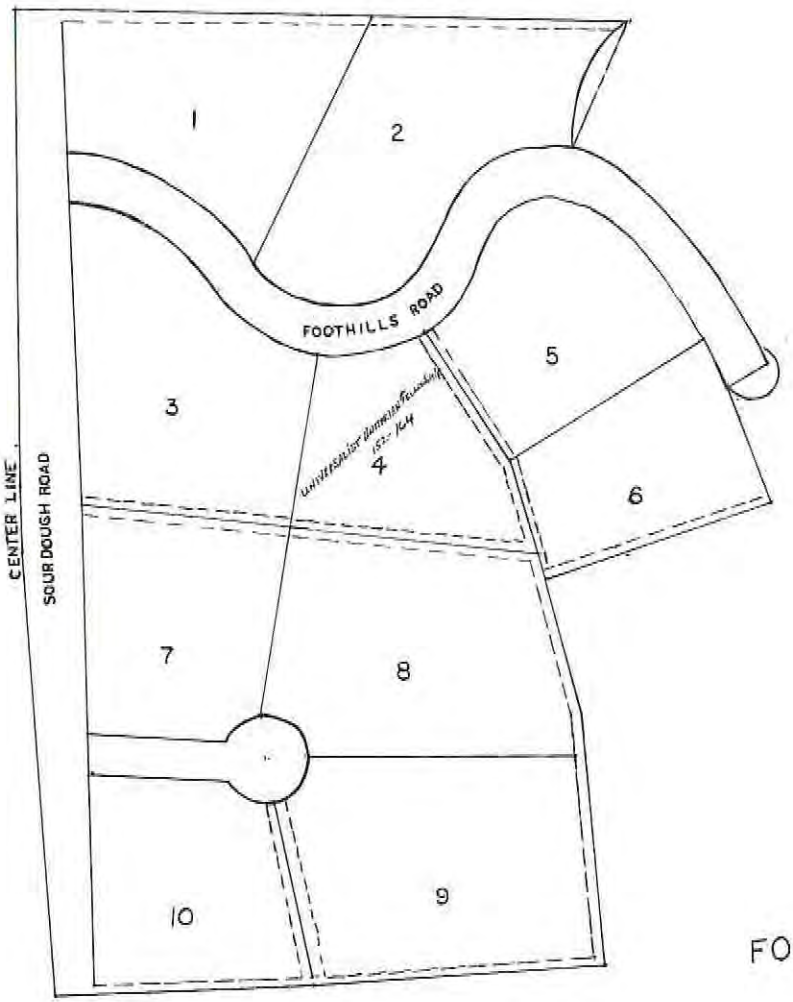


W ½
SEC 19
T 2 S
R 6 E

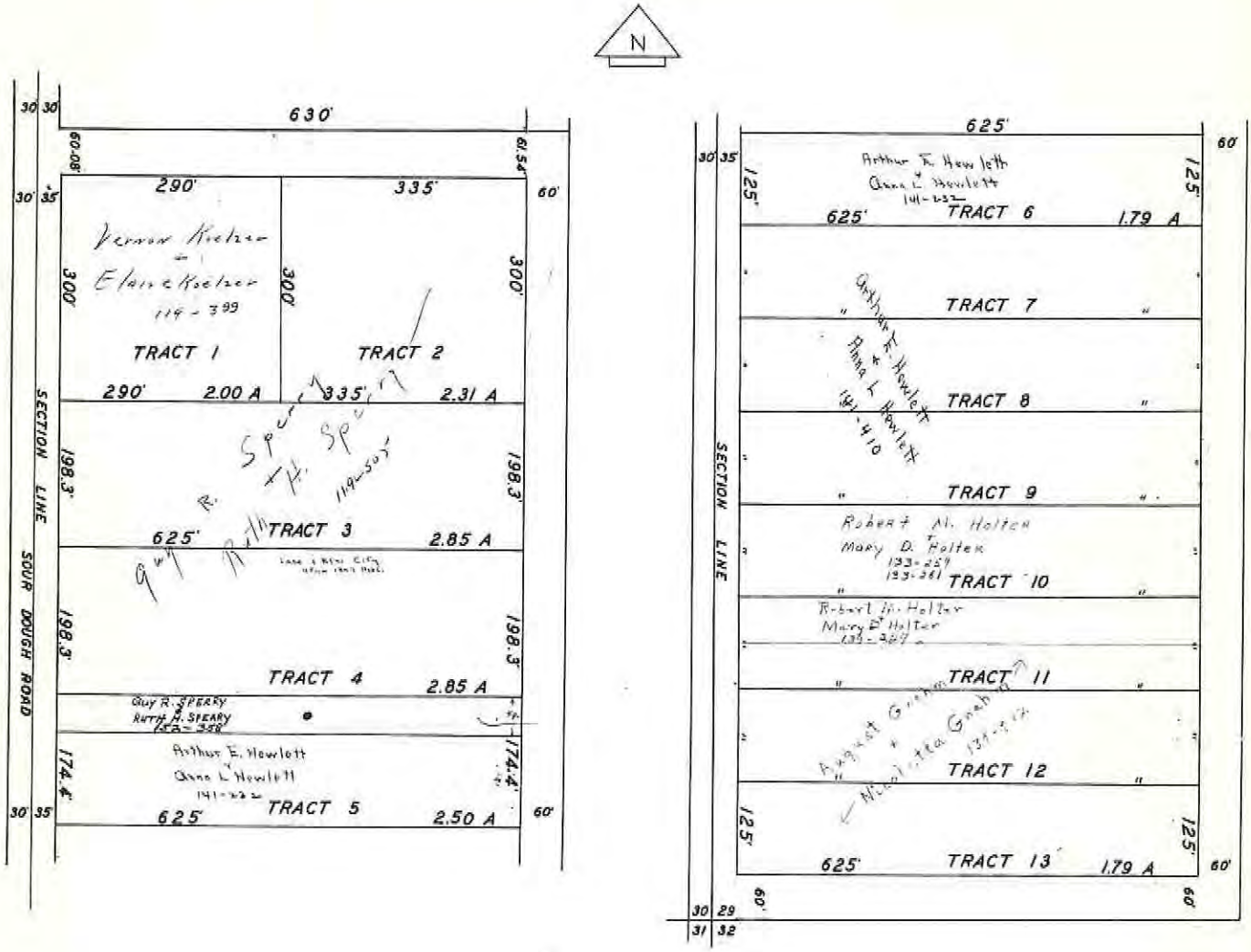
SCALE 1 INCH = 300 FEET

SECTION 19-20 TOWNSHIP 2S RANGE 6E

SCALE: One (1) Inch Equals 100 Feet

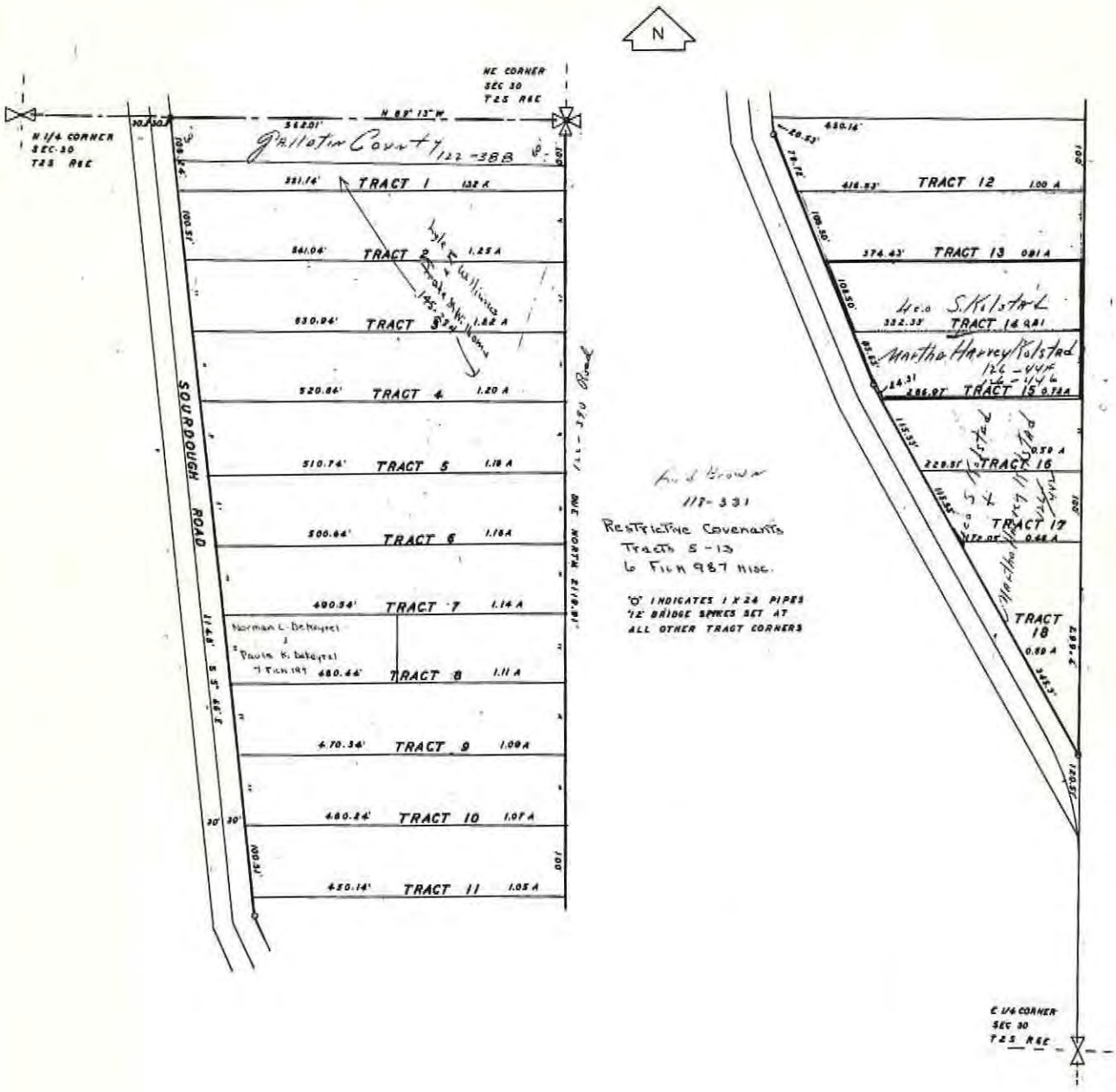


FOOTHILLS SUBDIVISION



SOURDOUGH HILLS

A SUBDIVISION OF THE S.W. 1/4
OF SECTION 29 T.2S. R.6E
SCALE 1"=100'



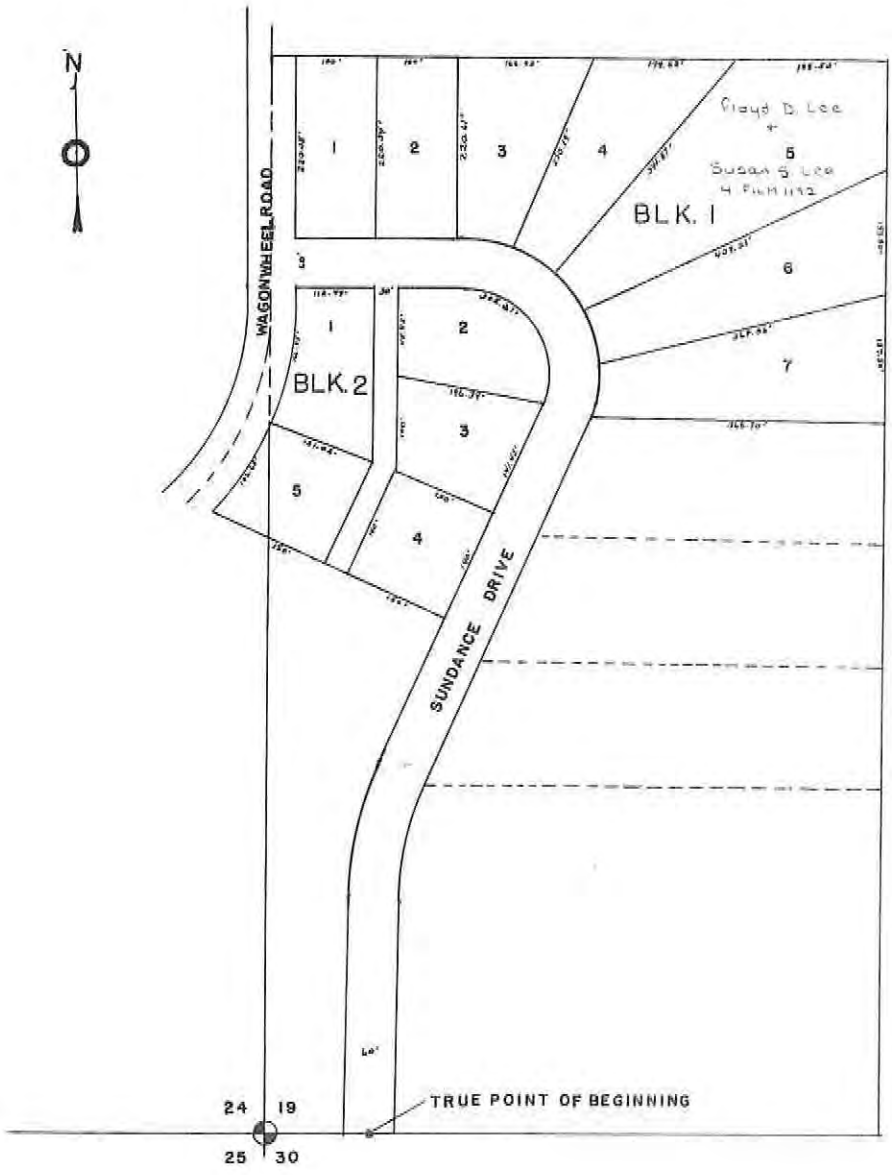
HILLCREST

A SUBDIVISION OF PART OF THE NE 1/4 OF SEC. 30 T2S [redacted]

SW 1/4 SECTION 19 & SE 1/4 **SECTION** 24 **TOWNSHIP** 2S **RANGE** 6E

SCALE: One (1) Inch Equals 100 Feet

SUBDIVISION NO. 1 OF THE SOUR DOUGH CREEK PROPERTIES

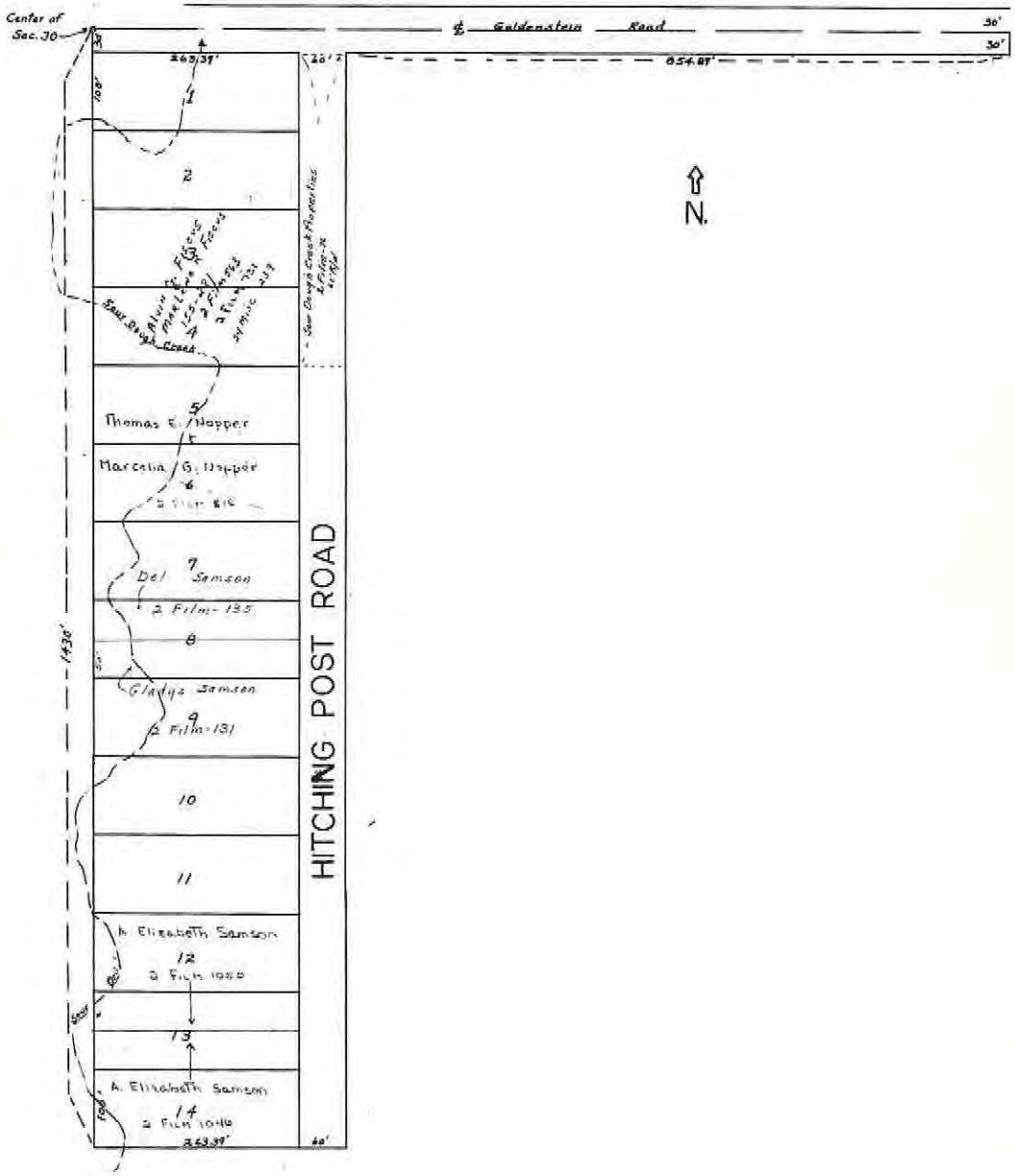


IN W1/2 OF SE1/4,
SECTION 30 TOWNSHIP 2 SOUTH RANGE 6 EAST.

SCALE: One (1) Inch Equals 100 Feet

SUBDIVISION NO. 2

SOUR DOUGH CREEK PROPERTIES

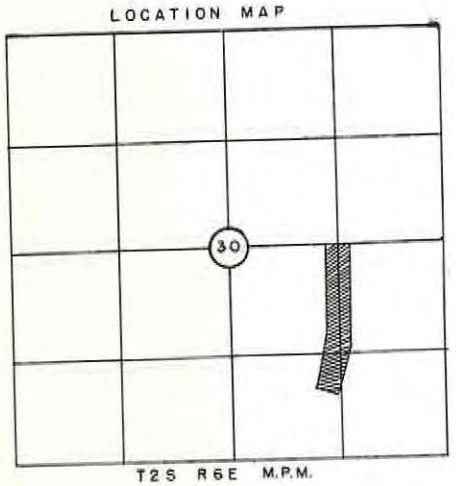


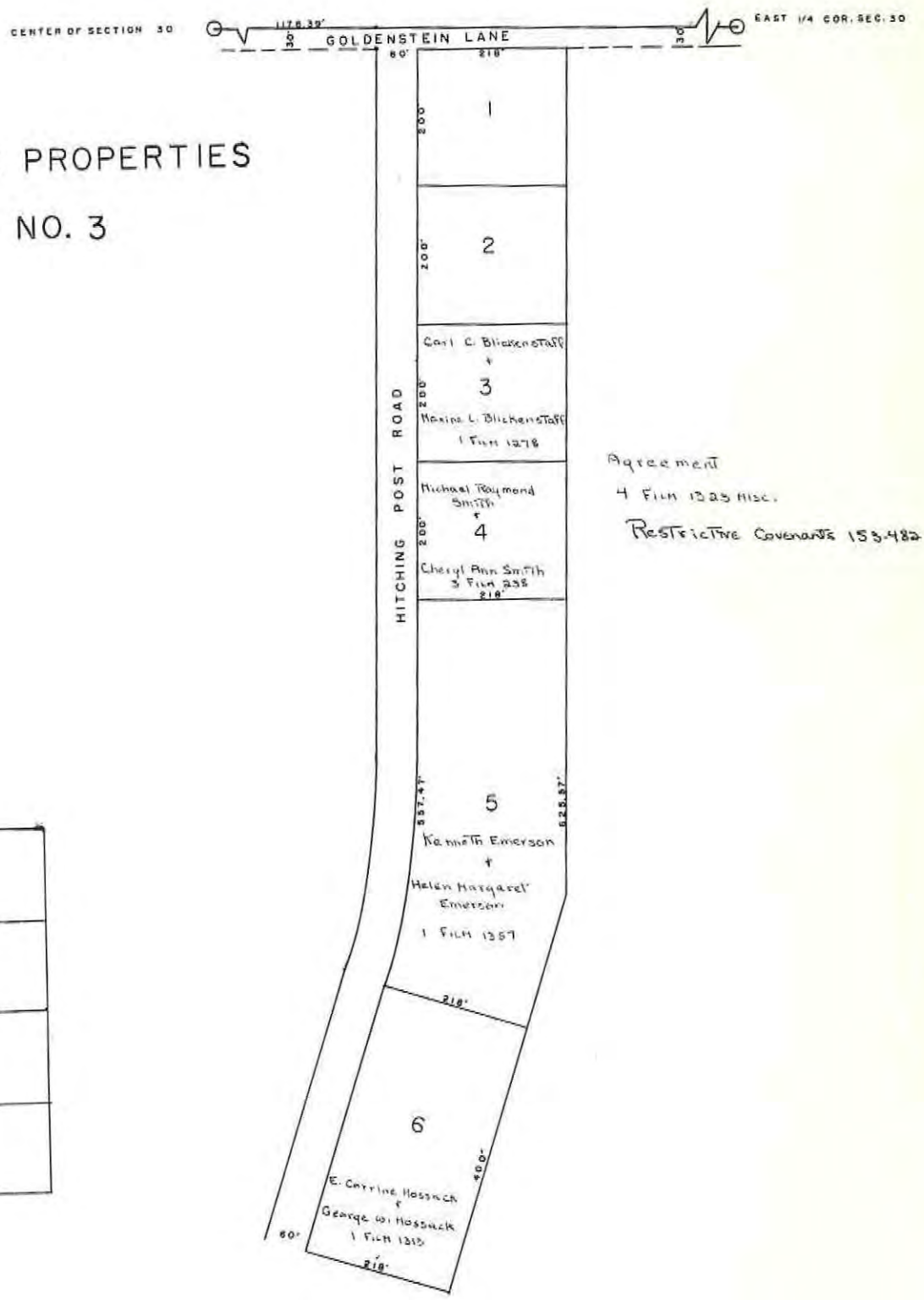
SE 1/4 **SECTION** 30 **TOWNSHIP** 2S **RANGE** 6E

SCALE: One (1) Inch Equals 100 Feet

SOUR DOUGH CREEK PROPERTIES

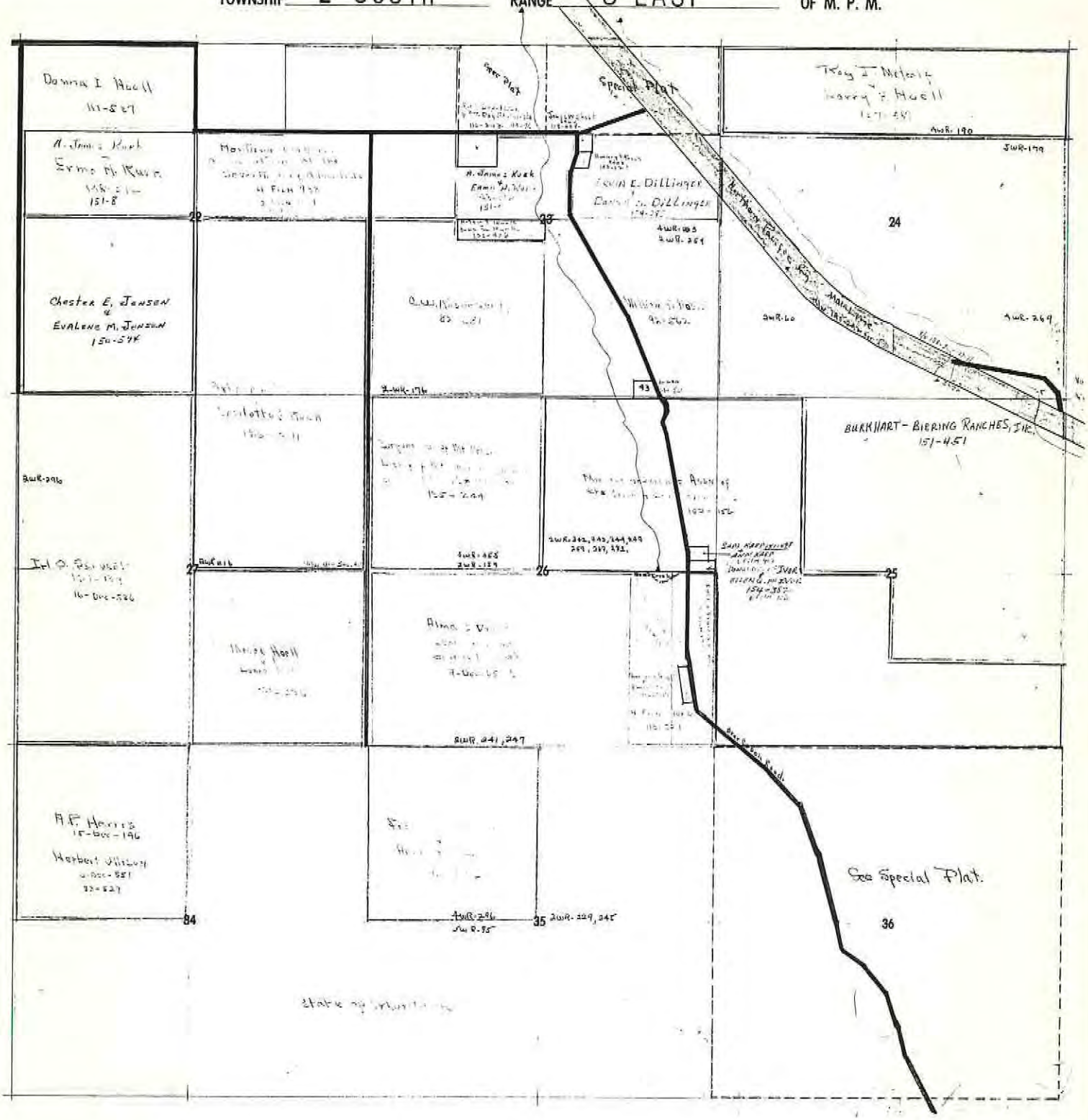
SUBDIVISION NO. 3





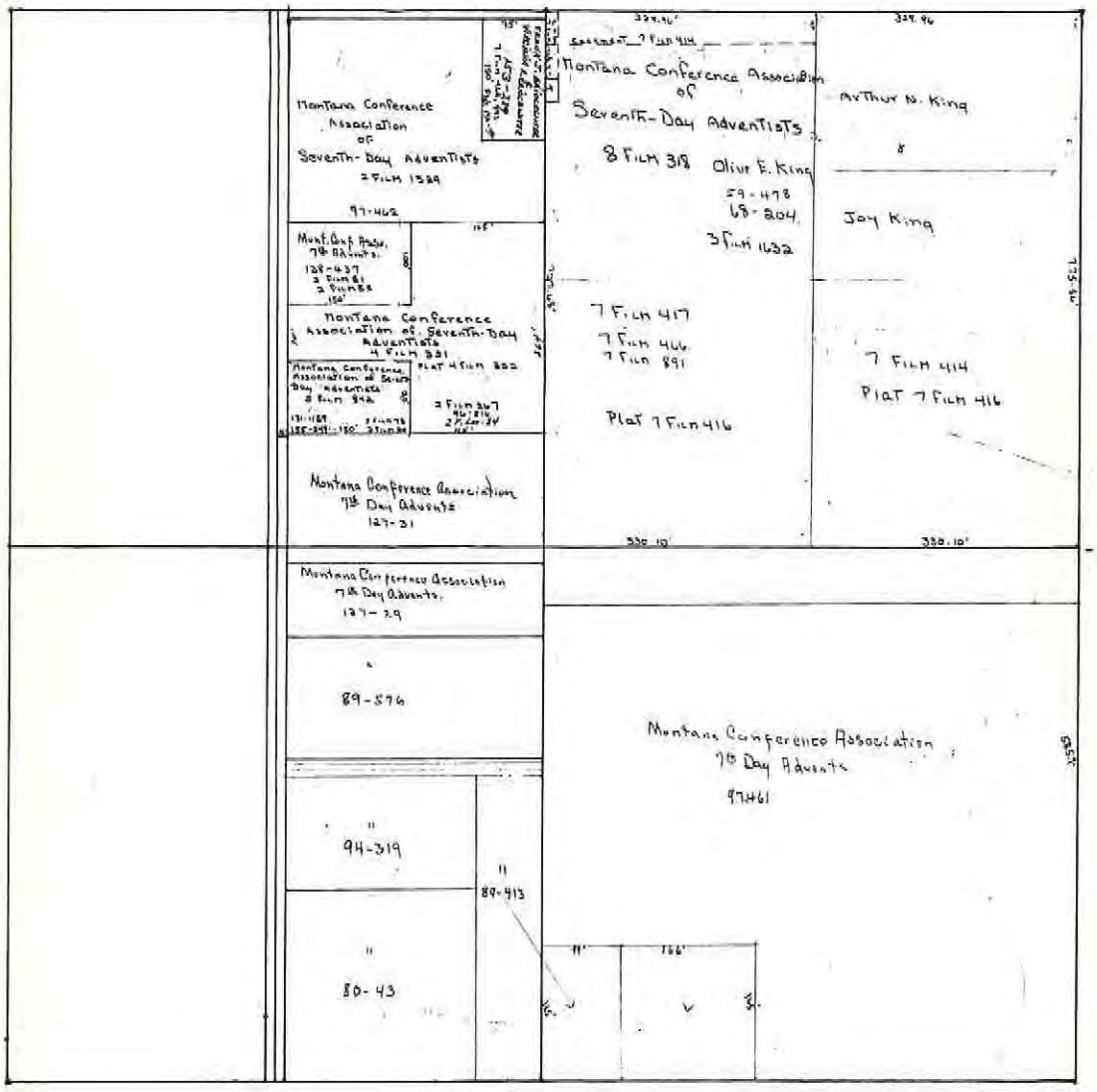
Agreement
4 Film 1225 Misc.
Restrictive Covenants 153-482

TOWNSHIP 2 SOUTH RANGE 6 EAST OF M. P. M.



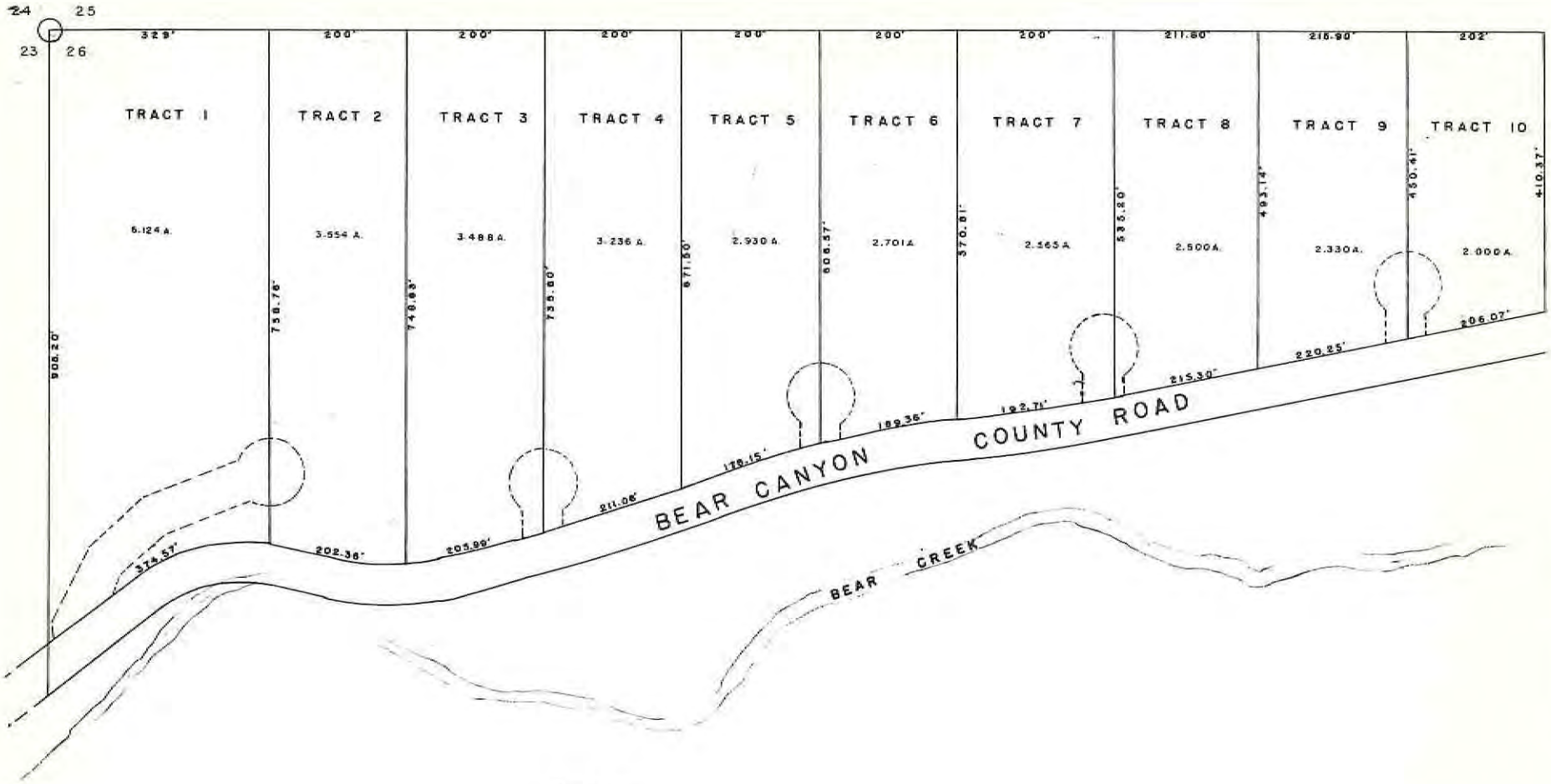
SECTION 23 **TOWNSHIP** 2S **RANGE** 6E

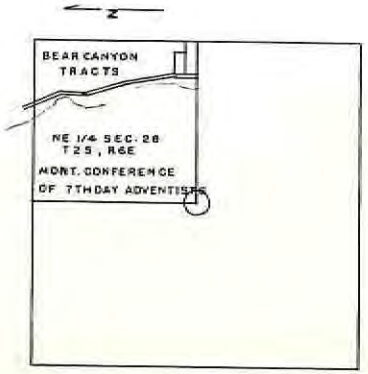
SCALE: One (1) Inch Equals 100 Feet



NE¼ - NW¼ Sec 23 T2S, R6E.

BEAR CANYON TRACTS

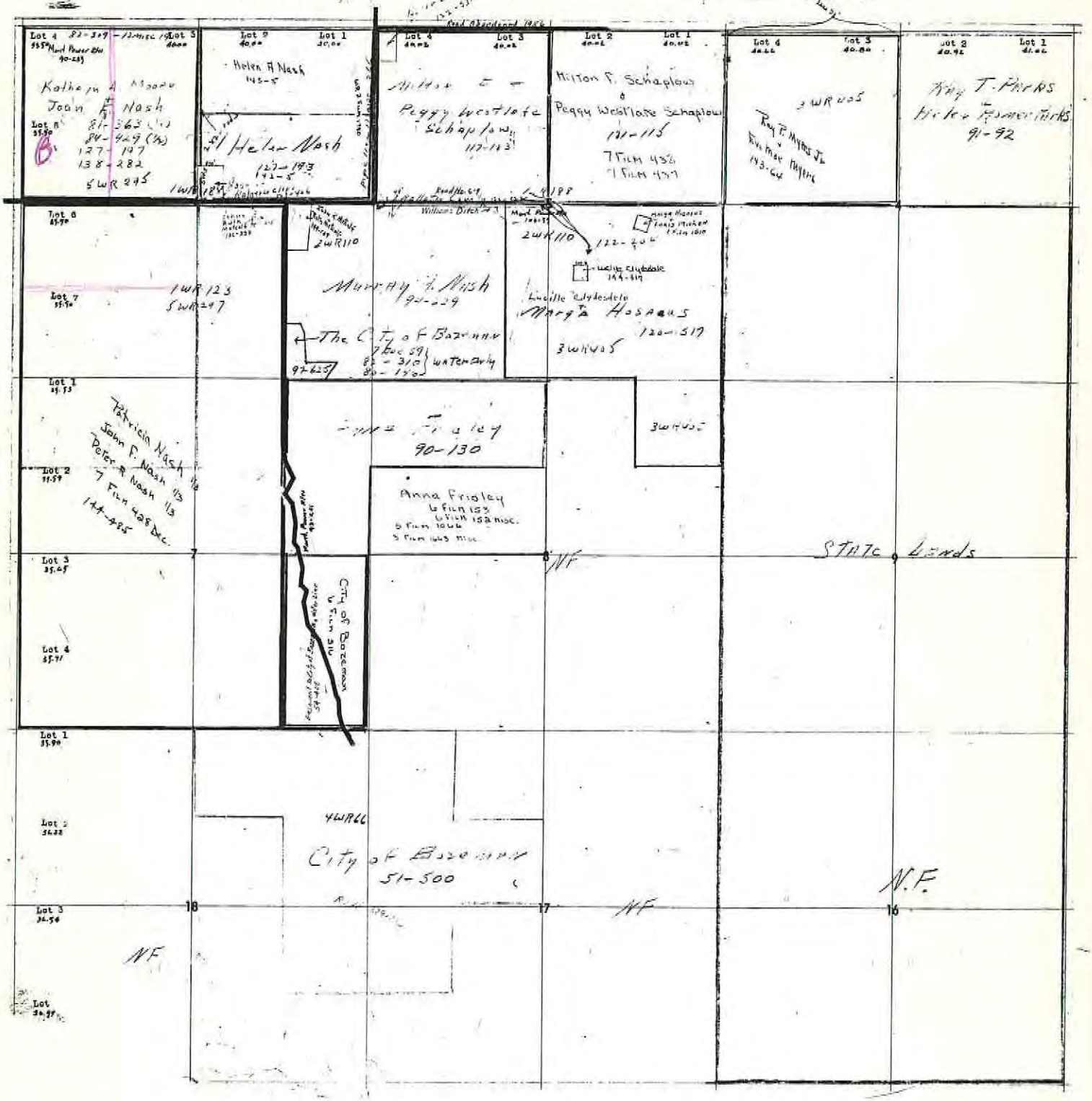




NE 1/4 SECTION 26 TOWNSHIP 2S RANGE 6E

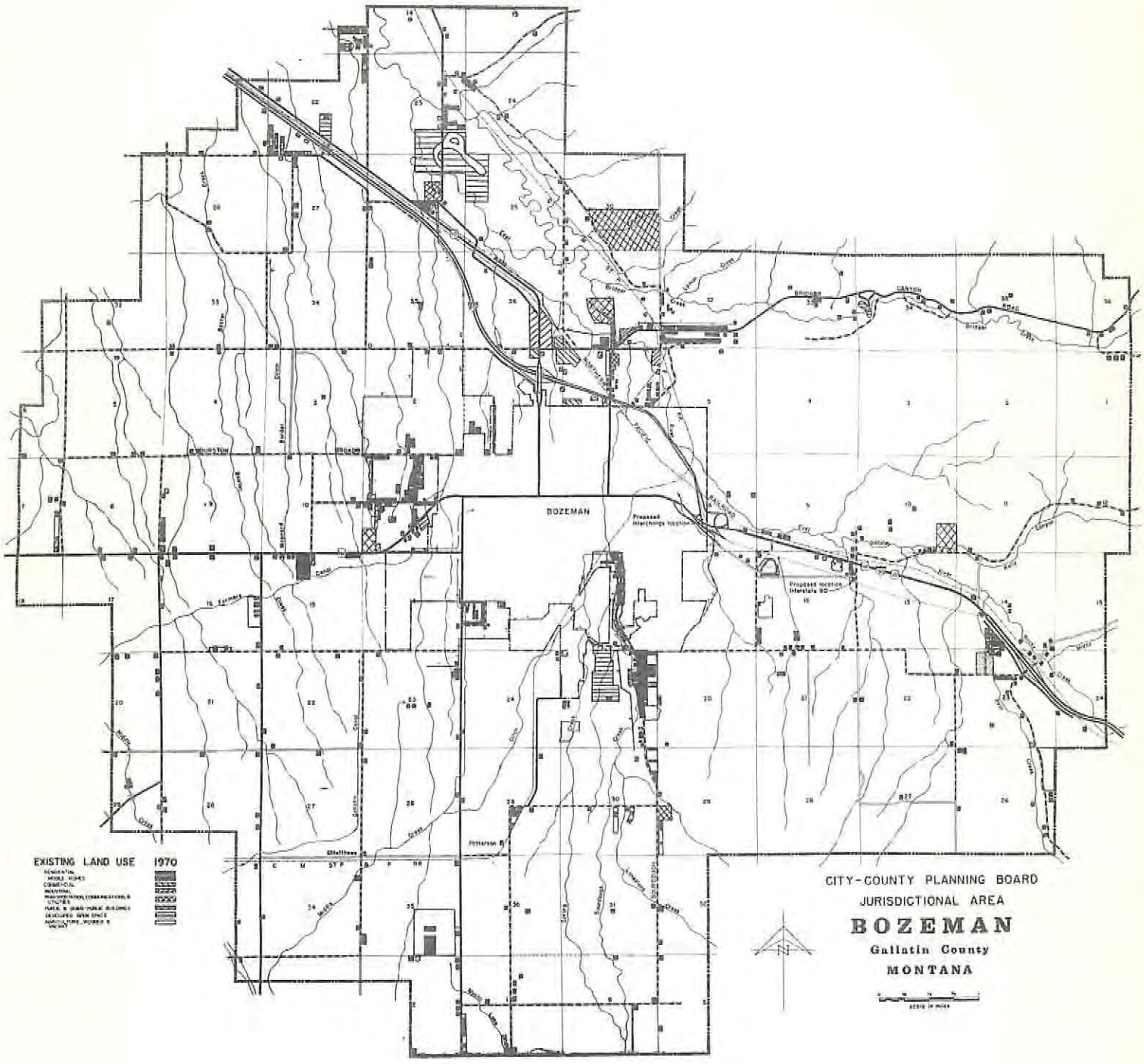
SCALE: One (1) Inch Equals 100 Feet

TOWNSHIP 3 SOUTH RANGE 6 EAST OF M. P. M.



EXISTING LAND USE MAP*

* Source: Gallatin County Clerk and Recorder's Office, Gallatin County Assessor's Office and Visual survey

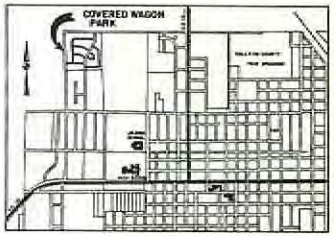

BOZEMAN
EXISTING LAND USE 1970
CITY-COUNTY PLANNING BOARD
JURISDICTIONAL AREA
BOZEMAN
Gallatin County
MONTANA

SUBDIVISIONS, PROPOSED*

* Source: Bozeman City-County Planning Board

STREETS	8.64 ACRES
RECREATION AREA	2.78 "
NET TRAILER PARK	23.93 "
TOTAL	35.35 ACRES

DENSITY = 5.86 TRAILERS / ACRES
207 TRAILER SPACES SHOWN



VICINITY MAP

SCALE : 1" = 50'

THOMAS, DEAN & HOSKINS INC.
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN, MONTANA

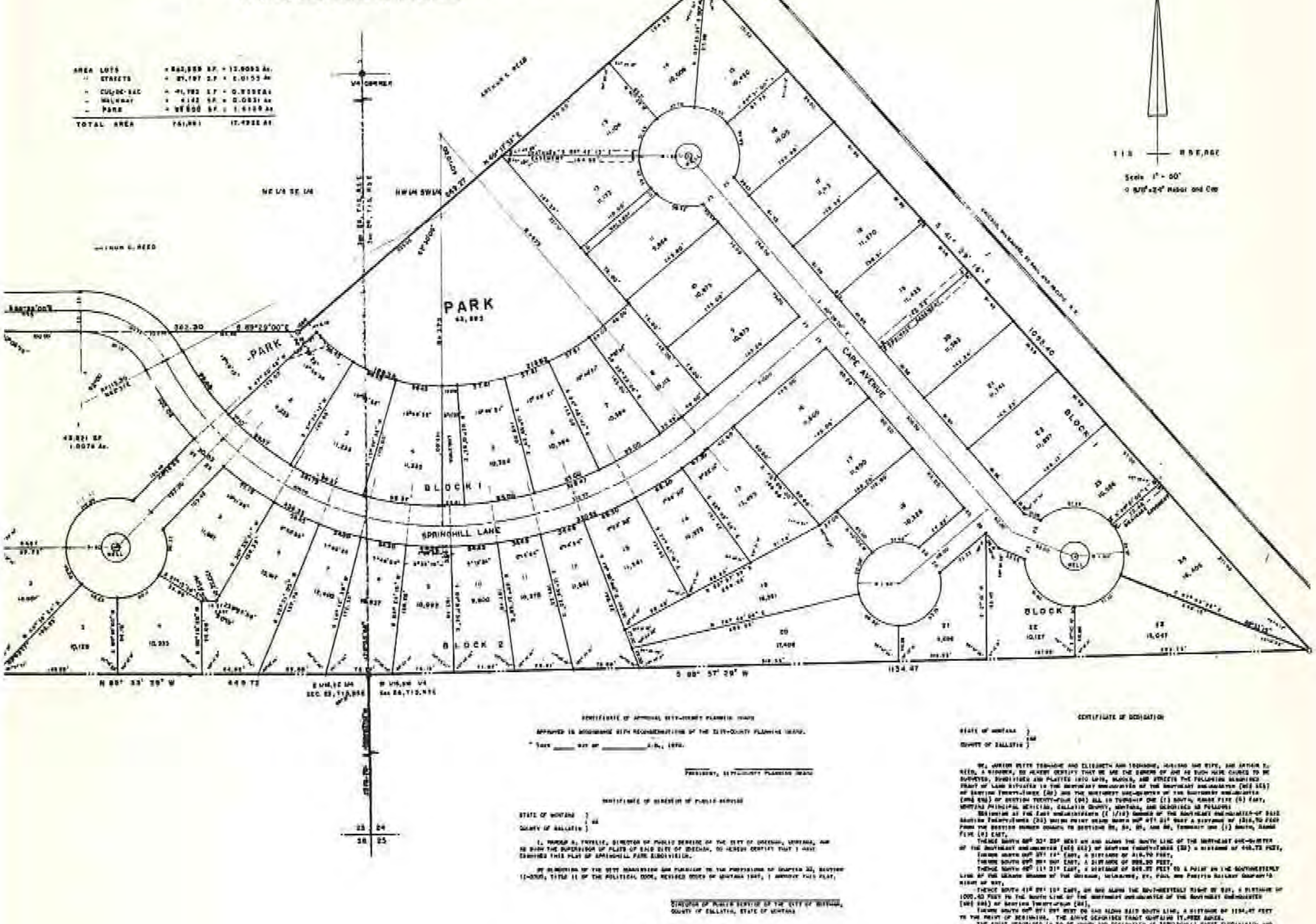
J. W. TSCHACHE

COVERED WAGON PARK

DATE:	JOB NO: 28-70		SHEET NO.
DESIGNED: R.W.D.	CHECKED:		
DRAWN: R.P.M.	APPROVED:	TOTAL SHEETS:	

SPRINGHILL PARK

A TRACT OF LAND IN THE NE 1/4 OF THE SE 1/4, SEC. 23, AND THE NW1/4 OF THE SW1/4, SEC. 24, T 1 S, R 5 E, MPM, GALLATIN COUNTY, MONTANA



CERTIFICATE OF APPROVAL CITY-COUNTY PLANNING BOARD

APPROVED IN ACCORDANCE WITH RECOMMENDATIONS OF THE CITY-COUNTY PLANNING BOARD.

THIS ____ DAY OF __________ A.D., 1970.

PRESIDENT, CITY-COUNTY PLANNING BOARD

CERTIFICATE OF DIRECTOR OF PUBLIC SERVICE

STATE OF MONTANA)
: SS
COUNTY OF GALLATIN)

[illegible]

DIRECTOR OF PUBLIC SERVICE OF THE CITY OF BOZEMAN, COUNTY OF GALLATIN, STATE OF MONTANA

CERTIFICATE OF COUNTY COMMISSIONERS

STATE OF MONTANA)
: SS
COUNTY OF GALLATIN)

[illegible]

ATTEST

CLERK AND RECORDER, GALLATIN COUNTY, MONTANA

CHAIRMAN, BOARD OF COUNTY COMMISSIONERS, GALLATIN COUNTY, MONTANA

CERTIFICATE OF CLERK AND RECORDER

STATE OF MONTANA)
: SS
COUNTY OF GALLATIN)

[illegible]

COUNTY CLERK AND RECORDER, GALLATIN COUNTY, MONTANA

CERTIFICATE OF DEDICATION

STATE OF MONTANA)
: SS
COUNTY OF GALLATIN)

[illegible]

[illegible], HUSBAND

[illegible], WIFE

[illegible], WIDOWER

[illegible]

NOTARY PUBLIC FOR THE STATE OF MONTANA
RESIDING AT BOZEMAN, MONTANA
MY COMMISSION EXPIRES ______

CERTIFICATE OF SURVEYOR

STATE OF MONTANA)
: SS
COUNTY OF GALLATIN)

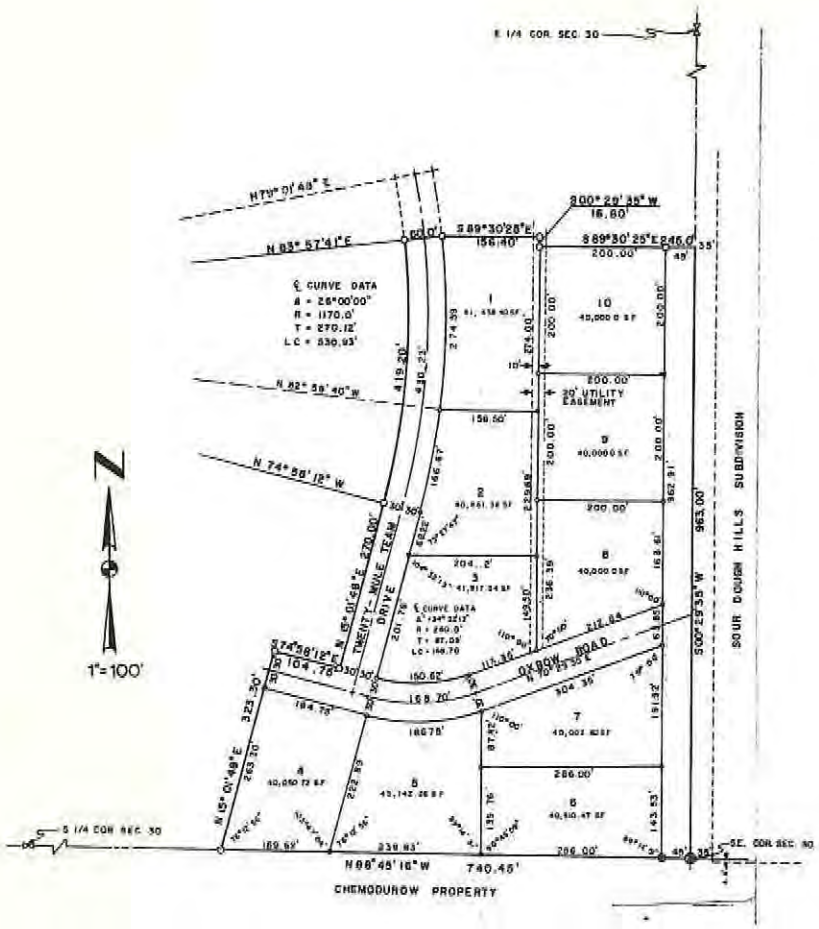
[illegible]

SUBSCRIBED AND SWORN BEFORE ME THIS ____ DAY OF ______ A.D., 1970.

NOTARY PUBLIC FOR THE STATE OF MONTANA
RESIDING AT BOZEMAN, MONTANA
MY COMMISSION EXPIRES ______

SUBDIVISION NO 7 OF SOUR DOUGH CREEK PROPERTIES

LOCATED IN THE SE 1/4 SEC 30, T2S, R6E, P.M.M.
GALLATIN COUNTY, MONTANA

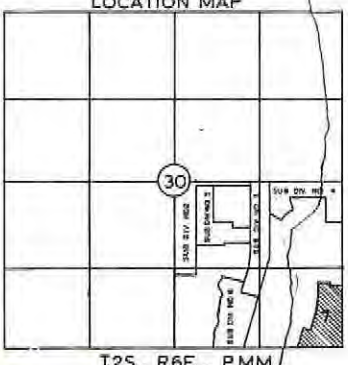


LEGEND

- 1 1/2"X 30" IRON PIPE
- 1"X24" IRON PIPE
- 5/8"X 18" REBAR
- SUBDIVISION BOUNDARY
- LOT LINE
- EASEMENT LINE
- ℄ ROADWAY
- EXISTING SUBDIVISION LINE
- REFERENCE LINE
- SECTION LINE

LOT AREA — 9.406 ac
STREET AREA — 2.812 ac.
TOTAL AREA — 12.218 ac.

LOCATION MAP



CERTIFICATE OF DEDICATION

STATE OF MONTANA)
: ss
COUNTY OF GALLATIN)

Sour Dough Creek Properties, a Montana Corporation, having its principal place of business at Bozeman, Montana, as owner by and through its duly authorized officers, and Vera McLeod as mortgagee, certify that they are the owner and mortgagee respectively, of and have caused to be surveyed and platted into lots and streets as shown by plat and certificates hereto annexed, the following described tract of land.

A tract of land located in the South East Quarter (SE 1/4) Section Thirty (Sec. 30) Township Two South (T2S), Range Six East (R6E) of the Montana Principle Meridian, Gallatin County, Montana, and being more particularly described as follows:

Beginning at the South East corner of said Section Thirty (30), said corner being marked with a 5/8" x 18" steel pin with aluminum survey cap imbedded in concrete, set 4" below the surface of Sour Dough Road; thence, North eighty-eight degrees, forty-five minutes and sixteen seconds West (N 88°45'16" W) seven hundred forty and forty-five hundredths (740.45) feet; thence, North fifteen degrees one minute and forty-eight seconds East (N 15°01'48" E) three hundred twenty-three and three tenths (323.30) feet; thence, North seventy-four degrees fifty-eight minutes and twelve seconds East (N 74°58'12" E) one hundred four and seventy-five hundredths (104.75) feet; thence, North fifteen degrees one minute and forty-eight seconds East (N 15°01'48" E) two hundred and seventy (270.00) feet; thence, northerly along a one thousand one hundred and forty (1,140.00) foot radius curve to the left and arc distance of four hundred nineteen and two tenths (419.20) feet; thence, North eighty-three degrees fifty-seven minutes and forty-one seconds East (N 83°57'41" E) sixty (60.00) feet; thence, South eighty-nine degrees thirty minutes and twenty-five seconds East (S 89°30'25" E) one hundred fifty-six and four tenths (156.40) feet; thence, South twenty-seven minutes thirty-five seconds West (S 00°29'35" W) sixteen and eight tenths (16.80) feet; thence, South eighty-nine degrees thirty minutes and twenty-five seconds East (S 89°30'25" E) two hundred and forty-five (245.00) feet; thence, South twenty-nine minutes thirty-five seconds West (S 00°29'35" W) nine hundred and sixty-three (963.00) feet to the point of beginning and containing 12.218 acres.

The Land included in the Streets and Road Right-of-way shown on said plat of the described area are hereby granted, donated and dedicated to uses of the Public forever.

The Land shown by plat and certificates hereto annexed shall be known as Subdivision Number Seven of Sour Dough Creek Properties.

Dated this _____ day of _____, A.D., 1970

SOUR DOUGH CREEK PROPERTIES, A Montana Corporation

Attest_____ by_____

Title_____ Title_____

_____
Vera McLeod

STATE OF MONTANA)
: ss
COUNTY OF GALLATIN)

On this _____ day of _____ 1970 before me, a Notary Public for the State of Montana, personally appeared _____ known to me to be the _____ of the Corporation that executed this instrument on behalf of said corporation and acknowledged to me that such corporation executed the same.

IN WITNESS WHEREOF I have hereunto set my hand and affixed my official seal the day and year in the certificate first above written.

_____
Notary Public for the State of Montana
Residing at _____
My Commission Expires _____

STATE OF MONTANA)
: ss
COUNTY OF GALLATIN)

On this _____ day of _____ 1970, before me, a Notary Public for the State of Montana, personally appeared Vera McLeod, known to me to be the person whose name is subscribed to the foregoing Certificate of Dedication and acknowledged to me that she executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

_____
Notary Public for the State of Montana
Residing at _____
My Commission expires _____

CERTIFICATE OF SURVEYOR

STATE OF MONTANA)
: ss
COUNTY OF GALLATIN)

I, William F. Underwood, a registered Professional Engineer and Land Surveyor in the State of Montana, Reg. No. 1884 ES, do hereby certify that between June 15, 1970 and July 1, 1970, I supervised the survey of Subdivision Number Seven of Sour Dough Creek Properties, Gallatin County, Montana; that such survey was made in accordance with the provisions of Chapter 9, Title 11 of the Political Code, Sections 11-901-11-915, Revised Code of Montana, 1947, and Section 11-614.1 enacted as Section 1, Chapter 82, Laws of 1953; that iron pins and iron pipe monuments were set at all lot corners and subdivision corners as shown on the accompanying plat.

_____ day of _____, 1970

_____
William F. Underwood
Montana Registration No. 1884 ES

CERTIFICATE OF DIRECTOR OF PUBLIC SERVICE

STATE OF MONTANA)
CITY OF BOZEMAN : ss
COUNTY OF GALLATIN)

I, Harold A. Fryslie, Director of Public Service for the City of Bozeman, Montana, and as such, the Supervisor of Plats of said City of Bozeman, do hereby certify that I have examined this plat of Subdivision Number Seven of the Sour Dough Creek Properties, into lots, blocks and streets.

By the direction of the City Commission and pursuant to the provision of Chapter 3, Section 11-3306, Title 11 of the Political Code, Revised Codes of Montana, 1947, I approve said plat.

Dated this _____ day of _____, 1970

_____
Director of Public Service of the City of Bozeman
County of Gallatin, State of Montana

CERTIFICATE OF COUNTY COMMISSIONERS

We, the undersigned, _____, Chairman of the Board of County Commissioners of Gallatin County, Montana and _____, County Clerk and Recorder of said county, do hereby certify that the accompanying plat of Subdivision Number Seven of the Sour Dough Creek Properties, Gallatin County, Montana, as prepared in duplicate, has been submitted to the Board of County Commissioners, of Gallatin County, Montana, for examination and has been found by them to conform to law and was approved by them on _____ day of _____, 1970

_____
Chairman, Board of County Commissioners

_____
County Clerk & Recorder, Gallatin County

Approved this _____ day of _____, 1970. Gallatin County - City of Bozeman, CITY-COUNTY PLANNING BOARD.

By _____
President

STATE OF MONTANA)
: ss
COUNTY OF GALLATIN)

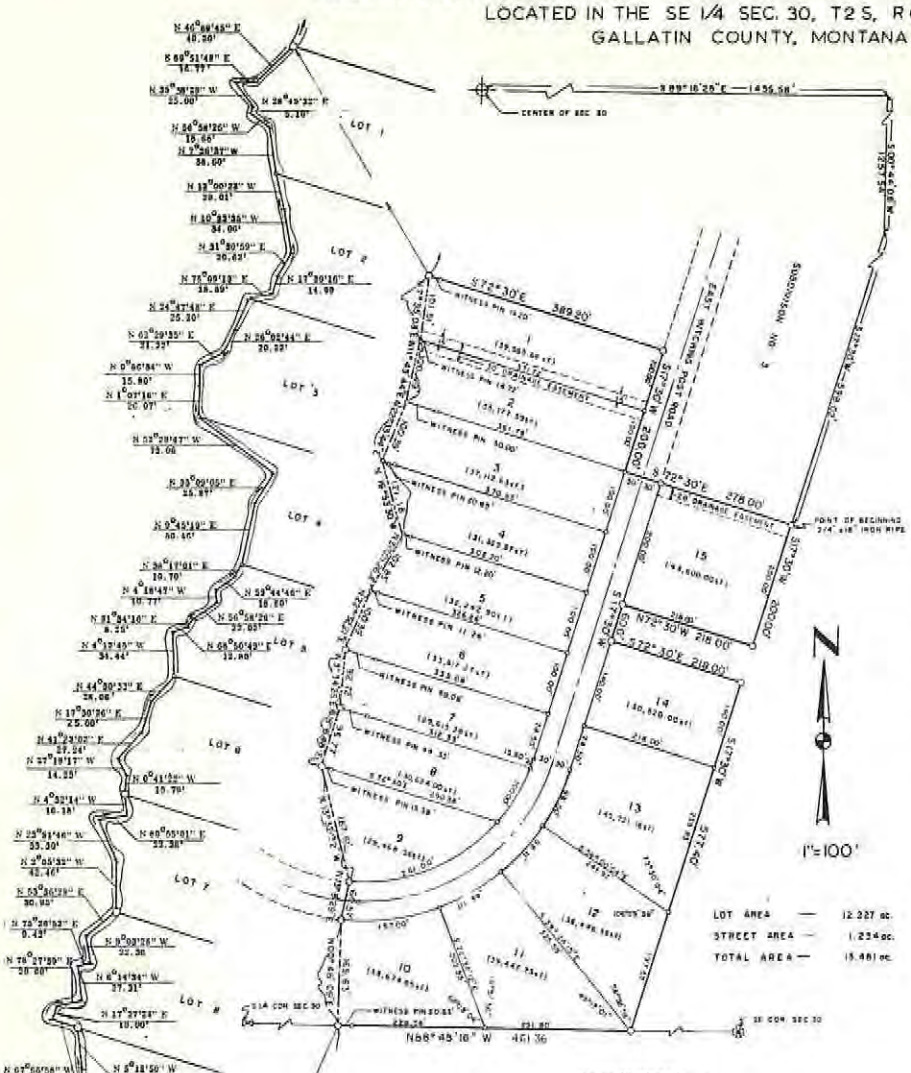
I hereby certify that the foregoing instrument was filed for record in my office this _____ day of _____, A.D., 1970 at _____ o'clock _____ M., and recorded on page _____ of Book _____ of Plats, Records of Gallatin County, Montana.

_____
Clerk & Recorder, Gallatin County, Montana

SUBDIVISION NO. 6 OF SOUR DOUGH CREEK PROPERTIES

LOCATED IN THE SE 1/4 SEC. 30, T2S, R6E, M.P.M.

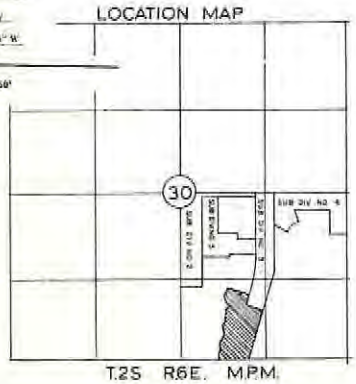
GALLATIN COUNTY, MONTANA



LEGEND

- 1" x 24" IRON PIPE
- 3/4" x 18" IRON PIPE
- 5/8" x 18" REBAR
- SUBDIVISION BOUNDARY
- LOT LINE
- EASEMENT LINE
- REFERENCE LINE
- EXISTING SUBDIVISION LINE
- EXISTING STREAM
- E ROADWAY

LOCATION MAP



CERTIFICATE OF DEDICATION

STATE OF MONTANA)
: ss
COUNTY OF GALLATIN)

Sour Dough Creek Properties, a Montana Corporation, having its principal place of business at Bozeman, Montana, as owner by and through its duly authorized officers, and Vera McLeod as mortgagee, certify that they are the owner and mortgagee respectively, of and have caused to be surveyed and platted into lots and streets as shown by plat and certificates hereto annexed, the following described tract of land:

A tract of land located in the South East Quarter (SE 1/4) Section Thirty (Sec. 30) Township Two South (T2S), Range Six East (R6E) of the Montana Principle Meridian, Gallatin County, Montana, and being more particularly described as follows:

Beginning at a point which bears South eighty-nine degrees fifteen minutes and twenty-five seconds East (S 89° 16'25" E) fourteen hundred fifty-five and fifty-eight hundredths (1455.58) feet; thence, South zero degrees forty-four minutes and eight seconds West (S 00°44'08" W) twelve hundred fifty seven and fifty-four hundredths (1257.54) feet; thence, South seventeen degrees thirty minutes and zero seconds West (S 17°30'00" W) five hundred ninety-eight and two hundredths (598.02) feet from the center of said Section Thirty (30); said point of beginning being also the South East Corner of Subdivision No. 5 Sour Dough Creek Properties marked with a 3/4" x 18" iron pipe 6" below the ground surface; thence, South seventeen degrees thirty minutes and zero seconds West (S 17°30'00" W) two hundred and zero hundredths (200.00) feet; thence, North seventy-two degrees thirty minutes and zero seconds West (N 72°30'00" W) two hundred eighteen and zero hundredths (218.00) feet; thence, South seventeen degrees thirty minutes and zero seconds West (S 17°30'00" W) sixty and zero hundredths (60.00) feet; thence, South seventy-two degrees thirty minutes and zero seconds East (S 72°30'00" E) two hundred eighteen and zero hundredths (218.00) feet; thence, South seventeen degrees thirty minutes and zero seconds West (S 17°30'00" W) five hundred seventy-seven and forty hundredths (577.40) feet; to a point on the South Line of said Section Thirty (30); thence, North eighty-eight degrees forty-five minutes and sixteen seconds West (N 88°45'10" W) along South Line of said Section Thirty (30) four hundred sixty one and thirty-six hundredths (461.36) feet; thence, northerly along the thread of stream of Limekiln Creek to a point which bears North zero degrees forty-eight minutes and nine seconds East (N 00°48'09" E) one hundred sixty-five and sixty-three hundredths (165.63) feet; thence, northerly along the thread of stream of Limekiln Creek to a point which bears North thirteen degrees eight minutes and twenty-nine seconds East (N 13°08'29" E) sixty and fifty seven hundredths (60.57) feet; thence, northerly along the thread of stream of Limekiln Creek to a point which bears North thirteen degrees thirty-two minutes and thirty-two seconds West (N 13°32'32" W) one hundred eighty-seven and sixty-one hundredths (187.61) feet; thence, northerly along the thread of stream of Limekiln Creek to a point which bears North eighteen degrees eight minutes and forty-eight seconds East (N 18°08'48" E) ninety-six and seventy-seven hundredths (96.77) feet; thence, northerly along the thread of stream of Limekiln Creek to a point which bears North three degrees thirty-four minutes and twenty-six seconds East (N 03°34'26" E) ninety-two and seventy-two hundredths (92.72) feet; thence, northeasterly along the thread of stream of Limekiln Creek to a point which bears North twenty-two degrees thirty-two minutes and twenty-one seconds East (N 22°32'21" E) one hundred and thirty-nine hundredths (100.39) feet; thence, northeasterly along the thread of stream of Limekiln Creek to a point which bears North thirty-one degrees one minute and twenty-six seconds East (N 31°01'26" E) one hundred two and eighty-five hundredths (102.85) feet; thence, northwesterly along the thread of stream of Limekiln Creek to a point which bears North sixteen degrees fifty-three minutes and thirty seconds West (N 16°53'30" W) one hundred twenty-one and eighteen hundredths (121.18) feet; thence, northeasterly along the thread of stream of Limekiln Creek to a point which bears North twenty-two degrees thirty-three minutes and forty-four seconds East (N 22°33'44" E) one hundred and thirty-nine hundredths (100.39) feet; thence, northerly along the thread of stream of Limekiln Creek to a point which bears North eleven degrees forty-nine minutes and forty-four seconds East (N 11°49'44" E) one hundred and forty-nine hundredths (100.49) feet; thence, northerly along the thread of stream of Limekiln Creek to a point which bears North seven degrees thirty-five minutes and eight seconds East (N 07°35'08" E) one hundred one and fifty-one hundredths (101.51) feet; thence, South seventy-two degrees thirty minutes and zero seconds East (S 72°30'00" E) three hundred eighty-nine and twenty hundredths (389.20) feet to West Line of East Hitching Post Road; thence, South seventeen degrees thirty minutes and zero seconds West (S 17°30'00" W) along the West Line of East Hitching Post Road, two hundred and zero hundredths (200.00) feet; thence, South seventy-two degrees thirty minutes and zero seconds East (S 72°30'00" E) along the South Line of Subdivision No. 5 Sour Dough Creek Properties two hundred seventy-eight and zero hundredths (278.00) feet to the said point of beginning and containing 13.461 acres.

The Lands for park area have been dedicated by a previous plat of Subdivision No. 4 of Sour Dough Creek Properties.

The Land included in the Streets and Road Right-of-way shown on said plat of the described area are hereby granted, donated and dedicated to uses of the Public forever.

The Land shown by plat and certificates hereto annexed shall be known as Subdivision Number Six of Sour Dough Creek Properties.

Dated this _____ day of _____, A. D., 1969

SOUR DOUGH CREEK PROPERTIES, A Montana Corporation

Attest _____ by _____

Title _____ Title _____

Vera McLeod

STATE OF MONTANA)
: ss
COUNTY OF GALLATIN)

On this _____ day of _____ 1969 before me, a Notary Public for the State of Montana, personally appeared _____ known to me to be the _____ of the Corporation that executed this instrument on behalf of said corporation and acknowledged to me that such corporation executed the same.

IN WITNESS WHEREOF I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

Notary Public for the State of Montana
Residing at _____
My Commission Expires _____

STATE OF MONTANA)
: ss
COUNTY OF GALLATIN)

On this _____ day of _____ 1969, before me, a Notary Public for the State of Montana, personally appeared Vera McLeod, known to me to be the person whose name is subscribed to the foregoing Certificate of Dedication and acknowledged to me that she executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

Notary Public for the State of Montana
Residing at _____
My Commission expires _____

CERTIFICATE OF SURVEYOR

STATE OF MONTANA)
: ss
COUNTY OF GALLATIN)

I, William F. Underwood, a registered Professional Engineer and Land Surveyor in the State of Montana, Reg. No. 1854 ES, do hereby certify that between August 1, 1969 and October 15, 1969, I supervised the survey of Subdivision Number Six of Sour Dough Creek Properties, Gallatin County, Montana; that such survey was made in accordance with the provisions of Chapter 8, Title 11 of the Political Code, Sections 11-601-11-616, Revised Code of Montana, 1947, and Section 11-614.1 enacted as Section 1, Chapter 82, Laws of 1953; that iron pins and iron pipe monuments were set at all lot corners and subdivision corners as shown on the accompanying plat.

_____ day of _____, 1969

William F. Underwood
Montana Registration No. 1854 ES

CERTIFICATE OF DIRECTOR OF PUBLIC SERVICE

STATE OF MONTANA)
CITY OF BOZEMAN : ss
COUNTY OF GALLATIN)

I, Harold A. Fryslie, Director of Public Service for the City of Bozeman, Montana, and as such, the Supervisor of Plats of said City of Bozeman, do hereby certify that I have examined this plat of Subdivision Number Six of the Sour Dough Creek Properties, into lots, blocks and streets.

By the direction of the City Commission and pursuant to the provision of Chapter 3, Section 11-3305, Title 11 of the Political Code, Revised Codes of Montana, 1947, I approve said plat.

Dated this _____ day of _____, 1969

Director of Public Service of the City of Bozeman
County of Gallatin, State of Montana

CERTIFICATE OF COUNTY COMMISSIONERS

We, the undersigned, _____, Chairman of the Board of County Commissioners of Gallatin County, Montana and _____, County Clerk and Recorder of said county, do hereby certify that the accompanying plat of Subdivision Number Six of the Sour Dough Creek Properties, Gallatin County, Montana, as prepared in duplicate, has been submitted to the Board of County Commissioners, of Gallatin County, Montana, for examination and has been found by them to conform to law and was approved by them on _____ day of _____, 1969.

Chairman, Board of County Commissioners

County Clerk & Recorder, Gallatin County

Approved this _____ day of _____, 1969 Gallatin County - City of Bozeman, CITY-COUNTY PLANNING BOARD.

by _____
President

STATE OF MONTANA)
: ss
COUNTY OF GALLATIN)

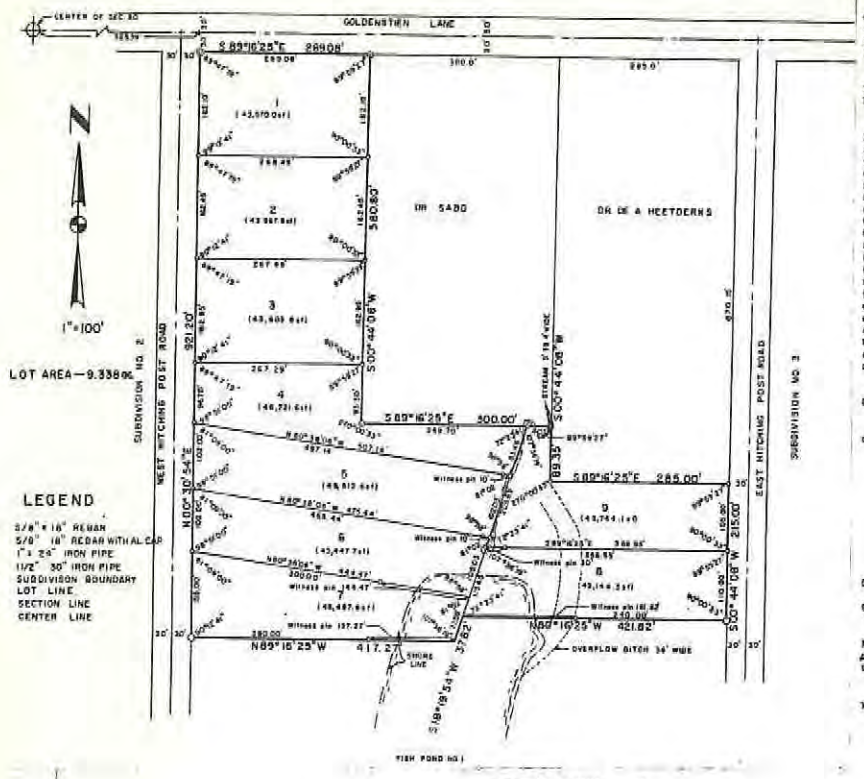
I hereby certify that the foregoing instrument was filed for record in my office this _____ day of _____, A. D., 1969 at _____ o'clock _____ M., and recorded on page _____ of Book _____ of Plats, Records of Gallatin County, Montana.

Clerk & Recorder, Gallatin County, Montana

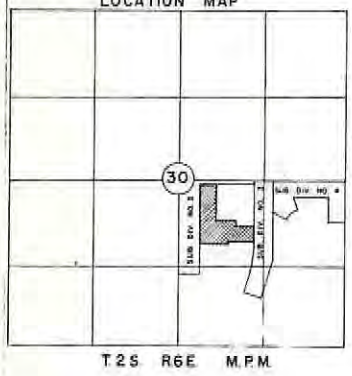
SUBDIVISION NO. 5 OF SOUR DOUGH CREEK PROPERTIES

LOCATED IN THE SE 1/4 SEC. 30, T2S, R6E, M.P.M.

GALLATIN COUNTY, MONTANA



LOCATION MAP



CERTIFICATE OF DEDICATION

STATE OF MONTANA)
: ss
COUNTY OF GALLATIN)

Sour Dough Creek Properties, a Montana Corporation, having its principal place of business at Bozeman, Montana, as owner by and through its duly authorized officers, and Vera McLeod as mortgagee certify that they are the owner and mortgagee respectively of and have caused to be surveyed and platted into lots and streets as shown by plat and certificates hereto annexed, the following described tract of land.

A tract of land located in the South East Quarter (SE 1/4) Section Thirty (Sec. 30) Township Two South (T2S), Range Six East (R6E) of the Montana Principle Meridian, Gallatin County, Montana, and being more particularly described as follows:

Beginning at a point which bears South eighty nine degrees sixteen minutes and twenty-five seconds East (S 89°16'25" E) three hundred twenty-three and thirty-nine hundredths feet (323.39') and South zero degrees thirty minutes fifty-four seconds West (S00°30'54" W) thirty and zero hundredths feet (30.00') from the center of said Section Thirty (Sec. 30); thence, South eighty-nine degrees sixteen minutes and twenty-five seconds East (S 89°16'25" E) two hundred sixty-nine and eight hundredths feet (269.08'); thence, South zero degrees forty-four minutes and eight seconds West (S 00°44'08" W) five hundred eighty and eighty hundredths feet (580.80'); thence, South eighty-nine degrees sixteen minutes and twenty-five seconds East (S 89°16'25" E) three hundred and zero hundredths feet (300.00'); thence, South zero degrees forty-four minutes and eight seconds West (S 00°44'08" W) eighty-nine and thirty-five hundredths feet (89.35'); thence, South eighty nine degrees sixteen minutes and twenty-five seconds East (S 89°16'25" E) two hundred eighty-five and zero hundredths (285.00'); to the westerly line of East Hitching Post Road, thence, South zero degrees forty-four minutes and eight seconds West (S 00°44'08" W) along the westerly line of East Hitching Post Road two hundred fifteen and zero hundredths feet (215.00'); thence, North eighty-nine degrees sixteen minutes and twenty-five seconds West, (N 89°16'25" W) four hundred twenty-one and eighty-two hundredths feet (421.82'); thence South eighteen degrees nineteen minutes and fifty-four seconds West (S 18°19'54" W) thirty-seven and eighty-two hundredths feet (37.82'); thence, North eighty-nine degrees sixteen minutes twenty-five seconds West (N 89°16'25" W) four hundred seventeen and twenty-seven hundredths feet (417.27'); to the easterly line of West Hitching Post Road, thence, North zero degrees, thirty minutes fifty-four seconds East (N 00°30'54" E) along the easterly line of West Hitching Post Road nine hundred twenty-one and twenty hundredths feet (921.20') to the Said Point of beginning and containing 9.338 acres.

The Lands for park area have been dedicated by a previous plat of Subdivision No. 4 of Sour Dough Creek Properties.

The Land shown by plat and certificates hereto annexed shall be known as Subdivision Number Five of Sour Dough Creek Properties.

Dated this_____day of_____, A.D., 1969

SOUR DOUGH CREEK PROPERTIES, A Montana Corporation

Attest_____ by_____
Title_____ Title_____

Vera McLeod

STATE OF MONTANA)
: ss
COUNTY OF GALLATIN)

On this_____day of_____1969 before me, a Notary Public for the State of Montana, personally appeared_____known to me to be the_____ of the Corporation that executed this instrument on behalf of said corporation and acknowledged to me that such corporation executed the same.

IN WITNESS WHEREOF I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

Notary Public for the State of Montana
Residing at_____
My Commission Expires_____

STATE OF MONTANA)
: ss
COUNTY OF GALLATIN)

On this_____day of_____1969, before me, a Notary Public for the State of Montana, personally appeared Vera McLeod, known to me to be the person whose name is subscribed to the foregoing Certificate of Dedication and acknowledged to me that she executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

Notary Public for the State of Montana
Residing at_____
My Commission expires_____

CERTIFICATE OF SURVEYOR

STATE OF MONTANA)
: ss
COUNTY OF GALLATIN)

I, William F. Underwood, a registered Professional Engineer and Land Surveyor in the State of Montana, Reg. No. 1654 ES, do hereby certify that between August 1, 1969 and September 3, 1969, I supervised the survey of Subdivision Number Five of Sour Dough Creek Properties, Gallatin County, Montana; that such survey was made in accordance with the provisions of Chapter 6, Title II of the Political Code, Sections 11-601-11-616, Revised Codes of Montana, 1947, and Section 11-614.1 enacted as Section 1, Chapter 82, Laws of 1953; that iron pins and iron pipe monuments were set at all lot corners and subdivision corners as shown on the accompanying plat.

_____day of_____, 1969. William F. Underwood
Montana Registration No. 1654 Es

CERTIFICATE OF DIRECTOR OF PUBLIC SERVICE

STATE OF MONTANA)
CITY OF BOZEMAN : ss
COUNTY OF GALLATIN)

I, Harold A. Fryslie, Director of Public Service for the City of Bozeman, Montana, and as such, the Supervisor of Plats of said City of Bozeman, do hereby certify that I have examined this plat of Subdivision Number Five of the Sour Dough Creek Properties, into lots, blocks and streets.

By the direction of the City Commission and pursuant to the provision of Chapter 3, Section 11-3305, Title II of the Political Code, Revised Codes of Montana, 1947, I approve said plat.

Dated this_____day of_____, 1969.

Director of Public Service of the City of Bozeman
County of Gallatin, State of Montana

CERTIFICATE OF COUNTY COMMISSIONERS

We, the undersigned,_____, Chairman of the Board of County Commissioners of Gallatin County, Montana and_____ County Clerk and Recorder of said county, do hereby certify that the accompanying plat of Subdivision Number Five of the Sour Dough Creek Properties, Gallatin County, Montana, as prepared in duplicate, has been submitted to the Board of County Commissioners, of Gallatin County, Montana, for examination and has been found by them to conform to law and was approved by them on_____day of_____, 1969.

Chairman, Board of County Commissioners

County Clerk & Recorder, Gallatin County

Approved this_____day of_____1969 , Gallatin County - City of Bozeman, CITY-COUNTY PLANNING BOARD,

by_____
President

STATE OF MONTANA)
: ss
COUNTY OF GALLATIN)

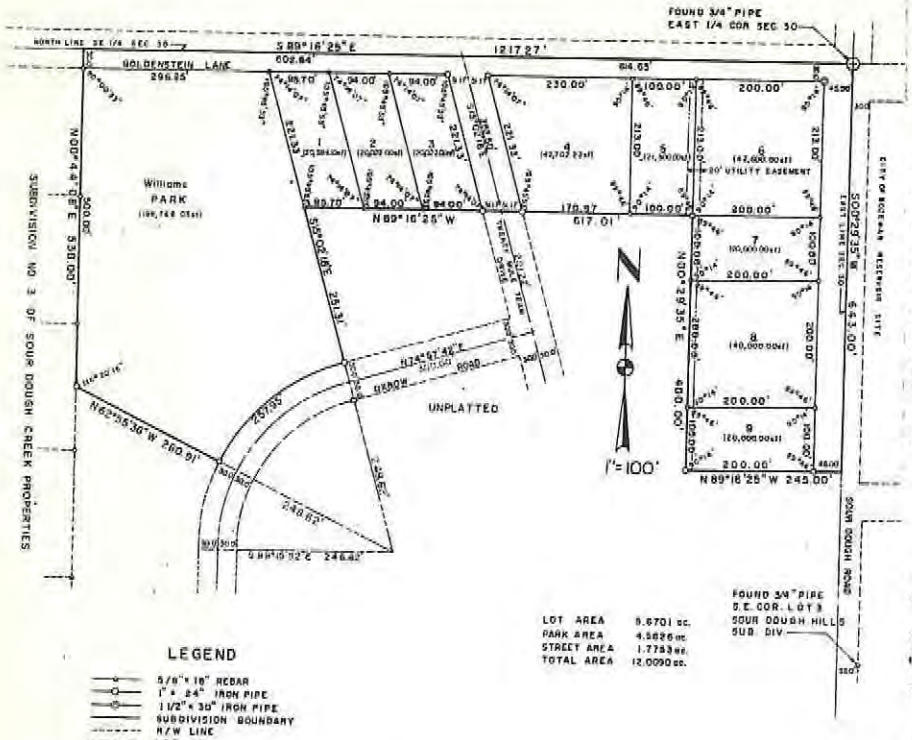
I hereby certify that the foregoing instrument was filed for record in my office this_____day of_____, A.D., 1969 at_____o'clock_____M., and recorded on page_____of Book_____of Plats, Records of Gallatin County, Montana.

Clerk & Recorder, Gallatin County, Montana

SUBDIVISION NO. 4 OF SOUR DOUGH CREEK PROPERTIES

LOCATED IN THE SE 1/4 SEC. 30, T2S, R6E, M.P.M.

GALLATIN COUNTY, MONTANA

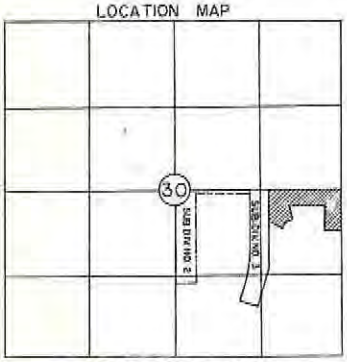


LOT AREA	8.6701 ac.
PARK AREA	4.5626 ac.
STREET AREA	1.7753 ac.
TOTAL AREA	12.0090 ac.

LEGEND

- 5/8" x 18" REBAR
- 1" x 24" IRON PIPE
- 1 1/2" x 30" IRON PIPE
- SUBDIVISION BOUNDARY
- R/W LINE
- LOT LINE
- SECTION LINE
- CENTER LINE
- EASEMENT LINE

LOCATION MAP



T 2 S R 6 E M.P.M.

CERTIFICATE OF DEDICATION

STATE OF MONTANA)
: ss
COUNTY OF GALLATIN)

Sour Dough Creek Properties, a Montana Corporation, having its principal place of business at Bozeman, Montana, as owner by and through its duly authorized officers, and Vera McLeod as mortgagee certify that they are the owner and mortgagee respectively of and have caused to be surveyed and platted into lots and streets as shown by plat and certificates hereto annexed, the following described tract of land.

A tract of land located in the South East Quarter (SE 1/4) Section Thirty (Sec. 30) Township Two South (T2S), Range Six East (R6E) of the Montana Principle Meridian, Gallatin County, Montana, and being more particularly described as follows:

Beginning at the East Quarter Corner of said Section Thirty (30), said corner being marked with a 3/4" x 18" iron pipe set 8" below the road surface, at the approximate centerline intersections of Goldenstein Lane and Sour Dough Road: thence, South twenty-nine minutes and thirty-five seconds West (200°29'35"W) along the east line of said Section thirty (30) a distance of six hundred and forty-three (643.00) feet: thence, North eighty-nine degrees sixteen minutes and twenty five seconds West (N89°16'25"W) a distance of two hundred forty-five (245.00) feet: thence, North twenty-nine minutes thirty-five seconds East (N00°29'35"E) a distance of four hundred (400.00) feet; thence North eighty-nine degrees sixteen minutes and twenty-five seconds West (N89°25' 16"W) a distance of six hundred seventeen and one hundredth (617.01) feet: thence, South fifteen degrees two minutes and eighteen seconds East (S15°02'18"E) a distance of two hundred fifty-one and thirty-one hundredths (251.31) feet to a point of curvature: thence South Westerly along three hundred eight and sixty-two hundredths (308.62) feet radius curve to the left an arc distance of two hundred fifty-seven and ninety-five hundredths (257.95) feet: thence, North sixty-two degrees, fifty-five minutes and thirty-six seconds West (N62°55'36"W) a distance of two hundred sixty and ninety-one hundredths (260.91) feet to the East line of Subdivision No. 3 of the Sour Dough Creek Properties: thence, North forty-four minutes and eight seconds East (N00°44'08"E) along the East line of said Subdivision No. 3 a distance of five hundred thirty (530.00) feet to the North line of the South East Quarter of said Section Thirty (30): thence, South eighty-nine degrees sixteen minutes and twenty-five seconds East (S89°16'25"E) along the North line of the South East Quarter of said Section Thirty (30) a distance of one thousand two hundred seventeen and twenty-seven hundredths (1,217.27) feet to the said point of Beginning and containing 12.0090 acres.

The lands included in the park, streets and road right of ways shown on said plat of the described area are hereby granted, donated and dedicated to the use of the public forever, said plat shall be known as Subdivision Number Four of Sour Dough Creek Properties.

Dated this _____ day of _____, A.D., 1969

SOUR DOUGH CREEK PROPERTIES, A Montana Corporation

Attest _____ by _____
Title _____ Title _____

_____
Vera McLeod

STATE OF MONTANA)
: ss
COUNTY OF GALLATIN)

On this _____ day of _____ 1969 before me, a Notary Public for the State of Montana, personally appeared _____ known to me to be the _____ of the Corporation that executed this instrument on behalf of said corporation and acknowledged to me that such corporation executed the same.

IN WITNESS WHEREOF I have hereunto set my hand and affixed my official seal, the day and year in this certificate first above written.

_____
Notary Public for the State of Montana
Residing at _____
My Commission Expires _____

STATE OF MONTANA)
: ss
COUNTY OF GALLATIN)

On this _____ day of _____ 1969, before me, a Notary Public for the State of Montana, personally appeared Vera McLeod, known to me to be the person whose name is subscribed to the foregoing Certificate of Dedication and acknowledged to me that she executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

_____
Notary Public for the State of Montana
Residing at _____
My Commission Expires _____

CERTIFICATE OF SURVEYOR

STATE OF MONTANA)
: ss
COUNTY OF GALLATIN)

I, William F. Underwood, a registered Professional Engineer and Land Surveyor in the State of Montana, Reg. No. 1854 ES, do hereby certify that between June 1, 1968 and July 1, 1969, I supervised the survey of Subdivision Number Four of Sour Dough Creek Properties, Gallatin County, Montana; that such survey was made in accordance with the provisions of Chapter 4, Title II of the Political Code, Sections 11-601-11-616, Revised Codes of Montana, 1947, and Section 11-614.1 enacted as Section 1, Chapter 92, Laws of 1953; that iron pins and iron pipe monuments were set at all lot corners and subdivision corners as shown on the accompanying plat.

_____ day of _____, 1969. William F. Underwood
Montana Registration No. 1854 ES

CERTIFICATE OF DIRECTOR OF PUBLIC SERVICE

STATE OF MONTANA)
CITY OF BOZEMAN : ss
COUNTY OF GALLATIN)

I, Harold A. Fryslie, Director of Public Service for the City of Bozeman, Montana, and, as such, the Supervisor of Plats of said City of Bozeman, do hereby certify that I have examined this plat of Subdivision Number Four of the Sour Dough Creek Properties, into lots, blocks and streets.

By direction of the City Commission and pursuant to the provision of Chapter 33, Section 11-3308, Title II of the Political Code, Revised Codes of Montana, 1947, I approve said plat.

Dated this _____ day of _____, 1969.

_____
Director of Public Service of the City of Bozeman
County of Gallatin, State of Montana

CERTIFICATE OF COUNTY COMMISSIONERS

We, the undersigned, _____, Chairman of the Board of County Commissioners of Gallatin County, Montana, and _____ County Clerk and Recorder of said county, do hereby certify that the accompanying plat of Subdivision Number Four of the Sour Dough Creek Properties, Gallatin County, Montana, as prepared in duplicate, has been submitted to the Board of County Commissioners, of Gallatin County, Montana, for examination and has been found by them to conform to law and was approved by them on the _____ day of _____, 1969.

_____
Chairman, Board of County Commissioners

_____
County Clerk & Recorder, Gallatin County

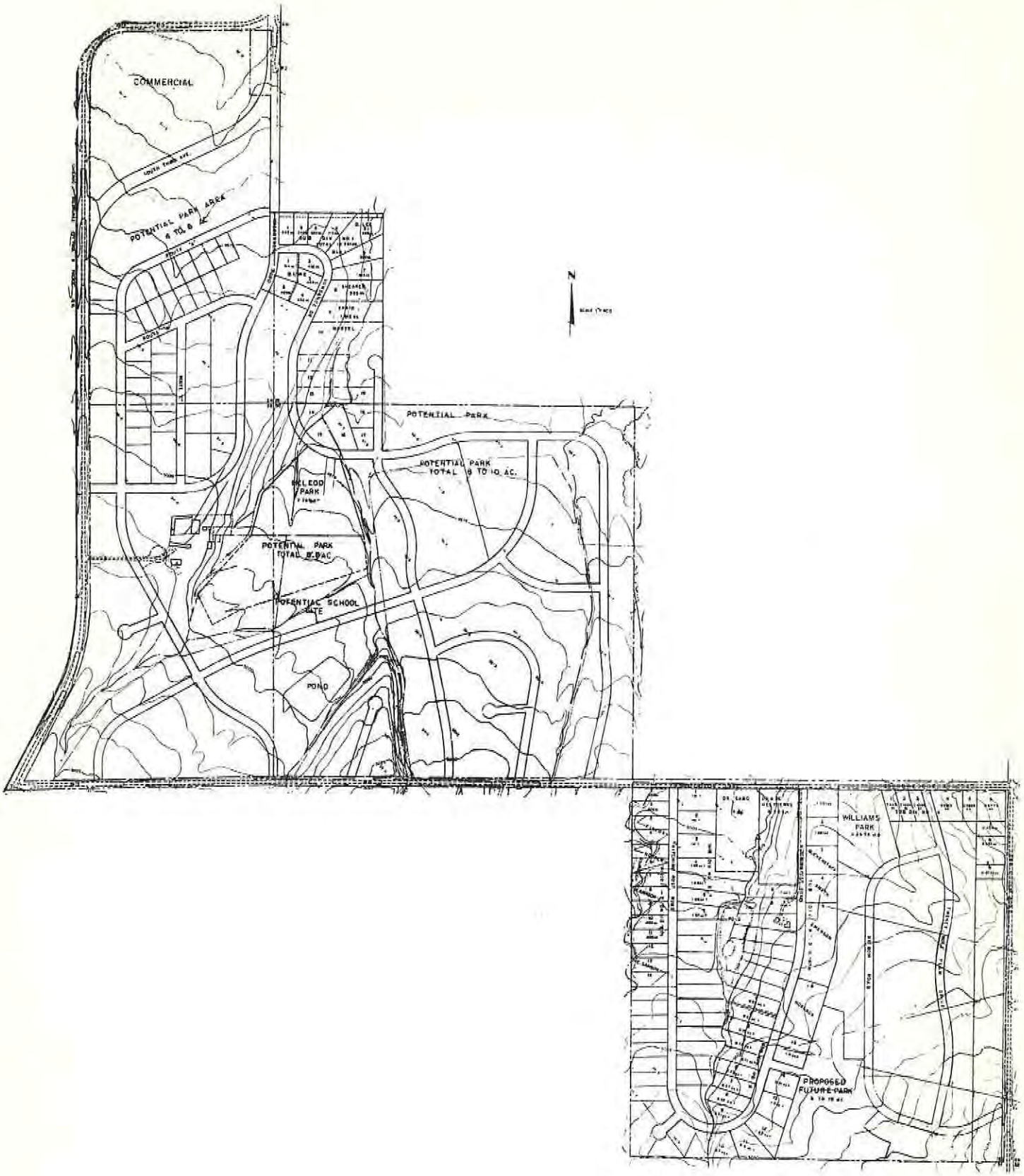
Approved this _____ day of _____, 1969, Gallatin County - City of Bozeman, CITY-COUNTY PLANNING BOARD.

By _____
President

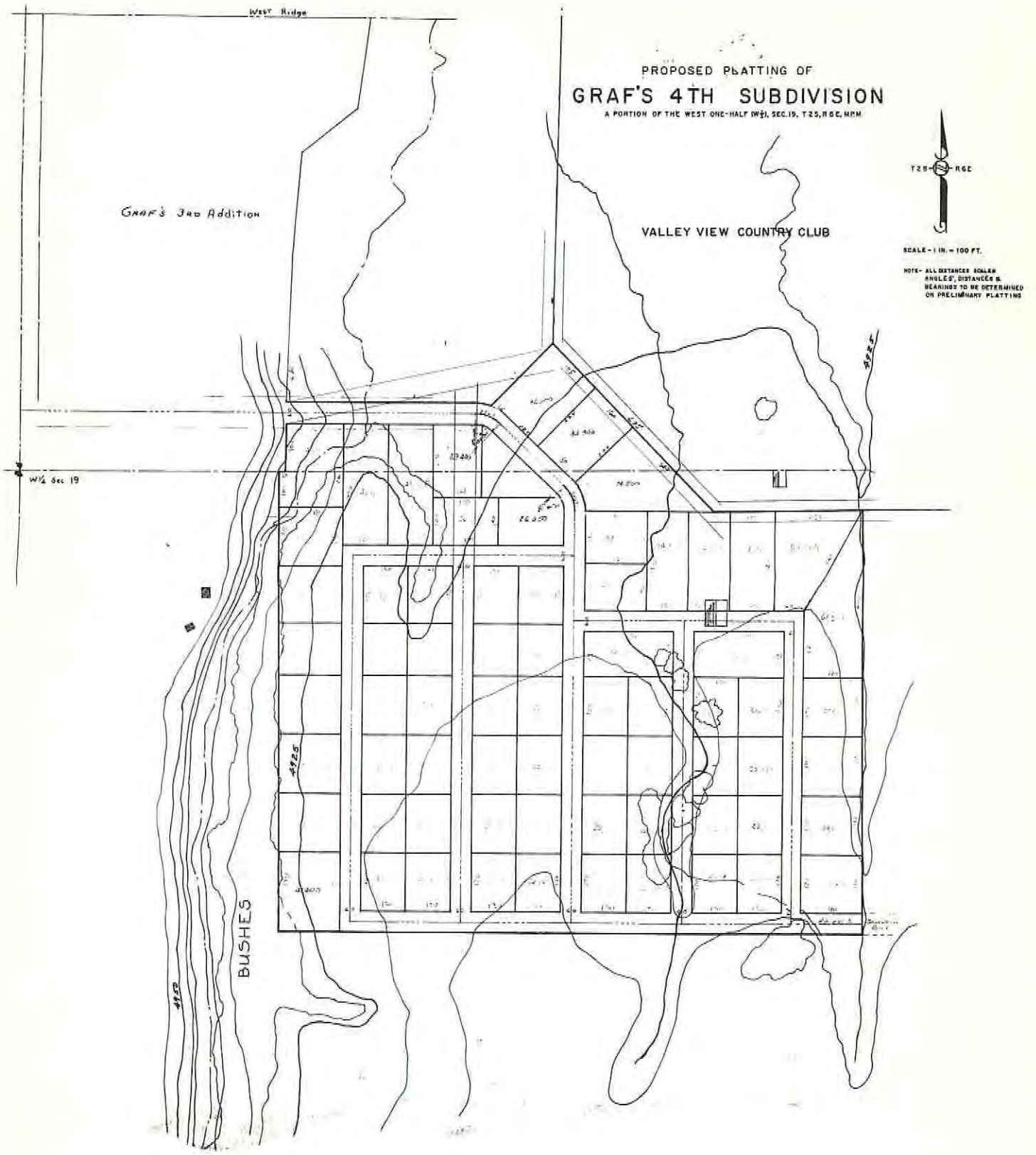
STATE OF MONTANA)
: ss
COUNTY OF GALLATIN)

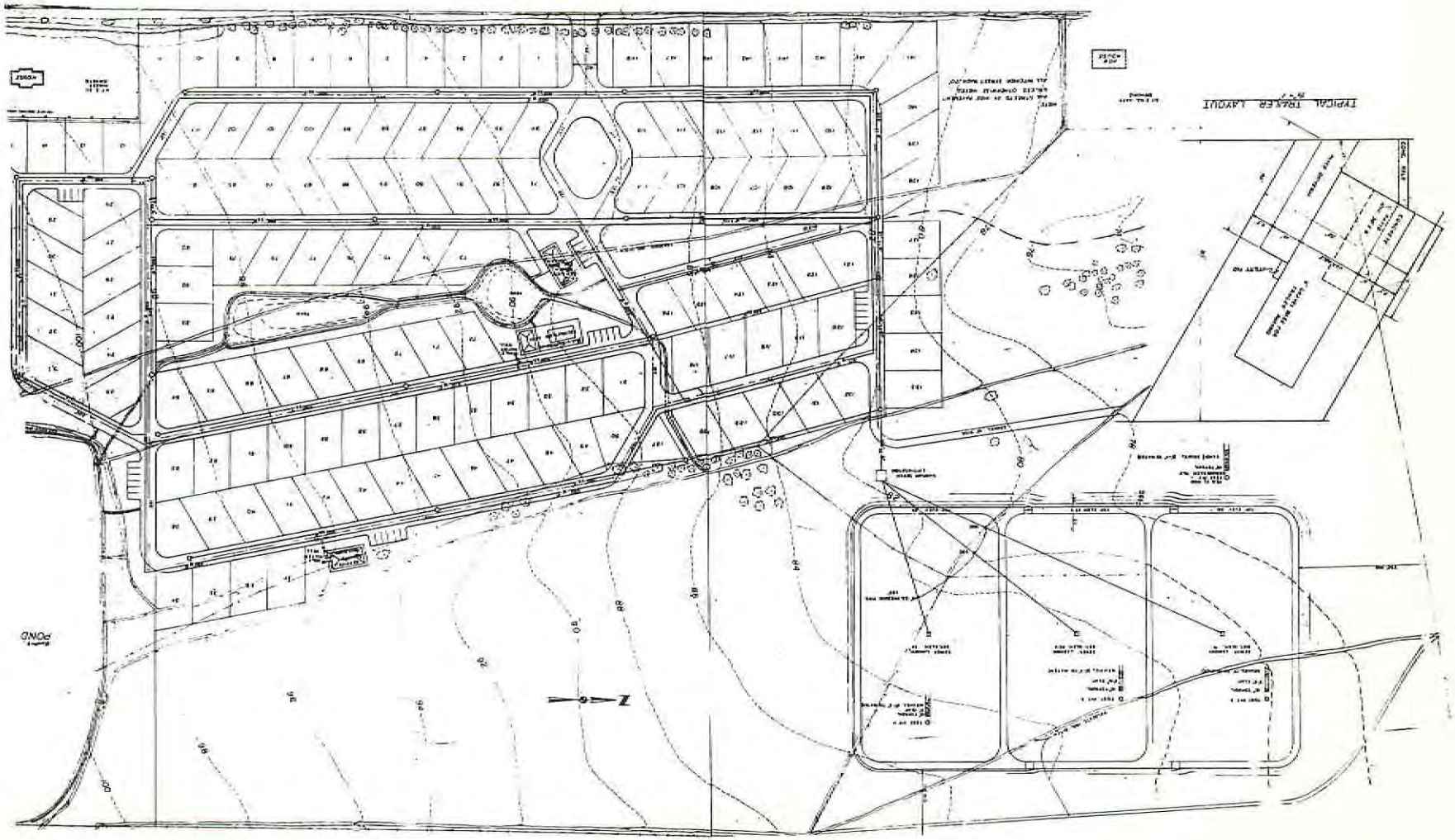
I hereby certify that the foregoing instrument was filed for record in my office this _____ day of _____, A. D., 1969, at _____ o'clock _____ M., and recorded on page _____ of Book _____ of Plats, Records of Gallatin County, Montana.

_____
Clerk & Recorder, Gallatin County, Montana



Sour Dough Creek
Properties


West Ridge
PROPOSED PLATTING OF
GRAF'S 4TH SUBDIVISION
A PORTION OF THE WEST ONE-HALF (W½), SEC.19, T25, R6E, MPM
T25
R6E
GRAF'S 3RD Addition
VALLEY VIEW COUNTRY CLUB
SCALE - 1 IN. = 100 FT.
NOTE- ALL DISTANCES SCALED
ANGLES, DISTANCES &
BEARINGS TO BE DETERMINED
ON PRELIMINARY PLATTING
W½ Sec 19
BUSHES



ARTERIAL STREET SYSTEM

The arterial streets section and the following map summarize the current status of and plans for streets within the City-County Jurisdictional area. This section is composed of three basic segments:

a. Arterial streets plan
b. Arterial classification
c. Street and highway plans

Arterial Streets Plan

The map, Arterial Streets, depicts the present status of area streets, roads and highways. Each designated classification of arterial street is specified as being either existing, proposed, dedicated or partially dedicated.

The objective of street planning as referred to here is to match, as nearly as possible, the projected future traffic volumes and needs of an area with the capacity and specifications provided. Research has been conducted by Consulting Services Corporation and Theodore J. Wirth and Associates, 1967, specifically for the Bozeman area to assist in planning for more efficient use of the streets already available. Additionally, arterial street plans have been spelled out to provide for the anticipated transportation needs of a fast growing community. Such plans are based only upon the information available at the time of planning and therefore, are not intended to remain constant in the event that the community's real needs are found to differ considerably from previously anticipated needs. Constant

assessment and revisions are necessary. Nevertheless, The Comprehensive Plan for the city of Bozeman published in 1967 does provide a sound basis for city-county planning. For that reason, much of the remaining discussion in this section is based, at least in part, upon that report. For a more detailed treatment of arterial street planning it is advised that the original plan be used as a reference.

Arterial Classification

A city's street planning system should be designed to serve the needs of the designated area and according to the 1967 Comprehensive Report, "This will involve a combination of various funtional street types into an overall plan." Further, "This plan should provide for the division of streets into systems according to their purpose -- for movement or for access -- and integrate these systems into a coordinated network."

The following discussion, as outlined in the Comprehensive Study, explains the existing street classifications and the functions performed by each:

Freeway: Provides for efficient movement of large volumes of through traffic between communities and regions; does not provide access to adjacent land uses; provides one additional classification to those proposed in the L. C. Gerckins Report, 1960.

Primary Arterial: Provides for through traffic movement to and around the city and connects major highways and freeways.

Community Arterial: Provides for expeditious movement within and through the planning area, for cross-town traffic in Bozeman and for circulation between areas inside the city; it also provides access to abutting property.

Collector: Provides for traffic movement between arterials and between local streets and arterials and provides access to abutting property.

Local Street: Provides for access to abutting properties and local traffic movement within a neighborhood.

As well as being classified as to type and function, the status of each street has been specifically designated as follows:

Existing: Includes all streets, roads and highways currently completed and in use.

Proposed: All streets, roads and highways which have been officially recommended or suggested, but which as of yet are not part of the long range plan.

Dedicated: Any street, road or highway which has progressed beyond the proposed stage to the actual planning stage. In the case of dedicated streets, the necessary land for roadway and/or right-of-way has been acquired, but construction has not begun.

Partially Dedicated: Any street, road or highway which has progressed part way beyond the proposal stage. In the case of partially dedicated streets, only a portion of the necessary land for roadway and/or right-of-way has been acquired.

Street and Highway Plans

Several proposals have been made regarding construction of new arterials serving the outlying areas and improvement of those currently in existence. The majority of these proposals have been summarized in detail by Consulting Services Corporation and Theodore J. Wirth and Associates, in their 1967 Comprehensive Plan for the city of Bozeman. The following discussion essentially follows the format of that earlier report with intervening visual updates included. Each proposed improvement is indicated on the map following.

Wallace Avenue:

Presently, Bridger Canyon Road traffic is carried by Rouse Avenue. However, since no possibility exists for a grade separation between Rouse Avenue and the Northern Pacific mainline, it has been proposed that the majority of this traffic be diverted to Wallace Avenue. This diversion would include construction of the proposed "L" Street which would underpass the freeway. The "L" Street proposal is considered to be low priority as it will not be needed before 1985.

Alternate to U. S. 191:

An alternate route to U. S. 191 west has been proposed. The new arterial would connect the intersection of Nineteenth and Kagy Boulevard to the existing Goochill Road which in turn leads to Gallatin Gateway. The objective of this proposal is to shift much of the U. S. 191 through traffic from the inner-city area, including North Seventh Avenue and Main Street, to outer area arterials such as Nineteenth Avenue and Oak Street and Kagy Boulevard.

Circumferential Route:

An inner ring road is proposed to border the northern, western and southern portions of the city. Not only would such a road divert traffic from the already busy Main Street and North Seventh Avenue, but it would provide relatively improved access to many of the outlying areas, including several developing subdivisions. Such a plan would incorporate Tamarack Street,

Third Avenue and Oak Street on the north, Nineteenth Avenue on the east and Kagy Boulevard on the south. Additionally, as indicated on the map, Arterial Streets, land acquisition for roadways and right-of-ways has proceeded with respect to this proposal and includes dedicated and partially dedicated sections of North Nineteenth and West Oak.

Highland Boulevard:

A northerly extension of Highland Boulevard is proposed which would connect with U. S. 10 just west of the East Interstate 90 interchange. As proposed, this extension would provide a route from south Bozeman to the Interstate which would avoid the central business district.

Outer Ring Road:

A northern, outer ring road is proposed for the long range future which would lead from the proposed intersection of "L" Street and Bridger Canyon Road, around the golf course on Bohart Road, and finally connect, via a freeway underpass, with Valley Center, Peg Smith and Cottonwood Roads. Sections of this proposed route which remain in the proposal stage are indicated on the map, Arterial Streets. The objective of this outer ring road is to provide improved access to outlying areas and particularly to provide a unifying link between the expanding northern and western portions of the Jurisdictional Area which are currently divided by Interstate 90.

North Nineteenth:

It is proposed that Nineteenth Avenue be extended north beyond Oak Avenue to near Interstate 90, connecting with a proposed frontage road which would run in a northwesterly direction along the freeway.

College Street:

An easterly extension of College Street is proposed which would involve construction of a new road across Sourdough Road joining with Highland Boulevard. This road, when completed, would provide an additional route for through city traffic - a route which would not only avoid the central business district but would pass directly by the northern edge of Montana State University.


CITY-COUNTY PLANNING BOARD
JURISDICTIONAL AREA
ARTERIAL STREETS

SANITARY SEWER PLAN

This section, together with the accompanying map, summarizes the current status of and plans for the sewerage system within the City-County Jurisdictional Area. The following subjects are reviewed:

a. Service Area
b. Collection System and Improvements
c. Treatment and Improvements
d. Plant Projections and Limitations

Sewage Service Area

The following map titled Jurisdictional Area Sanitary Sewer Plan, indicates the current and planned service areas for the sanitary sewer system. Existing and new treatment facilities are also located. All areas are keyed to indicated whether they are part of the (1) immediate plan, (2) the 5-10 year plan or (3) long range plan. Order of priority for inclusion within the city sewer system is also specified for regions under the 5-10 year plan.

According to the plan, two areas adjacent to the north interchange of Interstate 90 are to be serviced by the city sewer within the immediate future. Three other areas extending along or near Bridger Drive, Sourdough Road and Stucky Lane - Kagy Boulevard are scheduled for completion within 5-10 years, (See map). Long range plans, for the most part, include large areas to the south and west of Bozeman. Exceptions to this general rule include the addition of land areas east of the city, but south of Interstate 90, and a small section just north of Bridger

Canyon Road adjacent to Lyman and Bridger Creeks.

Sewage Collection System and Improvements

In October of 1967 Thomas, Dean and Hoskins, Incorporated completed an "Engineering Report on the Sewerage System Improvements for the City of Bozeman". Much of the remaining information in this section is summarized from that report. For a more detailed treatment, particularly for the city itself, please refer to the original Thomas, Dean and Hoskins Report.

The Bozeman city sewer line system is presently composed of four major trunk sewers, smaller trunk sewers, and lateral sewers which collect the sewage from the property being served and carry it by gravity flow to the major trunk sewers. The major trunk sewers now serving the city are as follows:

Location	Size	Portion of City Served
North on Rouse Ave. from sewage plant to Tamarack St.	20"	East of Seventh Ave.
West from sewage plant	21" & 18"	West of Seventh Ave.
East on Tamarack St. from Rouse Ave. to N.P. Railroad right-of-way, then southeasterly	15" & 12"	East of Sourdough Creek
West on Tamarack St. from Rouse Ave. to Grand Ave.	18" & 15"	Central

Obviously, as the city grows and expands into the outlying Jurisdictional Area, the present collection system, some of which is fifty to sixty years old, will not be sufficient to adequately handle the increasing sewage output. The natural

terrain of the area generally follows a series of long, narrow parallel drainage courses that drain from south to north. Gravity sewer lines, therefore, cannot be constructed from the present treatment sites to serve the anticipated growth areas in the western parts of Bozeman. If only the old treatment sites were used, Thomas, Dean and Hoskins has determined that lift stations would be necessary to serve the city's growth areas, resulting in relatively high construction and maintenance costs. Instead, it has been advised that a completely new, downstream location be developed in order to provide a sound system which can be expanded and improved to meet the city's anticipated needs over the next fifty years. Construction of this facility is currently nearing completion.

Recommendations in the 1967 Thomas, Dean and Hoskins Report also included an interceptor sewer which would transverse the existing system and thereby both relieve the present system as well as provide capacity for anticipated growth. Completion of this project was realized during the late summer of 1970.

Secondly, sewer extensions are recommended in accordance with Thomas, Dean and Hoskins Report, Volume II, to serve areas of anticipated growth within the Jurisdictional Area. Trunk sewers have been proposed for nearly all sides of the city and are planned for development in correspondence with the service area expansion plan, (See map). As additional subdivisions are filed for development in these outlying areas, the sewer locations may necessarily require some relocation to conform to

street and alley layouts.

In addition, an outfall sewer has been constructed between the existing treatment plant and the new treatment plant located on the far north side of Bozeman. As proposed, this outfall sewer will connect with both a trunk line from the Bridger Canyon area and the new interceptor sewer at points upstream from the new sewage treatment site.

Sewage Treatment and Improvements

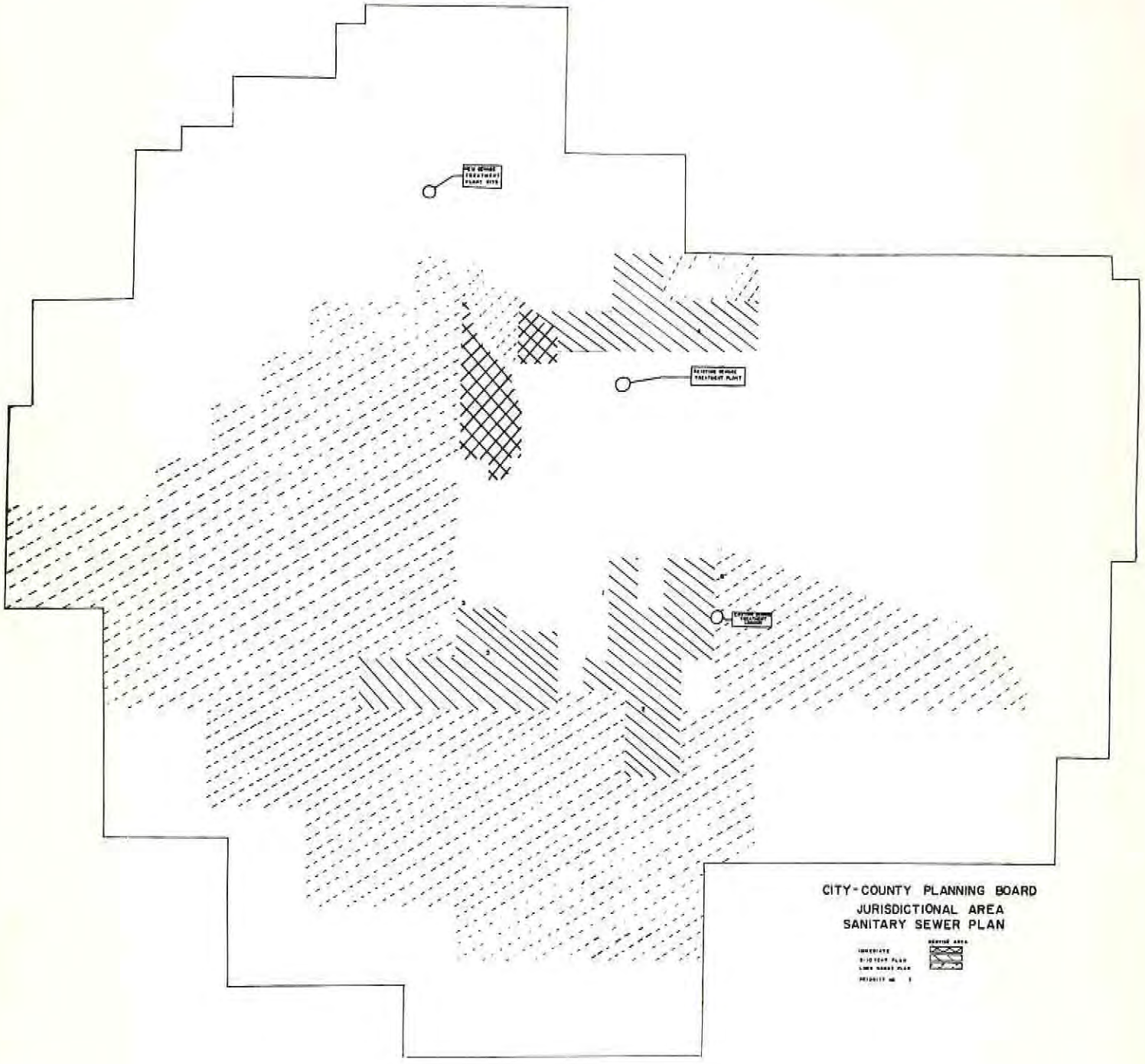
Based upon the obvious needs of a growing city, a new sewage treatment facility was recommended. The new, modern equipped plant is located north and west of Bozeman and will permit gravity flow from the entire system, including that which is planned. (See map.)

Design and layout of the proposed system was specified by Thomas, Dean and Hoskins in their 1967 report. Included in the plan is use of existing comminutors together with other new equipment within a new structure. Power and natural gas are readily available at or near the site, however, a well will be required to furnish the plant with a potable water supply.

Plant Projections and Limitations

The Thomas, Dean and Hoskins Report was based on a thirty year projection to handle an estimated thirty thousand population. It appears that this population density may be reached inside the city of Bozeman prior to 1997. This would necessitate an addition to the existing plant but the plant is adequate for

considerable growth at the present time. There is another limiting factor in terms of expansion of the sewer system due to the ruling of the Bozeman City Commission, that sewer lines cannot be extended beyond the city limtis. This necessitates one or two alternatives, the annexation of the property or a change in the City Commission ruling.


CITY-COUNTY PLANNING BOARD
JURISDICTIONAL AREA
SANITARY SEWER PLAN

WATER SUPPLY PLAN

This section and the map following generally describe the existing Bozeman urban area-wide water plan. To a large degree, the comprehensive water and sewer plan prepared in 1968 by the City-County Planning Board remains as a relatively current and very useful planning reference and is therefore summarized here. All intervening changes in the area-wide water plan have, however, been fully incorporated to provide a completely up-to-date source. It is recommended that the original comprehensive water and sewer plan be referred to for any specific details of the system. In the course of this section, both the existing system and plans for future service are briefly discussed.

Existing System

The present Bozeman city water supply is the composite of three distinct systems commonly referred to as (1) the Lyman Creek System, (2) the Bozeman Creek System and (3) the Hyalite Creek System. Distribution reservoirs, however, are combined for the Bozeman Creek and Hyalite Creek systems. The following table summarized information pertaining to the location, water source and distribution reservoir for each of the systems.

EXISTING WATER SUPPLY SYSTEM FOR
BOZEMAN, MONTANA 1970

Water Supply System	General Location	Water Source	Distribution Location	Reservoirs Construction
Lyman Creek	Northeast	Springs	North	Open
Bozeman Creek	South	Watershed[1]	Sourdough Road	Concrete-4 million gallons
Hyalite Creek	South	Watershed[2]	Sourdough Road	Concrete-4 million gallons

[1] Supplemented by water from Mystic Lake during summer months. Mystic Lake is located about 7 miles above the Bozeman Creek intake.

[2] This system contains Hyalite Reservoir.

After treatment, including chlorination and fluoridation, the water then enters the city distribution piping system at the north and south ends of the city. The map following shows the existing and planned systems, facilities and service area for the City-County Jurisdictional Area. Included in this plan are new pipeline, storage and pumping facilities.

Water System Plans

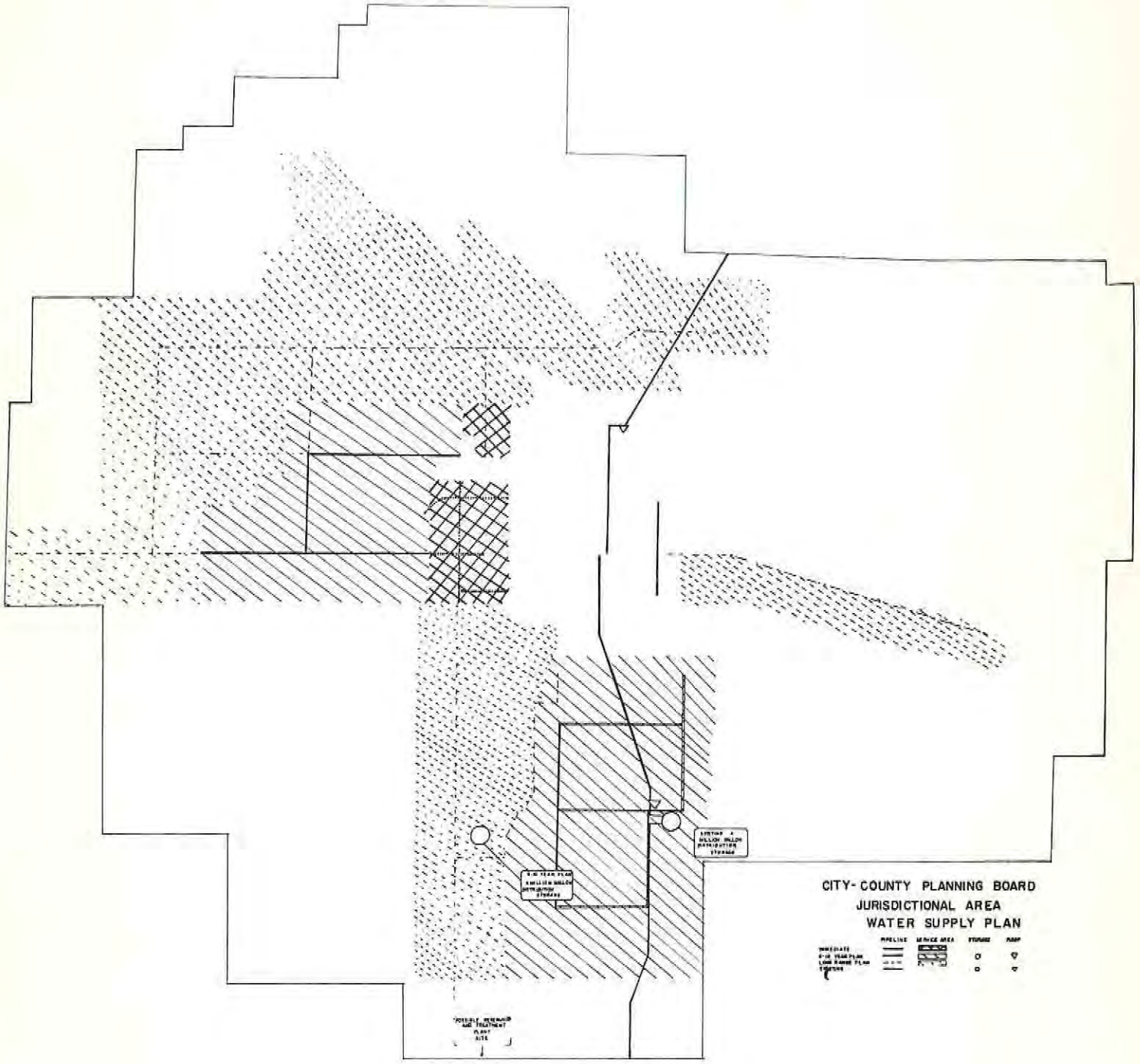
As can be seen from the map, current plans call for vastly expanding the coverage of the existing system. Basically, these improvements include provisions for (1) an additional four million gallon storage and distribution reservoir to be located south of Bozeman near the junction of FAS 458 and Patterson Siding Road, (2) a pumping facility near the Sourdough distribition storage location and (3) additional distribution

piping to serve the city's future water needs.

All zones to be included in the city's planned service area are indicated on the map, titled Water Supply Plan. Current city ordinances require that, in order to be considered for city water supply, an area must be contiguous with the existing city borders. It, therefore, becomes obvious that the service area will likely grow outward from the existing boundaries and will not include random outlying areas which do not directly adjoin the city. In addition to these legal restrictions on service expansion, certain economic restraints exist which may dictate the infeasibility of serving outlying areas. For example, the cost of high intensity distribution piping is approximately one dollar an inch per foot of pipe. This cost alone, then for a fourteen inch line run one-quarter mile would exceed $18,000. Such considerations should always be recognized when potential outlying subdivisions are considered for city water service.

Water System Potential

The present water system has the potential to adequately serve an additional five to six thousand population without any problems. There is, however, a problem that has no relation to further expansion and that is the need for a treatment and settling plant to handle the problems that exist in the city water system at the present time. A site for this plant has been acquired and you will note it is located on the lower part of the map. Its actual location is approximately one half mile beyond this map.


CITY- COUNTY PLANNING BOARD
JURISDICTIONAL AREA
WATER SUPPLY PLAN

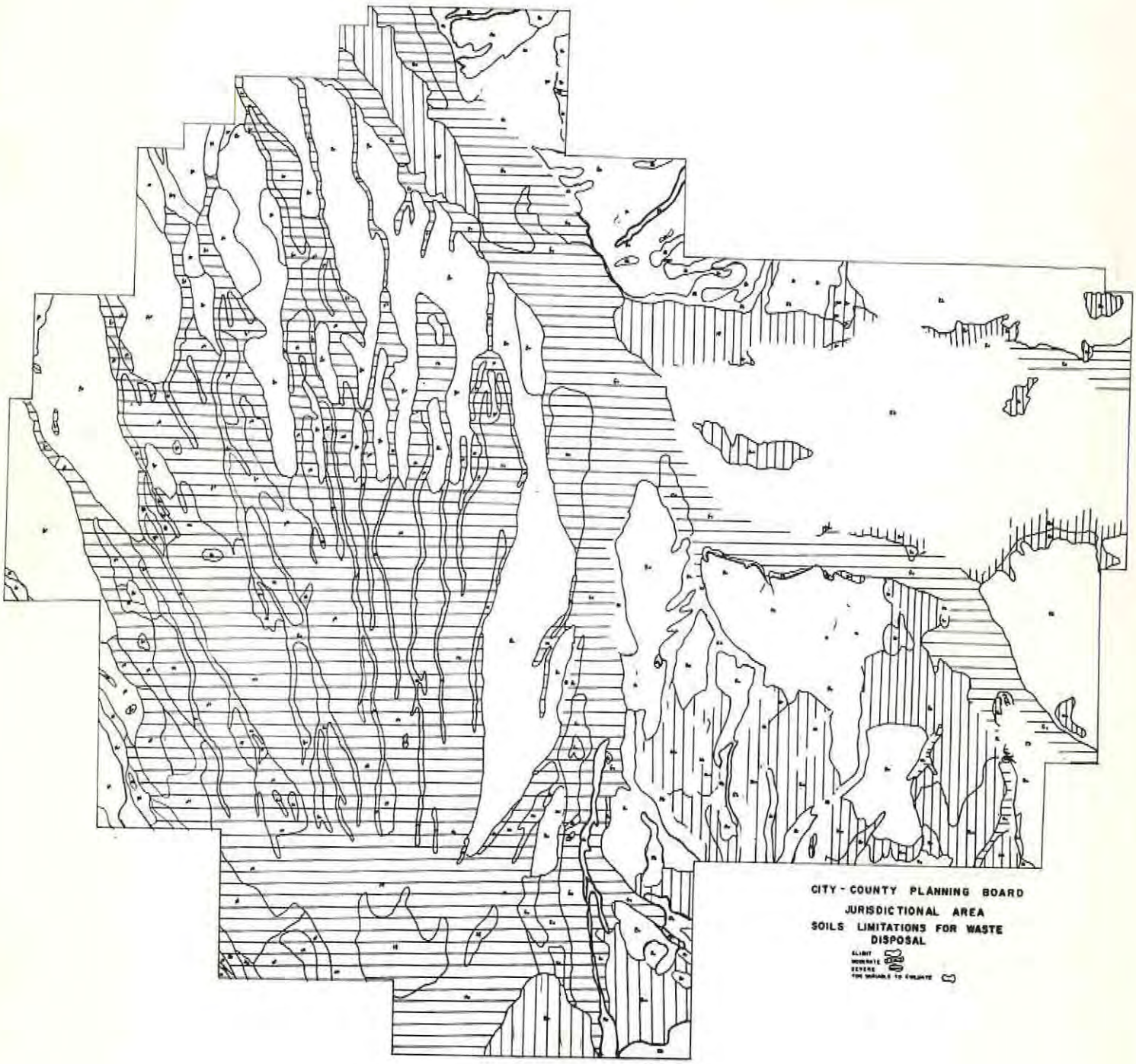
SOILS LIMITATIONS FOR WASTE DISPOSAL

This section and the accompanying map describe the general soils limitations within the City-County Jurisdictional Area. Specifically, such limitations as discussed here are based upon suitability for waste disposal; however, it is certainly true that the areas defined as having either slight, moderate or severe limitations for waste disposal also possess the same or similar limitations in relationship to designated urban usages.

Information contained in this section is based primarily upon the Soil Survey of the Gallatin Valley Area, Montana, which was conducted in 1931 by the then United States Bureau of Chemistry and Soils in cooperation with the Montana Agricultural Experiment Station. Additionally, this initial 1931 study has been updated and integrated by recent efforts (1970) of the U.S. Soil Conservation Service and the Montana State University Department of Soils. In all cases, use was made of the most recent information available. Various small plots within the areas designated may well possess differing limitations; therefore, in no case should information presented here eliminate or substitute for specific on-site investigations for design and construction purposes.

Soils Classification

The map, titled Soils Limitations for Waste Disposal is designed to display graphically the areas having either slight, moderate or severe limitations for waste disposal. Those areas


CITY - COUNTY PLANNING BOARD
JURISDICTIONAL AREA
SOILS LIMITATIONS FOR WASTE DISPOSAL
SLIGHT
MODERATE
SEVERE
TOO VARIABLE TO EVALUATE

possessing characteristics too variable to classify are also indicated. Additionally, the predominating soil type in each distinctly outlined area is specified in symbolic form. These soil types and their characteristics for various uses are classified by the following tables.

Soils Limitations

As may easily be determined from examination of the map following, much of the land area has either moderate or severe limitations for waste disposal purposes as well as many agricultural and urban usages. Those areas which have only slight limitations are somewhat scattered, generally distributed between areas which possess considerable limitations. If a general statement were to be made regarding soils limitations in the area under consideration, it would necessarily be that the soils are not well suited to waste disposal. Regardless of this fact, however, areas do exist,particularly to the east, which present only minor limitations, (see map).

Limiting Soil Properties and Hazards
Indicated by Number in Table 1

1. Frequency of flooding or surface ponding

2. Seasonal ground water table within 3 feet

3. Slope percentage:

   a. Less than 2
   b. 2 to 5
   c. 5 to 9
   d. Less than 9
   e. More than 9
   f. 9 to 15
   g. More than 15

4. Relief

5. Load bearing capacity

6. Hydraulic conductivity (inches per hour):

   a. 0.20 to 0.63
   b. 0.63 to 2.00
   c. More than 2.00

7. Susceptibility to piping:

   a. Moderate
   b. High

8. High organic matter content

9. Frost action potential:

   a. Moderate
   b. High

10. Salinity and alkalinity

11. Ground water pollution

12. Coarse fragments (gravel, cobble or stones)

13. Depth to loose sand or sand and gravel

14. Soil texture

15. Depth to bedrock (less than 40 inches)

NOTE: These interpretations are for general planning. On-site investigation is needed for specific design and construction.

Table 1. Estimated Soil Limitations or Suitability for Selected Uses.

Map Symbols and Soil Names*	(As) Amsterdam silt loam; (Av) Amsterdam very fine sandy loam	(Ag) Ashuelot gravelly loam	(Bg) Beaverton gravelly loam; (Bl) Beaverton loam; (Bl) Beaverton loam, dark colored phase	(Bo) Bozeman silt loam; (Bo) Bozeman silt loam, brown phase	(Bc) Bridger silty clay loam; (Bm) Bridger loam; (Br) Bridger gravelly loam	(Bs) Bridger stony loam
Soil Limitations for:						
Cropping	Slight Moderate 3c Severe 3e	Severe 13	Severe 13	Slight Moderate 3c Severe 3e	Slight Moderate 3c Severe 3e	Severe 12
Road & street location	Severe 5,9b Severe 3g,5,9b	Slight	Slight	Severe 5,9b Severe 3g,5,9b	Moderate 5,8,9a Severe 3g	Moderate 3f Severe 3g
Urban development -foundations for low bldgs. with basements	Slight Moderate 3f Severe 3g	Slight	Slight	Slight Moderate 3f Severe 3g	Slight Moderate 3f Severe 3g	Severe 12
-lawns and landscaping	Slight Moderate 3f Severe 3g	Moderate 12,13	Moderate 12,13	Slight Moderate 3f Severe 3g	Slight Moderate 3f Severe 3g	Severe 12
-parking areas	Severe 5,9b Severe 3e,5,9b	Slight Moderate 3b	Slight	Severe 5,9b Severe 3e,5,9b	Moderate 3b&c, 5,8,9a Severe 3e	Moderate 3b&c Severe 3e
Recreation -camp areas	Slight Moderate 3c&f Severe 3g	Slight Moderate 3c	Slight	Slight Moderate 3c&f Severe 3g	Slight Moderate 3c&f Severe 3g	Severe 12
-picnic areas	Slight Moderate 3e	Slight	Slight	Slight Moderate 3e	Slight Moderate 3e	Moderate 12 Moderate 3f,12 Severe 3g
-playgrounds	Slight Moderate 3b Severe 3c	Slight Moderate 3b Severe 3c	Slight	Slight Moderate 3b Severe 3c	Slight Moderate 3b Severe 3c	Severe 12
Waste disposal -septic tank filter fields	Slight Moderate 3c Severe 3e	Slight#	Slight#	Slight Moderate 3c Severe 3e	Moderate 6b Severe 3e	Severe 3e,12
-sewage lagoons	Moderate 6b Moderate 3b&c,6b Severe 3e	Severe 6c#	Severe 6c#	Moderate 6b Moderate 3b&c,6b Severe 3e	Moderate 6b Moderate 3b&c,6b Severe 3e	Severe 12
-sanitary land fills	Moderate 14 Moderate 3f,14 Severe 3g	Slight#	Slight#	Moderate 14 Moderate 3f,14 Severe 3g	Slight Moderate 3f Severe 3g	Severe 12
Other uses -cemeteries	Slight Moderate 3f Severe 3g	Slight	Slight	Slight Moderate 3f Severe 3g	Slight Moderate 3f Severe 3g	Severe 12
-pond reservoir area	Severe 7b	Severe 6c	Severe 6c	Severe 7b	Moderate 6b	Severe 12
Suitability as Source of:						
Fill material other than embankment	Poor 5,9b	Good	Good	Poor 5,9b	Fair to good	Poor 12
Pond embankment material	Poor 7b	Poor 6c,12	Poor 6c,12	Poor 7b	Good	Poor 12
Topsoil	Good	Poor 12	Poor 12	Good	Good	Poor 12

* Names of soils are tentative and subject to change.

The possibility of groundwater pollution should be investigated where polluted water will drain through coarse, clean gravels and cobbles which have little filtering capacity.

NOTE: These interpretations will not eliminate the need for on-site soil investigations for design and construction.

Table 1. (Cont'd)

Map Symbols and Soil Names*	(Gc) Gallatin silty clay loam; (Gs) Gallatin silt loam	(Gs) Gallatin silt loam, swampy phase	(Hf) Havre fine sandy loam; (Hf) Havre fine sandy loam, dark colored phase	(Hr) Huffine gravelly loam; (Hs) Huffine silt loam	(Hs) Huffine silt loam, poorly drained phase	(Hg) Hyrum gravelly loam	(Ma) Manhattan loamy sand; (Mf) Manhattan fine sandy loam; (Mf) Manhattan fine sandy loam, smooth phase; (Mf) Manhattan fine sandy loam, gravelly subsoil phase
Soil Limitations for:							
Cropping	Moderate 1,2	Severe 2	Moderate to Severe 1,13	Slight	Severe 2	Severe 13	Moderate 14
Road & street location	Severe 1,2,9b	Severe 2	Slight to Moderate 1	Moderate 2	Severe 2	Slight	Slight Moderate 3f
Urban development -foundations for low bldgs. with basements	Severe 1,2	Severe 2	Moderate to Severe 1,2	Severe 2	Severe 2	Slight	Slight Moderate 3f
-lawns and landscaping	Severe 1,2	Severe 2	Slight to Moderate 1	Slight	Severe 2	Moderate 12,13	Slight Moderate 3f
-parking areas	Severe 1,2,9b	Severe 2	Slight to Moderate 1	Moderate 2 Moderate 2,3b	Severe 2	Slight Moderate 3b&c	Slight Moderate 3b&c Severe 3c
Recreation -camp areas	Severe 1,2	Severe 2	Slight to Severe 1	Slight	Severe 2	Slight to Moderate 3c	Slight Moderate 3e&f Moderate 3c
-picnic areas	Moderate 1	Severe 2	Slight to Moderate 1	Slight	Severe 2	Slight	Slight Moderate 3f
-playgrounds	Severe 1	Severe 2	Slight to Moderate 1	Slight Moderate 3b	Severe 2	Slight Moderate 3b Severe 3c	Slight Moderate 3b Severe 3c
Waste disposal -septic tank	Severe 1,2,11	Severe 2,11	Moderate to Severe 1,2,11	Severe 2,11	Severe 2,11	Slight# Moderate 3c	Slight Moderate 3c Severe 3c
-sewage lagoons	Severe 6c,8,11	Severe 2,11	Severe 6c,11	Moderate 6b,11 Severe 6c,11	Severe 2,11	Severe 6c, 11	Severe 6c Severe 3c,6c
-sanitary land fills	Severe 1,2,11	Severe 2,11	Moderate to Severe 1,2	Severe 2,11	Severe 2,11	Slight#	Slight Moderate 3f
Other uses -cemeteries	Severe 1,2	Severe 2	Moderate to Severe 1,2	Severe 2	Severe 2	Slight	Slight Moderate 3f
-pond reservoir area	Severe 6c	Severe 6c	Severe 6c	Severe 6c	Severe 6c	Severe 6c	Severe 6c
Suitability as source of:							
Fill material other than embankment	Poor 8,9b	Poor 2	Good	Poor 8,9b	Poor 2	Good	Good
Pond embankment material	Poor 1,7b,8	Poor 2	Poor 6c	Poor 7b,8,9b	Poor 2	Poor 6c,12	Poor 6c
Topsoil	Good	Poor 2	Good	Good	Poor 2	Poor 12	Good

* Names of soils are tentative and subject to change.

\# The possibility of ground water pollution should be investigated where polluted water will drain through coarse, clean gravels and cobbles which have little filtering capacity.

NOTE: These interpretations will not eliminate the need for on-site soil investigations for design and construction.

Table 1. (Cont'd)

Map Symbol and Soil Names*	(Mv) Manhattan very fine sandy loam; (Mv) Manhattan very fine sandy loam, colluvial phase	(Mg) Manhattan gravelly loam	(Mv) Manhattan very fine sandy loam, shallow phase	(Ms) Millville silt loam	(Ml) Minotare silt loam	(Ml) Minotare silt loam, brown phase	(Rb) Rough broken and mountainous land; (Rw) Riverwash
Soil Limitations for:							
Cropping	Slight Moderate 3c Severe 3e	Moderate 12,14	Severe 15	Slight	Severe 2,10	Moderate 2,10	
Road & street location	Severe 5,9b	Slight Moderate 3f	Moderate to Severe 15	Severe 5,9b	Moderate to Severe 2,9b	Moderate 2,9a	
Urban development -foundations for low bldgs. with basements	Slight Moderate 3f	Slight Moderate 3f	Severe 15	Slight	Severe 2	Severe 2	
-lawns and landscaping	Slight Moderate 3f	Slight Moderate 3f	Moderate to Severe 15	Slight	Severe 10	Moderate 10	
-parking areas	Severe 5,9b Severe 3d,5,9b	Slight Moderate 3b&c Severe 3e	Moderate to Severe 3e,15	Severe 5,9b	Moderate to Severe 2,9b	Moderate 2,9a	Too Variable To Evaluate
Recreation -camp areas	Slight Moderate 3c&f	Slight Moderate 3c	Slight Moderate 3c	Slight Moderate 3c	Moderate to Severe 2	Slight to Moderate 2	
-picnic areas	Slight Moderate 3f	Slight Moderate 3f	Slight Moderate 3f	Slight	Slight	Slight	
-playgrounds	Slight Moderate 3b Severe 3c	Slight Moderate 3b Severe 3c	Moderate to Severe 3c,15	Slight Moderate 3b Severe 3c	Moderate to Severe 2	Slight to Moderate 2	
Waste disposal -septic tank	Slight Moderate 3c Severe 3e	Slight Moderate 3c Severe 3e	Severe 3e,15	Slight# Moderate 3c#	Severe 2,11	Severe 2,11	
-sewage lagoons	Moderate 3b Moderate 3b&c,6b Severe 3e	Severe 3c Severe 3e,6c	Severe 15	Severe 6c,11 Slight	Moderate 6b, 11	Moderate 6b,11	
-sanitary land fills	Moderate 14 Moderate 3f,14	Slight Moderate 3e	Severe 15		Severe 2,11	Severe 2,11	
Other uses -cemeteries	Slight Moderate 3f	Slight Moderate 3f	Severe 15	Slight	Severe 2	Severe 2	
-pond reservoir area	Severe 7b	Severe 6c	Severe 15	Severe 6c	Moderate 6b	Moderate 6b	
Suitability as Source of:							
Fill material other than embankment	Poor 5,9b	Good	Poor 5,9b	Poor 8,9b	Poor 9b	Poor 9b	
Pond embankment material	Poor 7b	Poor 6c	Severe 6c	Poor 7b	Severe 2,7b	Severe 2,7b	
Topsoil	Good	Fair 12,14	Good	Good	Poor 10	Moderate 10	

* Names of soils are tentative and subject to change.

The possibility of ground water pollution should be investigated where polluted water will drain through coarse, clean gravels and cobbles which have little filtering capacity.

NOTE: These interpretations will not eliminate the need for on-site soil investigations for design and construction.

PRESENT AND PROPOSED PARKS

The map following titled Park and Conservation Areas, indicates the location of the present and proposed parks. The proposed parks were a result of the comprehensive study completed in September of 1967 by Consulting Services Corporation and Theodore J. Wirth and Associates. It is stated in their report and we emphasize, "Unless provisions are made now for the establishment, development and maintenance of parks in Bozeman other developments - residential, commercial and industrial - will usurp the most desirable remaining lands within the Jurisdictional Area. Although such private non-recreational uses are vital they can usually be accommodated in areas less siutable for specialized environmental requirements of quality recreation."

Public park lands offering pleasant environment, a variety of outdoor activities and easy access from the business areas as well as the residential areas are necessary for the enhancement of urban living.

Perpetuation of parks will insure long range community enjoyment for Bozeman area residents and contribute immeasurably to the enduring economic, cultural welfare of the city. Attainment of an optimum plan for parks demands the following fundamental land use attitudes and practices:

(1) Use of land as a building site is not always the best use.

(2) Natural environment must be respected and must be preserved in certain areas.

(3) Low land and water ways must be set aside to preserve natural drainage.

(4) Open space must be provided in intensely developed residential and commercial areas.

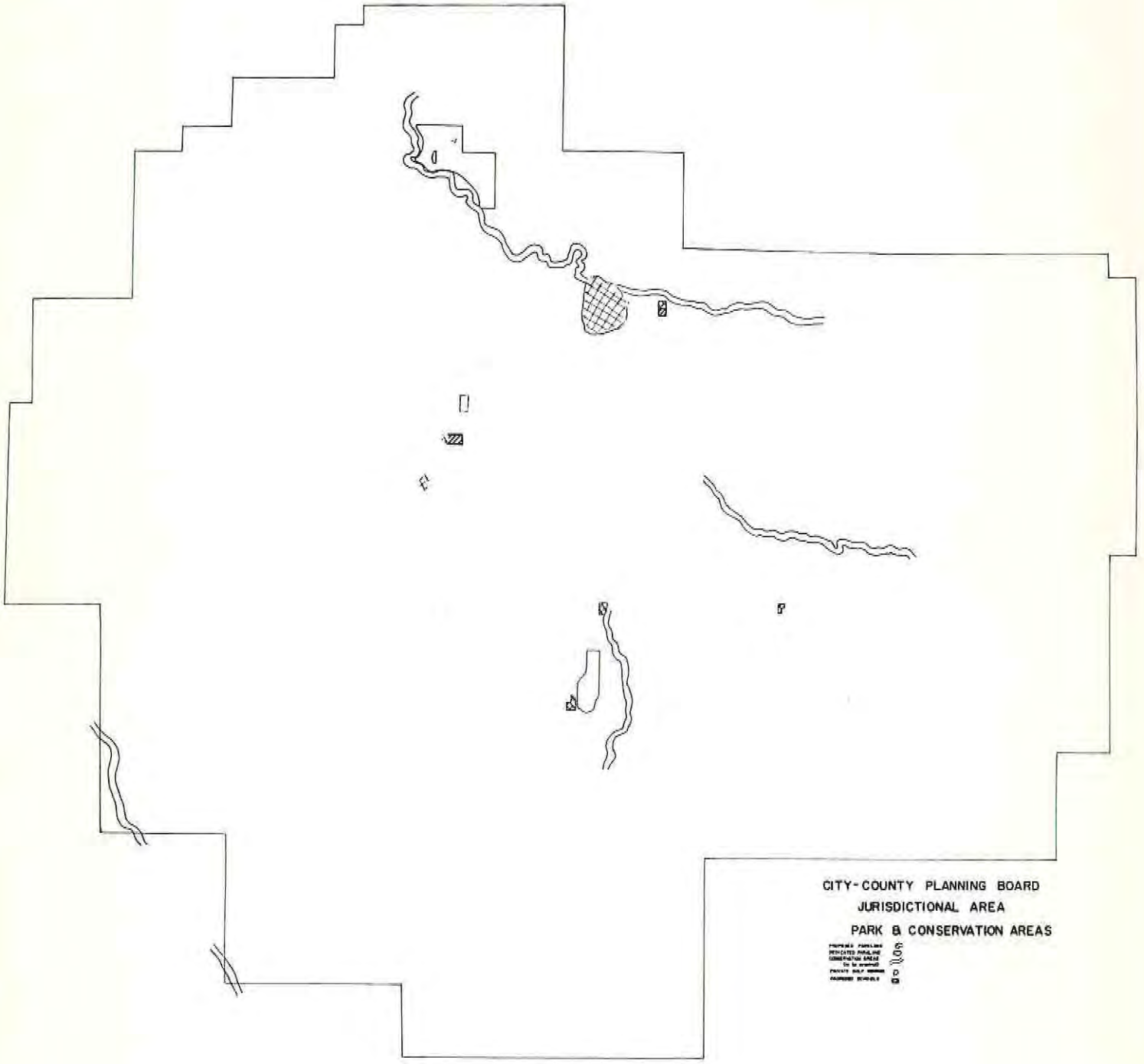
(5) Prime agricultural lands must be protected against un-wise subdivisions.

(6) Future needs must be envisioned and hasty, random developments avoided. This means that a primary consideration in any proposed subdivision or major land use project must be its conformity to the area's long range plan for parks, open space and recreational area.

The subdivision law, as it exists today, has created much misunderstanding regarding the park dedication requirements. The County has been deeded land for parks, but does not have the capacity financially to develop and maintain these parks.

The location of some of the parks may not coincide with the planned orderly development of the City-County Planning Board Jurisdictional Area. It is very imperative that the law be changed so utilization of this area or similar areas can be carried out.

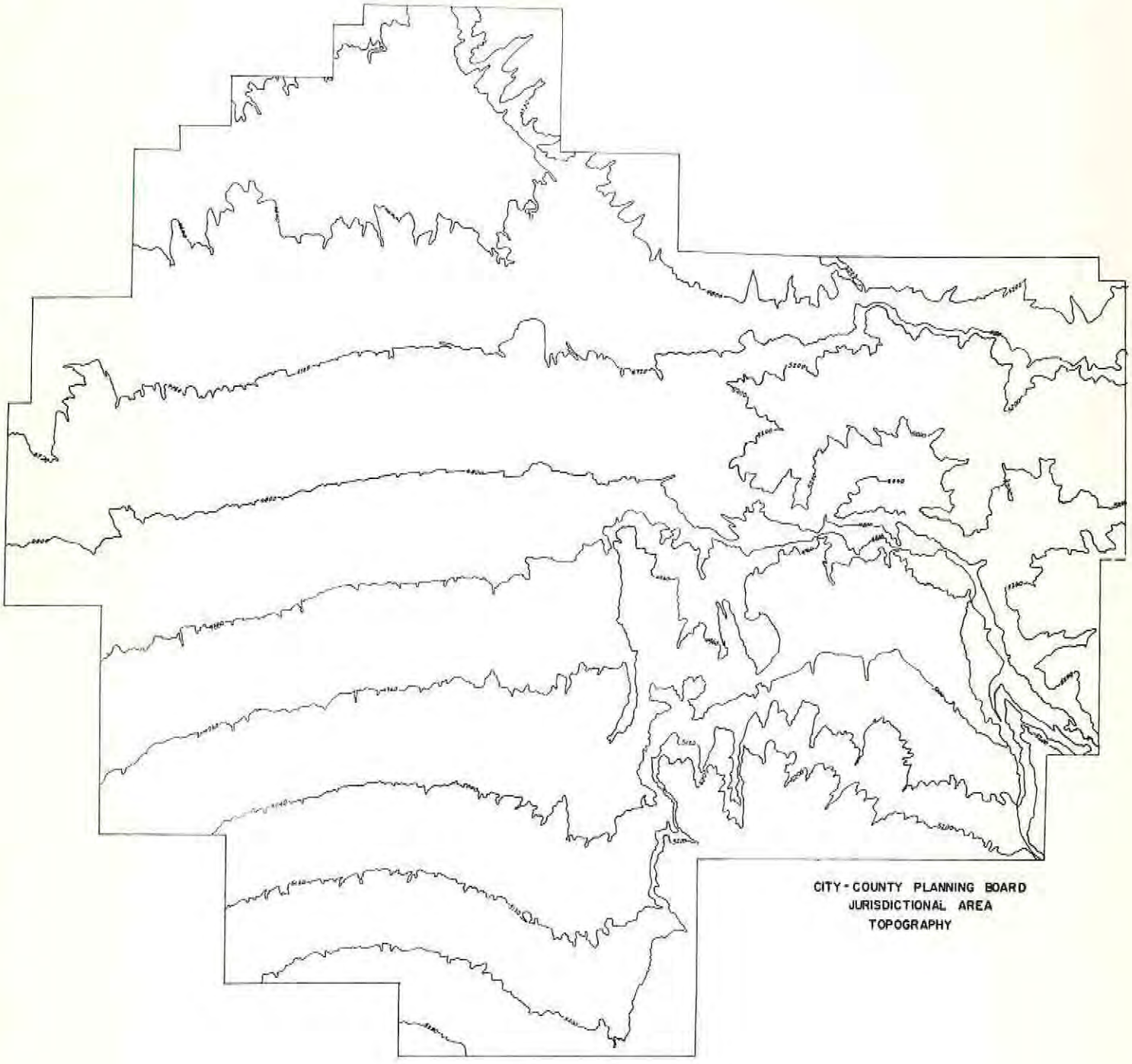
Zoning changes should be considered and formulated to restrict adverse development of areas that are natural drainages, steep areas, etc., to assure that they will be preserved and used for open space, recreation and agricultural purposes. Zoning for such uses prevents destruction of the natural stream flow and eliminates the construction of structures that will be susceptable to damage by the movement of the water.


CITY-COUNTY PLANNING BOARD
JURISDICTIONAL AREA
PARK & CONSERVATION AREAS

TOPOGRAPHY

General topography within the City-County Jurisdictional Area as presented on the map following tends to be somewhat flat or gently rolling, particularly in the sections of the valley located to the south and west of Bozeman. The surface of the land area to the northeast and east, however, tends to be more irregular, especially in the areas of Bridger Canyon Road, the Story Hills and the area immediately south of Interstate 90 east of Bozeman. With respect to Bozeman itself, the general lay of the land definitely tends to be from south to north which in many cases is a crucial factor for sewage and storm drainage planning as well as other considerations.

In summary, there are several areas whose topography offer no barrier to expanded development. It is true, however, that on the basis of other considerations such as soils limitations, etc., several of these otherwise satisfactory regions should be restricted in their use. Cautious and thoughtful planning is the proper vehicle to insure these results.



CITY - COUNTY PLANNING BOARD
JURISDICTIONAL AREA
TOPOGRAPHY

CLIMATE, FLOOD PLAINS AND DRAINAGE

General Climatic Conditions

Bozeman is located at an altitude of 4,763 feet in south central Montana and enjoys a continental-type climate with warm summer days and cool evenings and cool winters. The four seasons (Spring, Summer, Fall and Winter) are quite distinct. The table below summarizes the temperature and precititation data for the Bozeman area as recorded at the Montana State University weather station:

Temperature and Precipitation for Bozeman Montana (20 year average)

Month	Average Max. Temp.	Average Min. Temp.	Average Annual Precipitation
January	29.6	11.2	.94
February	32.8	13.0	.77
March	39.1	20.0	1.58
April	51.8	29.8	1.70
May	60.9	37.6	2.31
June	70.1	44.2	3.07
July	78.6	49.8	1.10
August	77.7	48.6	1.19
September	65.7	40.2	1.72
October	54.4	32.2	1.45
November	41.4	21.9	1.12
December	31.6	13.9	.90
Annual	--	--	17.85
Average Mo.	52.8	12.0	1.48

The months of June, July and August are traditionally Bozeman's warmest months while December, January and February are the coolest. In general, although Bozeman's precipitation is fairly well distributed throughout the year, May and June tend to be the wettest months while December, January and February experience the least precipitation, mostly in the form of snow.

Snow, one of the area's greatest recreational assets, remains on the ground much of the winter season. Measurements at Bridger Bowl,17 miles north, indicate the following monthly snow depths for 1966-1969:

Snow Measurements for Bridger Bowl, Montana*

Month	Snow Depth (Inches) 1966	1967	1968	1969	Water Content (Inches) 1966	1967	1968	1969
January	25	33	67	40	5.4	8.4	18.3	11.8
February	42	67	68	68	11.0	20.3	24.5	22.0
March	57	77	87	64	17.1	28.3	32.2	24.6
April	55	98	91	67	22.0	34.5	35.4	26.6
May	63	84	94	56	25.8	37.2	41.2	25.8

* Source: Summary of Snow Survey Measurements for Montana. U.S. Department of Agriculture, Soil Conservation Service, 1970.

The City-County Planning Board Jurisdictional Area has some basic climatic differences when compared to the city of Bozeman. Temperature, growing season, amount of moisture and depth of snow are all effected by higher altitudes. The two major areas

in the Jurisdictional Area which have higher altitudes are the Story Hills in the northeastern section and the benchlands in the southeastern portion of the area. Correspondingly these areas have a lower average temperature, a shorter growing season, and more snow and moisture than Bozeman. There is a tendency for the opposite to be true as one travels further west and northwest from Bozeman.

Wind factor also varies in different sections of the area. Generally the further south and southeast from Bozeman the more the winds will prevail. Due to winds and drifting snow the expense of keeping roads plowed and open during the winter is increased.

Flood Plains and Drainage

The identification of flood plains is not accurately defined within the City-County Planning Board Jurisdictional Area. Over the years flooding has covered a large portion of the area. The map, titled Approximate Outlines of Past Flooding and Seepage Problem Areas, shows the general areas of past floods. In 1959 Sourdough and Spring Creeks flooded a large area south of Bozeman. (Area 1) The city of Bozeman also had some flooding that year. Ice build-ups in the creeks appeared to be the major cause for the flooding. Again in 1969 there was flooding on the southern portion of these creeks almost into Bozeman. The area directly west of Bozeman was faced with poor drainage problems in 1969. (Area 2) The natural water drainages could not carry the water

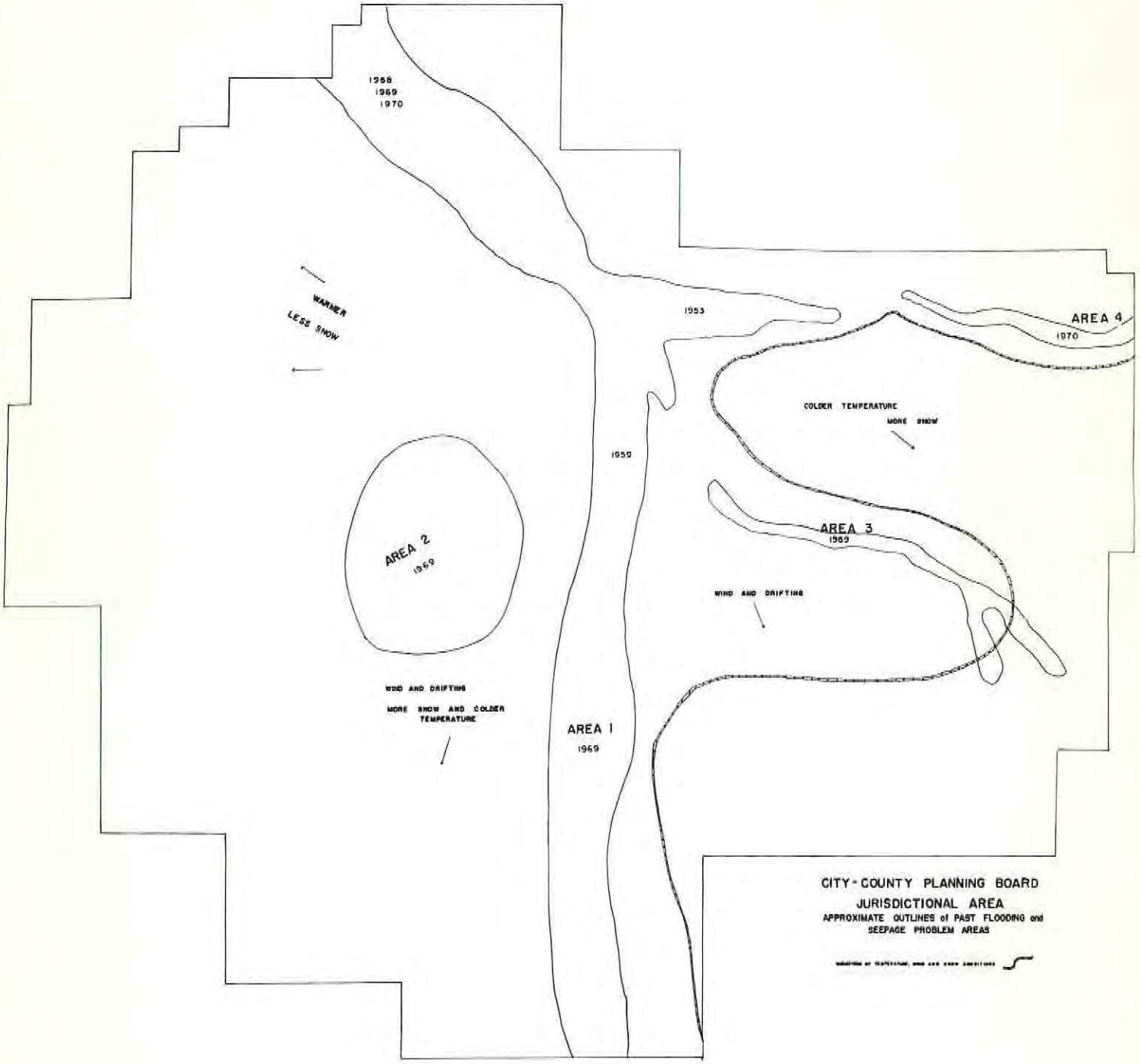
away fast enough. Almost every year the low lands of the East Gallatin River in the eastern section of the Jurisdictional Area have flooding and high water problems. (Area 3) In 1970 Bridger Creek flowed out of its banks to cover approximately the entire section designated as Area 4. Bridger Creek created some flooding problems in 1953 with the lower portion flooding most of the area where the housing development and industrial sites are located. In 1968, 1969, and 1970 the East Gallatin River, in the northern part of the Jurisdictional Area, has created major flooding problems.

The size of the stream beds and natural drainages has been formed by thousands of years of erosion. Nature adjusts these to a size which can successfully carry most of the runoff water most of the time. Human inhabitance has caused some increase in the stream flows. Some agricultural and forestry practices have increased the runoff. The main concern here is how urbanization can effect the runoff of water in the Jurisdictional Area. The balance set up by nature depends on the amount of moisture absorbed by the soil. The areas along Sourdough and Spring Creeks have more housing developments with pavement, sidewalks, driveways, etc. which increase the amount of runoff water. As development of subdivisions takes place along the streams this added runoff has to be a consideration in relation to the stream's maximum capacity to and through Bozeman in the future.

The drainages from the foothills can presently carry the normal excess water with minimum difficulty. However, as these

hills become urbanized the water runoff problem will become more serious as it has in other Montana cities.

Present and future water problems have to be a consideration in future urban development within the City-County Planning Board Jurisdictional Area.


1968
1969
1970
WARMER
LESS SNOW
1953
AREA 4
1970
COLDER TEMPERATURE
MORE SNOW
1959
AREA 2
1969
AREA 3
1969
WIND AND DRIFTING
WIND AND DRIFTING
MORE SNOW AND COLDER TEMPERATURE
AREA 1
1969
CITY - COUNTY PLANNING BOARD
JURISDICTIONAL AREA
APPROXIMATE OUTLINES of PAST FLOODING and SEEPAGE PROBLEM AREAS

SOCIAL AND ECONOMIC

Since the community of Bozeman, like all growing communities, must prepare itself for a rather steady influx of people, the pressures of demand for building sites and living units will continue to increase. To provide a perspective for the housing situation as it exists nationally, regionally and locally, a section follows.

National Housing Situation

Since 1966 the national housing construction activity has been depressed. It started with increased credit restrictions in 1966. The subsequent continued increases in interest rates, a general reduction in the availability of mortgage funds and continued increases in material and labor costs have been rather disappointing to the potential American homeowner. For example, the rate of housing starts between January, 1969 and December, 1969, declined from 1.9 million to 1.3 million. The potential homeowner has been forced to postpone home ownership and in other instances has been forced to look for alternative solutions.

The strong demand for more and better living space will continue. Prices and rents will continue to increase. It is not expected that new home construction activity will show any substantial increase in the near future. Congressional action to encourage and expedite the flow of funds into the mortgage and construction market will have a positive effect. But, it is

not expected that these effects will be felt immediately.

Over the past four years the median price of a new home rose from $19,600 in September of 1965 to $26,100 for the same month of 1969. The increase is due in part, to additional equipment and expansion of floor space, but more often to higher cost of land, labor, and materials. For the same time, existing home prices climbed from a median of $18,300 to $21,700.

The mobile home unit is receiving greater attention. Delivery of mobile home units by manufacturers continues to increase annually. There is some evidence that attitudes towards the mobile homes are changing in favor of the mobile unit. This is being prompted to a great degree by the inability of the potential homeowner to become a homeowner. The average homeowner's income does not carry the capacity for new home debt servicing currently required. Even though to many, the mobile home with improved quality and greater size is attractive, it still does not appear to be an universally and permanently acceptable alternative to a traditional residence. The delivery of mobile homes into regions with the moderate climates and where the demand for reasonably priced housing is critical, will continue to increase.

Regional Housing (Ninth Federal Reserve District)

The regional housing outlook is relatively more optimistic than is the national outlook. This is based largely on the fact that increased permit activity in the district was higher in the second quarter of 1970 than it was in the first quarter.

However, the 1970 January to July total of residential permits and valuation of permits is below that for the comparable period in 1969.

Residential Housing Activity in the Ninth Federal Reserve District*

Period	Number of Permits	Valuation (thousands)
Jan.-July, 1969	7,715	$285,615
Jan.-July, 1970	6,230	$239,584

* Minnesota, North Dakota, South Dakota, Montana, Upper Michigan, Northwest Wisconsin

The above data represent residential urban housing activity in the Ninth Federal Reserve District in three hundred cities. The cities of Minneapolis and St. Paul heavily influence these data since approximately sixty percent of the building permits for the period January to July were issued in this Standard Metropolitan Statistical Area.

Bozeman Housing Situation

High and increasing financing costs, high and increasing construction costs, and the high cost of land have literally dried up the effective demand for single family dwellings. With minor exceptions, the residential construction activity in Bozeman is at a standstill. Monthly payments on new mortgages have soared to a point where many persons with middle incomes cannot qualify for the kind of homes they thought they could

afford just one year ago. Even loans insured by the Federal Housing Administration (FHA) now have an effective rate of interest of at least nine percent. This means that a dwelling of 1200 square feet constructed at $20 per square foot, situated on a lot valued at $5,000 to $6,000, and financed with an FHA guarantee with minimum down payment, over a period of twenty-five years, will require monthly payments in excess of $250. This monthly payment would include taxes and insurance. To afford this level of monthly payments would normally require the person to have a monthly salary ranging from $1,200 to $1,400.

The data in the table following provides a resume of the changes in new residential dwelling activity in Bozeman since 1965.

HOUSING STARTS AND VALUE IN BOZEMAN, 1965 to 1969*

	Single Family Structures	Multiple Dwelling Structures[1]	Total Dwelling Structures	Total Living Units	Total Dwelling Value	Value per Living Unit[2]
1965	76	1	77	80	$1,666,356	$20,795
1966	45	4	49	55	960,500	17,464
1967	35	5	40	51	887,654	17,405
1968	40	13	53	79	1,390,570	17,602
1969	29	10	39	56	895,700	15,995
1970	21	2	23	27	--	--

* Source: Engineering and Inspection Department, City of Bozeman, 1970.

[1] Multiple dwelling units refers to four-plexes or smaller.

[2] Value in current dollars.

The data reveal that the number of new single family units constructed within the city's corporate limits declined with near complete regularity from 76 in 1965 to 29 in 1969. During that same period the number of multiple dwelling structures increased from one in 1965 to ten in 1969. Presumably the high cost of single family structures has encouraged Bozeman residents to move in the direction of multiple dwelling structures with the consequent decline in the cost per living unit. Nor is this the complete picture. Residences are being constructed outside the city limits. Information regarding the full extent of such activity and its recent changes is not readily available. However, with the cooperation of the Montana Power Company, an estimate has been made of new residential housing outside the city limits of Bozeman, but within the four and one-half mile Jurisdictional Area.

Housing and Residential Activity (Four and one-half mile Jurisdictional Area)

Data on residential housing activity within the Jurisdictional Area do not reveal the persistent decline experienced within the Bozeman City limits for the comparable time period, January, 1965 to September 30, 1970. The number of new homes built in the City-County Planning Board Jurisdictional Area peaked out at twenty nine homes in 1968 and then declined to twelve in 1969, but by September 30 of 1970, had recovered to sixteen.

Since 1965, a substantial number of mobile homes have been located outside the city limits of Bozeman. From January 1, 1965 to September 30, 1970, 176 mobile homes have been located outside the city limits. And, in the period 1967 to September, 1970, a greater number of mobile homes than traditional residential homes have been annually located within the four and one-half mile Jurisdictional Area.

The table below summarizes the estimate of the total residential activity within the Jurisdictional Area but outside the city limits.

Jurisdictional Residential Activity,
1965 to September 30, 1970*

Year	New Homes	Mobile Homes
1965	17	1
1966	17	1
1967	18	21
1968	29	104
1969	12	29
1970 (to Sept. 30)	16[1]	20

* B.L. Amsberry, Montana Power Company; based on records of installation of electrical service.

[1] Includes one multiple dwelling.

An important component of the total demand for housing in Bozeman and its vicinity is generated by both single and married students attending Montana State University.

Total student enrollment doubled in the last decade from 3,889 in 1960 to 7,718 in 1969 and the proportion of married students remained relatively constant at approximately nineteen percent. If in the next ten years total enrollment increases by about thirty percent, as it is projected, then married student enrollment could increase from 1,526 to approximately 2,000 in 1979. The annual demand for an additional forty five living units just from married students appears eminent.

Records currently indicate that as of October, 1970 dormitory space at the University is fully utilized. And there are no immediate plans to provide additional dormitory space. Similarly, married student housing is fully occupied. In fact, on August 15, 1970, seventy one married students were on the waiting list for High Rise Apartments. Alternate assignments for those on the waiting list were provided. But the reassignments offered were in the "stacks". The reassignments were considered unacceptable by most families and they subsequently located off the campus.

Net additions to available housing units for both married and single students must necessarily be provided if projected enrollments are to be realized. It is not clear whether this is the responsibility of the community or the University, or whether it is a joint responsibility. What is clear, is that the total demand for living units will remain strong and constant in the Bozeman community in the decade to come, unless, there

is a complete reversal of growth trends in this community. Nothing seems to indicate such a dramatic change in events.

SUBDIVISION REGULATIONS

In order to guide and promote orderly growth and development of the city of Bozeman and the surrounding land area, the Bozeman City-County Planning Board has established minimum procedures with which owners of land or other individuals or developers shall comply in seeking approval of plats, subdivisions or certificates of survey. Specifically, the city's objectives are to encourage proper land use, conservation, stabilization and protection of property values; and to insure adequate provision for utilities, streets, parks and other public places, public health, safety and general welfare.

It is the responsibility of the developer or his agent to fully comply with regulations detailed in SUBDIVISION REGULATION 1968, available from the City-County Planning Board. These requirements should be viewed and the subdivider is encouraged to consult with the Planning Board president or secretary and City Engineer prior to initiation of the steps toward subdivision approval.

Following is a brief outline of the general procedures required for development approval:

(1) Submission of the Preapplication Plan to the Planning Board, followed by a review and notice of approval/disapproval period of from one to three weeks.

(2) Submission of a Preliminary Plat followed by the review and notification period of from one to three weeks.

(3) Submission of the Final Plat to the Planning Board, followed by the one to three week review period. Upon receipt of this approval, the developer shall submit the Final Plat to the City of Bozeman and the Board of County Commissioners.

Specifications contained in SUBDIVISION REGULATIONS - 1968 enumerate the description of data and the standards of design required in the above listed steps.

Mobile home subdivision approval requests follow a similar pattern. However, the regulations governing such are further outlined in a separate publication, MOBILE HOME REGULATIONS - JULY, 1970. Again, familiarity with the data in this publication and consultation with members of the City-County Planning is urged prior to beginning action on the steps toward mobile home subdivision approval. In addition to the description of the data required, the mobile home regulations point out specific site planning and development standards as adopted by the city of Bozeman. The Board of County Commissioners has not yet adopted the regulations. However, they are presently under consideration by the Board.

RECOMMENDATIONS FOR PLANNING AND ZONING

1. Protect investments in existing property.

2. Considerable land in the Jurisdictional Area has severe limitations for urban uses, waste disposal and so forth, because of seasonal water table within three feet. This same land has high priority for agricultural use because of sub-irrigation properties. Therefore we encourage the continued agricultural use and discourage the development of this land.

3. Identify flood plains and prohibit future development until the flood plain study has been completed.

4. Encourage the annexation of all developed areas contiguous to the city that are occupying an area that has severe limitations for waste disposal.

5. All areas with severe limitations for waste disposal be limited to agricultural or extreme low density housing classification unless provisions are made to attach to the city sewer or similar systems. It shall be the burden of the property owner to provide proof that his plan will not cause future polution.

CONCLUSIONS

The foregoing has been a consolidation of information available at the present time, to aid in planning the City-County Planning Board Jurisdictional Area. There are some areas that we feel need additional study that could not be carried on in the short time period allotted us. In accordance with this, we would like to make the following recommendations for further in depth study and suggest that these be undertaken at the earliest opportunity.

(1) Soil Filtration Study - At the present time the State Board of Health requires tests to determine the percolation of the soil and ground water level but does not take into consideration the filtration capacity of the soil involved. There is considerable discussion as to the ability of the different soils to filter chemicals and therefore, leave the residue in that will polute the water. There is no definite conclusion as to what the maximum density can safely be on any of the severe limited soils so it has been our recommendation that the building on these types of areas be held to a minimum until the study can be completed that will answer this question.

(2) Flood Plain Study - There are some rather obvious areas in the City-County Jurisdictional Area that are susceptable to flooding. It is imperative that these

areas be identified and zoned to prohibit future structure development. The Gallatin County Commissioners have at the present time asked the Soil Conservation Service to implement such a study and we encourage the immediate undertaking and implementation of this study.

(3) Arterial Systems Study - The present arterial system study has been a building of previous studies and it is recommended that the projected traffic patterns be studied in depth and then be implemented for proper movement of people and resources in and around Bozeman so that growth in the Jurisdictional Area will not be stifled.

(4) Parks and Conservation Location Study - We feel that it is imperative that Parks and Conservation Areas be designated before the available land is devoted to residential or commercial use. There are several aesthetic areas in the Jurisdictional Area and it would be imperative that these be maintained and developed instead of destroyed.

UPDATING OF LAND USE PLANS FOR BOZEMAN CITY-COUNTY PLANNING BOARD JURISDICTIONAL AREA

TAP ECONOMIC CONSULTANTS

OFFICES
25 E. MENDENHALL
PHONE 406 587-4461

MAILING ADDRESS
TAP INC.
P.O. BOX 471

BOZEMAN, MONTANA 59715

UPDATING OF LAND USE PLANS FOR BOZEMAN CITY-COUNTY PLANNING BOARD JURISDICTIONAL AREA

Prepared for:

Bozeman City-County Planning Board

Prepared by:

T.A.P. Incorporated
P.O. Box 471
Bozeman, Montana 59715

August 10, 1970

Planning and zoning becomes a very personal problem when it affects you directly, as has been indicated by the large number of small zoning districts that are being suggested at the present time. We are in complete agreement with the City-County Planning Board, and County Commissioners that the small zoned areas are not the answer. We, therefore, must look for an alternative solution. It must be a solution that satisfies the land owner because Montana law allows for a forty percent (40%) protest of all freeholders to defeat a zoning ordinance. So it is very important that anything that is attempted has the support of the freeholders involved. We propose that the City-County Planning Board appoint a citizens' committee to work closely with us to aid in the communications from the people and to the people. We will send progress reports to all freeholders outside the Bozeman city limits in the City-County Planning Board jurisdictional area, so they are informed as we progress. The communications with the people are the most important item if we are to be successful in zoning the jurisdictional area, and we feel by keeping them informed as we progress it will allow them to be part of the planning and zoning team and therefore, agreeable to the final plan.

The following outline indicates areas of study in which we will direct our attention. It is not our intention to go into great depth in any area of item III, but to utilize the existing data available from various sources.

I. Secure names and addresses of all existing freeholders outside the Bozeman city limits in the City-County Planning Board jurisdictional area. (to be supplied by Gallatin County Commissioners)

This list will be used to identify property owners from which to draw a citizens' committee and to use for purposes of communication of progress reports.

II. Update land use map to existing uses.

A. Compile subdivision and platting within City-County Planning Board jurisdictional area.

Secure copies of all township maps indicating ownership and location and larger scale drawings of each platted subdivision.

B. Compile pending plans for subdivision and platting within City-County Planning Board jurisdictional area.

Secure copies of all pending subdivisions from City-County Planning Board.

C. Physical survey of City-County Planning Board jurisdictional area.

Site inspection of all City-County Planning Board jurisdictional area outside Bozeman city limits to determine present land use.

D. Prepare existing land use map.

III. Assemble data and develop maps, overlays and reports. (Source and depth listed under each topic.)

A. Arterial street system master plan

Comprehensive Plan 1967, Consulting Services Corporation, Theodore J. Wirth and Associates, visual update of any intervening changes.

B. Sewerage system

Engineering report on Sewerage System Improvements, 1967, Thomas, Dean and Hoskins, Inc.

C. Bozeman urban area-wide water plan

Bozeman Urban area-wide Comprehensive Water and Sewer Plan, Bozeman City-County Planning Board, 1968.

D. Soils analysis survey

Various existing soil surveys

E. Present and proposed parks

Comprehensive plan - study of existing and proposed subdivisions

F. Limited topography

United States Forest Service and subdivision topography maps.

G. Location and identification of flood plain areas

Soil Conservation Service

H. Climatic conditions

Soil Conservation Service

I. Agricultural potential study

Professional analysis of soil, topography and crop potential

J. Social and economic study

Analysis and projection of events affecting demands of area population, various sources.

K. Regional and national trends affecting area

Changes in housing, style and market, various sources.

L. Subdivision regulations

City-County Planning Board regulations including July 1970 update.

IV. Translation of data from I, II, and III into alternative plans

The assembling of data from I, II, and III will indicate the possible uses for lands within the City-County Planning Board jurisdictional area. The alternative possibilities will be constructed into possible plans for the consideration of the citizens involved.

V. Present data from I, II, and III to the City-County Planning Board and selected citizens' committee.

Discussions will be held with the City-County Planning Board and citizens to air the advantages and disadvantages of various plans. T.A.P. Incorporated will serve as moderator and advisor.

VI. Selection of final plan and development of more detailed proposals

The discussions in V will serve to crystalize the desires of the citizens into one agreeable plan. This plan will then be completed in detailed form for final consideration.

VII. Serve as City-County Planning Board educational arm to inform citizens of need for planning and zoning and procedure used in selection of final plan..

T.A.P. Incorporated will hold explanatory meetings with interested citizens to inform them of the procedure used in selection of the final plan and the reasons for its development.

Phase I	Duration	Cost
Items I, II and III (to include two milar overlays and forty copies of report in booklet form.	3 weeks	$4,705
Phase II		
Items IV-VII	4 weeks	$4,375

INFORMATION UPDATE

STUDY STATUS REPORT

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EAP INC
P.O. BOX 471

BOZEMAN, MONTANA 59715

INFORMATION UPDATE

STUDY STATUS REPORT

Submitted to: City of Bozeman,
County of Gallatin
The Bozeman City-County Planning Board

Submitted by: T.A.P. Incorporated
Bozeman, Montana

February, 1971

STUDY STATUS REPORT

This report contains the present status of the work completed by T.A.P., Inc. for the City-County Planning Board. Items 1, 2 and 3 of the original proposal were covered in the report dated November, 1970.

Item 4 - Translation of data from 1, 2 and 3 into alternative plans. The assembling of data from 1, 2 and 3 will indicate the possible uses for land within the City-County Planning Board Jurisdictional Area. The alternatives or possibilities will be constructed into possible plans for consideration of citizens involved.

After thorough study of the data from items 1, 2 and 3, it was our opinion that the primary problem that exists in the Jurisdictional Area was that of present and future pollution problems due to sanitary waste disposal methods. There were three alternatives presented to the citizens committee from each of the five assigned areas for their reaction and recommendations. The alternatives were as follows: (1) to eliminate all construction on property classified as severe limited area because of sewage disposal, (2) to declare this area a "green belt" area and put it into a permanent park by acquiring of rights or by easement purposes, (3) to put a temporary moratorium on building such as the extreme low density classification unless the property is handled by the Bozeman City Sewer System or a comparable system. The reaction at these citizens meetings were in favor of alternative (3) because (1) was not acceptable to the land owners and they, therefore, could throw out any work done by a 40% protest of the land owners. Item (2) was not acepptable because of the high cost involved. They did not consider it feasible since there is an abundance of recreational land in the near proximity of Bozeman. Alternative (3) was considered the only possibility. There was, however, one recommendation that the temporary holding have a set time limit to force something to be done and that time was recommended to be between 18 and 24 months.

Item 5 - Present data from 1, 2 and 3 to the City-County Planning Board and selected citizens committees. Discussions will be held with the City-County Planning Board and citizens to air the advantages and disadvantages of various plans. T.A.P. Inc. will serve as moderator and laisson.

Following the first meeting with all of the area groups a second meeting was held with some specific alternatives designed for their acceptance or rejection. A zone requirement chart was prepared for the citizens information. It was not intended to be a final recommendation but merely a definition of terms so that all individuals involved could communicate in the same language. Using this zone requirement chart as a guideline possible locations for all classifications were identified and the pros and cons of each location were stated. The alternative recommendations were as follows:

Classification Industrial - Alternative #1 - location to be in Section 36, bordered by Interstate 90 and the railroad track. The advantages of this particular location were its easy access to all forms of transportation, rail, surface and air, its proximity to the existing industrial area, the natural barriers of the Interstate and the railroad track to separate it from residential areas, the sewage capacity of the land being such that it could be initiated with a septic tank that could be converted to the city sewer system at a very economical cost since it is adjacent to both major trunk lines, the prevailing winds around Bozeman are from the southeast and therefore the climatic location would be acceptable. Disadvantages - the location adjacent to the Interstate would give the traveller this impression of Bozeman, it could be an asset or a liability depending on the quality of the development. The size was considered but was thought to be adequate for the expansion of industrial activity in the foreseeable future.

Alternative #2 - Starting with the existing industrial area of the oil companies and moving directly to the north into Section 31 and the eastern edge of Section 36. The same relative advantages can be stated for this site but it does have the disadvantage that the septic limitations are rated as severe and you, therefore, must connect to the city sewer system immediately but this could be done very economically since

the major trunk line adjoins this area.

Alternative #3 - starting with the existing area of the stockyards and moving to the north on Section 31 - here again there are some of the very same advantages but this has one distinct disadvantage in that it is in the flood plain area and it is doubtful that anyone would care to invest large sums of money in plant and equipment if it were to be susceptible to flooding.

Classification Commercial or Central Business District

There exist, at the present time, thirty-eight blocks designated as Central Business. Thirteen of these blocks are in a transitional stage and therefore could be used for expansion of the present city business district. This was judged adequate and therefore no expansion of this area was considered.

Classification Commercial Motor Business

It was pointed out that there was a large designation of this area at the present time but the recommendation was to add a "band" approximately 200 feet deep on each side of U.S. Highway 191 from the existing city limits to the Fish and Game area and to designate the area adjoining the Interchange location on Interstate 90 to be d ignated motor business as well. The area on U.S. 191 could be limited to motor related type of business, implement business, etc. and the area adjacent to the Interstate locations to be limited to tourist or travel related type of business such as motels, service stations, etc. Mobile home courts should be removed from this designation.

Classification Neighborhood Business

It was deemed desirable to have some small neighborhood areas to be designated for business purposes but they be limited to convenience grocery stores, barber shops, beauty salons, etc. and that the maximum total be 5,000 square feet of sales space. No particular locations were designated for these because we could not predict the direction and intensity of the growth from the Bozeman city limits.

Classification Agriculture

This classification be established for all agricultural uses of land and

customary associated buildings. The area to be classified at the option of the land owner as long as he maintains it for agricultural purposes.

Classification High Intensity Multiple Family

This classification was to serve a needed area of the high-rise apartment house. It was pointed out that in the past the city had attempted to re-zone the area immediately east of the campus to a high intensity multiple family classification approximately three years ago but it was denied because of its proximity to existing structures of a single family residence. The need for this type of housing was further emphasized by the report from the University in the fall of 1970, that the demand for apartments was far in excess of the availability. As the previous text indicated, 71 married students were on a waiting list for high-rise apartments. This is considering only one segment of our population but does express the need for this type of housing. It was therefore suggested that a "band" two blocks wide be established around the west and south side of the existing city limits surrounding the University. Specifically directly west and south of the Fieldhouse and Fieldhouse parking lot. It was further suggested that the remaining two block area between Willow Way and the suggested high-rise area be classified as the medium density housing to act as a buffer zone between the two areas.

Classification High Intensity Single Family

The need for the high intensity single family housing such as mobile home courts has been indicated by the numerous attempts to start such a development in the City-County Jurisdictional Area. There were two possible sites suggested. One at the southeast intersection of Baxter Lane and the projection of 19th Street North. The other site being at the southeast corner of the intersection of South 19th Street and the extension of Stucky Lane. These sites were recommended because of the location to community arterial systems that would allow for the movement of high numbers of traffic in and out of these areas, and the location to the projection of the city sewer system which it was deemed would be necessary to operate such an undertaking as this.

Classification Low Density Housing

All of the remaining areas were left to the work from the existing sub-divisions out. The present value of the existing structures in the existing sub-divisions was to be considered as a starting point and then would blend to the surrounding areas. A classification of "ranchette" - minimum of ten acres per building site was to be super-imposed over all land with a severe limitation due to waste disposal. This would have an eighteen months duration and would be lifted at that time. Hopefully, the study could have been completed by then to better inform the officials concerned as to the true capacity of that land

Meetings were held with each of the area groups and later two follow-up meetings with the committee chairman and co-chairman in regards to these proposals. The basic sentiment was as follows: The major disagreement was from the south area - one that the ten acre classification was too severe, two- the request by Summit Engineering to have their land classified as the light industrial park was generally acceptable by most of the south committee. (This area was included in the area suggested for high density multiple housing). Item three - the area immediately west of the Willow Way subdivision was requested by the owners to be classified as motor business and multiple housing. There was some question on this but no decision was reached pro or con.

The west area suggested that any further development of motor business be limited to designated intersections and not be allowed to cover area from city limits to Four Corners. The northeast, northwest and southeast group were not as active and did not register agreement or disagreement. The biggest criticism was from the agricultural people that they were not adequately represented by the committee chairmen. They were represented on the committees, but there was little communication between them and their representatives.

Item 6 - Selection of final plan and development of more detailed proposal. The discussion in #5 will serve to crystalize the citizens into one agreeable plan. This plan will then be completed in detailed form for final consideration.

We were in the process of meeting with the committees of the various areas to complete the detailed desires for each area, when it was suggested by the City-County Planning Board that Mr. Mayfield meet with those groups. The above mentioned information was forwarded to Mr. Mayfield and it was at his suggestion that we hold up any further development until more detailed information could be gathered. When the final plan is drawn we are willing and able to be of assistance to you to implement this and to inform the freeholders of the area involved.

D. Holmes

AGREEMENT

THIS AGREEMENT is made and entered into this 5th day of August, 1982, by and between the CITY OF BOZEMAN, a municipal corporation, organized and existing under the laws of the State of Montana, hereinafter referred to as "city", and KENNETH KRAFT, KATHRYN A. MOORE, JOHN F. NASH, STEVEN P. LIEBMANN, MARIANNE C. LIEBMANN, ALVIN J. GOLDENSTEIN, WILLIAM HOFFMAN, CHRISTIAN HOFFMAN, MARY REILLY and NASH-SOURDOUGH PROPERTIES, all residing in Gallatin County, Montana, hereinafter referred to as "irrigators".

W I T N E S S E T H

WHEREAS, these parties each own one or more shares in Bozeman Creek Reservoir Company; and

WHEREAS, the parties recognize that Mystic Lake Dam is in need of substantial renovation and repair; and

WHEREAS, it is in the interest of the city to increase the storage capacity of the reservoir at the time such renovation and repair is accomplished with the recognition by the parties that any additional water which is available because of the increased storage capacity will be allocated for use by the city; and

WHEREAS, it has been mutually determined that a proper method to acquire financing for the repairs is for the city to apply for appropriate grants from the State of Montana to complete the repairs; and

WHEREAS, the condition of successful grant applications is that the dam and all associated structures and facilities be owned by the municipality and used for municipal purposes; and

WHEREAS, the parties desire to establish an agreement to allow the city to acquire all shares of stock in the Reservoir if the grant applications are approved.

NOW, THEREFORE, in consideration of the mutual convenants and conditions contained herein, it is hereby agreed as follows:

1. The city shall make application to the Department of Natural Resources and Conservation of the State of Montana for a Renewable Resource

or a Water Development Grant
Development Grant / for funds to be utilized for the purpose of repair, reconstruction and renovation of Mystic Lake Dam. The application shall be for the greatest amount of money available for that purpose. ~~It is understood by the parties hereto that said amount may be $320,000.00.~~

2. The city has or shall make application to the State of Montana for a and/or other available funding.
Community Development Block Grant ~~in the amount of $400,000.00.~~ ~~The Development Block Grant funds shall also be utilized for the purpose of repair, reconstruction and renovation of Mystic Lake Dam in the event that such grant funds become available to the city and in the further event that the city receives a Renewable Resource Developmental Grant in an amount not less than $320,000.00.~~

3. It is contemplated that additional funds ~~in an amount of approximately $30,000.00~~ shall be required to complete the repair, reconstruction and renovation of the dam. The city shall provide such additional funds from whether they be grant
whatever source it has available to it for the purpose ~~and in amounts not to~~ or grant and loan funds.
~~exceed $30,000.00.~~

4. Each irrigator shall deliver to the Clerk of the City Commission of the City of Bozeman, as escrow agent, the share or shares of stock in the Reservoir Company which he or she holds. Additionally, each irrigator shall deliver to the Clerk of the City Commission an executed stock power which authorizes the Clerk to execute the share or shares of stock in the Reservoir Company on behalf of such irrigator in accordance with the terms and conditions of this agreement.

5. In the event that the city shall receive a Renewable Resource or a Water Development Grant
Developmental Block Grant ~~in an amount not less than $320,000.00~~ and receives or some other funding
a Community Developmental Block Grant ~~in an amount not less than $400,000.00~~ in the total amount of the reconstruction costs.
~~and in the further event that the contract for repair, reconstruction and renovation of Mystic Lake Dam shall not exceed $750,000.00,~~ the following shall occur

(a) At the time the contract for repair, reconstruction and renovation is signed by the city the Clerk is authorized to and shall execute on behalf of each irrigator an assignment to the city of the share or shares of stock in the Reservoir Company held by that irrigator. The city shall become

the sole owner of all shares of stock in the company and through the ownership of the shares, become the holder of all of the assets of the Company. The city shall have the right to liquidate the Company or undertake any other activity relating to the Company or its assets. All of the liabilities of the Company as well as its assets shall become the sole responsibility of the city.

(b) The city shall, at no expense to any irrigator, commence and complete within a reasonable time the repair, reconstruction and renovation of Mystic Lake Dam in accordance with the specifications and requirements of the United States Forest Service and in such further manner as the city shall determine is proper and desirable.

(c) The city and each irrigator shall negotiate a contract which shall provide for delivery by the city to the irrigator of ~~seventy (70)~~ 59.50 acre feet of water from Mystic Lake Reservoir for each share of stock that the irrigator held in the Company. The delivery shall be at such times as the irrigator shall demand the water during each irrigation season from and after the date of completion of the repair, reconstruction and renovation of the dam. The water shall be delivered at the rate of fifty (50) miner's inches of flow for a period of up to /twenty-eight (28) days or increments thereof. The delivery and measurement of the water by the city shall be at those places along Sourdough Creek at which such delivery and measurement have historically been made.

In the event of drought, earthquake or other unforeseen natural occurrence resulting in the maximum amount of water which is actually stored in the reservoir in the year of the occurrence, when added together with any amounts of water delivered to any one or more irrigators prior to the time when the maximum amount of water within the reservoir is reached during that year, being less than the maximum storage capacity of the reservoir, each irrigator shall receive, as his pro rata share of such water, a percentage amount which is equal to the percentage of such water as compared to the total storage capacity. The reduction in the amount of water delivered to each irrigator shall not be allowed if the reduction in the amount of water in storage occurs as a result of any

deliberate or negligent act or any deliberate or negligent omission on the part of the city in its control of the dam and reservoir.

In the event of reduction of delivery of water by the city to any irrigator for the reasons set forth above, the irrigator shall not be required to pay assessment for water not delivered by the city and therefore, not received by him.

(d) Each irrigator shall pay to the city an annual assessment for the water he or his successor in interest shall receive or is entitled to receive. During the first five years after initial receipt of water the rate shall be ~~$5.50~~ the actual cost of the water including principal, interest and operation and maintenance. per acre foot for each acre foot the irrigator receives. However, should the quantity of the water in the dam be insufficient to provide the ~~70~~ 59.5 acre foot requirement per irrigator, then each irrigator shall pay ~~only~~ actual costs divided by the water available. for ~~the water actually received by him.~~ ~~Commencing on the fifth annual anniversary date of receipt of the water and continuing on every fifth year thereafter the assessment per acre foot shall be adjusted to reflect the increased cost of operation and maintenance of the dam during the preceding five years.~~ The ~~average increase or decrease in the~~ and financing cost of operation and maintenance of the dam and associated structures and facilities ~~over the first five years~~ shall be determined by computing the annual ~~percentage increase or decrease in~~ cost for each year, adding those water available. figures together and dividing by five. ~~That figure shall be multiplied by the base assessment of $5.50. The resultant product shall be added to the base rate and such figure shall be the new base rate for the succeeding five years. Payment shall be made by the irrigator each year in cash within thirty (30) days after receipt of a statement of account from the city.~~

In computing the cost of operation and maintenance of the dam and all costs associated structures and facilities ~~no amount~~ shall be included which necessary represents a ~~capital~~ expenditure.

~~In no event, however, shall the increase or decrease in the amount of the assessment on any adjustment date be greater than 20% of the assessment rate for the previous five year period.~~

The date in each year from which computations are to be made shall be the anniversary date of the first statement of account mailed by the city to each irrigator.

6. The contractual right of each irrigator to receive water shall be freely assignable, subject only to the right of first refusal hereinafter described.

In the event any irrigator shall, at any time, receive a bona fide offer to purchase his or her contractual right to receive water from Mystic Lake Reservoir, or any part thereof, and in the further event that the irrigator shall decide to sell the same for the amount and on the terms set forth in the offer then in that event, the irrigator must, before selling such right, promptly give the city actual notice in writing of the terms of the offer and of irrigator's willingness to sell for the price and on the terms offered, and the city shall have a first right of refusal to purchase the contractual right at the price and on the terms contained in the offer. In the event any such right of first refusal is not exercised within sixty (60) days from the date of receipt of such offer by certified mail or the delivery of such written offer in person, then the irrigator shall be free to sell the contractual right on the same or better terms than those offered, but shall not be free to sell on any lesser terms than those offered to the city.

The failure of the city to accept any such offer shall not constitute a waiver by the city of its right of first refusal on any other contractual right to receive water from Mystic Lake Reservoir. It is the intention of the parties hereto that this right of first refusal shall be binding on each irrigator, his heirs, successors and assigns.

. It is understood and agreed that in the event any irrigator shall have no need for the use of any or all of the water which he is entitled to receive from the city from Mystic Lake Reservoir in any one year, the irrigator may give notice to the city that he does not desire to receive such water and the city shall not deliver the water to him but may use the water for its own purposes. The irrigator shall then have the obligation to pay an assessment for that year of $1.00 per acre foot for the water which he is otherwise entitled to receive but did not elect to receive.

8. In the event that the city shall receive a Renewable Resource or Water Development Grant requested Development ~~Block~~ Grant /in an amount less than ~~$320,000.00~~ or shall receive no such grant at all, or in the event that the city shall receive a Community or other funding the balance of the construction cost Developmental Block Grant/ in an amount less than ~~$400,000.00~~ or shall receive no such grant at all, or in the further event that the contract for repair, that proposed in the reconstruction and renovation of Mystic Lake Dam shall exceed ~~$750,000.00,~~ the preliminary engineering report prepared by its consultants, the city may elect to receive the shares of stock in the Reservoir Company which are held in the escrow account and undertake all responsibilities and obligations of this agreement and receive the benefits of this agreement. Alternatively, the city may terminate this agreement and direct the Clerk of the City Commission to return the share certificates and accompanying stock powers held in the escrow account to the owners of the certificates. In the event of such termination, all rights and responsibilities of any party hereunder shall cease and no party shall be further bound by the terms and provisions of this agreement.

It is recognized, understood and agreed that the repair, reconstruction and renovation of Mystic Lake Dam will probably prevent the storage of water during the construction period. The city shall have no obligation to deliver water to any irrigator if it is prevented from doing so because of such construction activity and no irrigator shall have any obligation to pay an assessment for water during the construction period when the city is unable to make delivery of water to the irrigator.

9. During the term of the escrow, the Bozeman Creek Reservoir Company shall continue in existence and shall remain the owner of Mystic Lake Dam and its associated structures and facilities. During the term of the escrow each present shareholder shall have the right to vote his or her shares in the Company at all Company meetings in accordance with the Company By-Laws and shall have all of the responsibilities resulting from the ownership of the stock. Furthermore, each shareholder shall have the right to use the water represented by his or her shares of stock as though such shareholder held physical possession of the shares.

10. All covenants and agreements herein contained shall extend and be obligatory upon the heirs, personal representatives or assigns of the respective parties hereto.

IN WITNESS WHEREOF, the parties hereto have signed and sealed this agreement the day and year first above written.

CITY OF BOZEMAN:

BY: Alfred M. Stiff

ATTEST:

IRRIGATORS:

Kenneth Kraft

Kathryn A. Moore

Steven P. Liebmann

John F. Nash

Marianne C. Liebmann

Goldenstein Brothers by

Alvin J. Goldenstein

William Hoffman

Christian Hoffman

Mary Reilly

Nash-Sourdough Properties

BY:

State of Montana)
: ss.
County of Gallatin)

I, the undersigned, hereby certify that the above, Alfred M. Stiff, did place his signature with an attestation by Robin L. Sullivan, in my presence, this 5th day of August, 1982.

Notary Public for
State of Montana
Residing at Bozeman, Montana
My Commission expires 4-30-85

(Notary Seal)

Expert Report of David O. Baldwin

IN THE WATER COURT OF THE STATE OF MONTANA
UPPER MISSOURI DIVISION
GALLATIN RIVER BASIN 41H
PRELIMINARY DECREE

Case 41H-0094-R-2021

41H 30459-00
41H 30460-00

City of Bozeman v. USA (USDA Forest Service)

PREPARED FOR:

CITY OF BOZEMAN AT DIRECTION OF
PETER G. SCOTT, LAW OFFICES, PLLC
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Bozeman, Montana 59718-6491

Attorneys for City of Bozeman

March14, 2024

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1. PURPOSE

The purpose of this report is to describe the history of Mystic Lake and the historical and current use of Mystic Lake water right claims 41H 30459-00 (municipal) and 41H 30460-00 (irrigation) and how City of Bozeman (COB) retains the ability to deliver shareholder water to the historic POU service area for claimed beneficial purposes.

This report provides a listing of water right claims having Sourdough Creek as a source and describes the historical and current uses of COB claimed water. This report explains how Mystic Lake water was managed in a dynamic manner with the capability of the source to provide multiple fills per year, including an initial spring fill of Mystic Lake and then subsequent additions to lake storage whenever water was available during late snowmelt and seasonal precipitation events.

This report discusses the service area of claims 41H 30459-00 and 41H 30460-00 responds to objections to COB claims and how COB planned to use this water for current and future needs.

2. QUALIFICATIONS

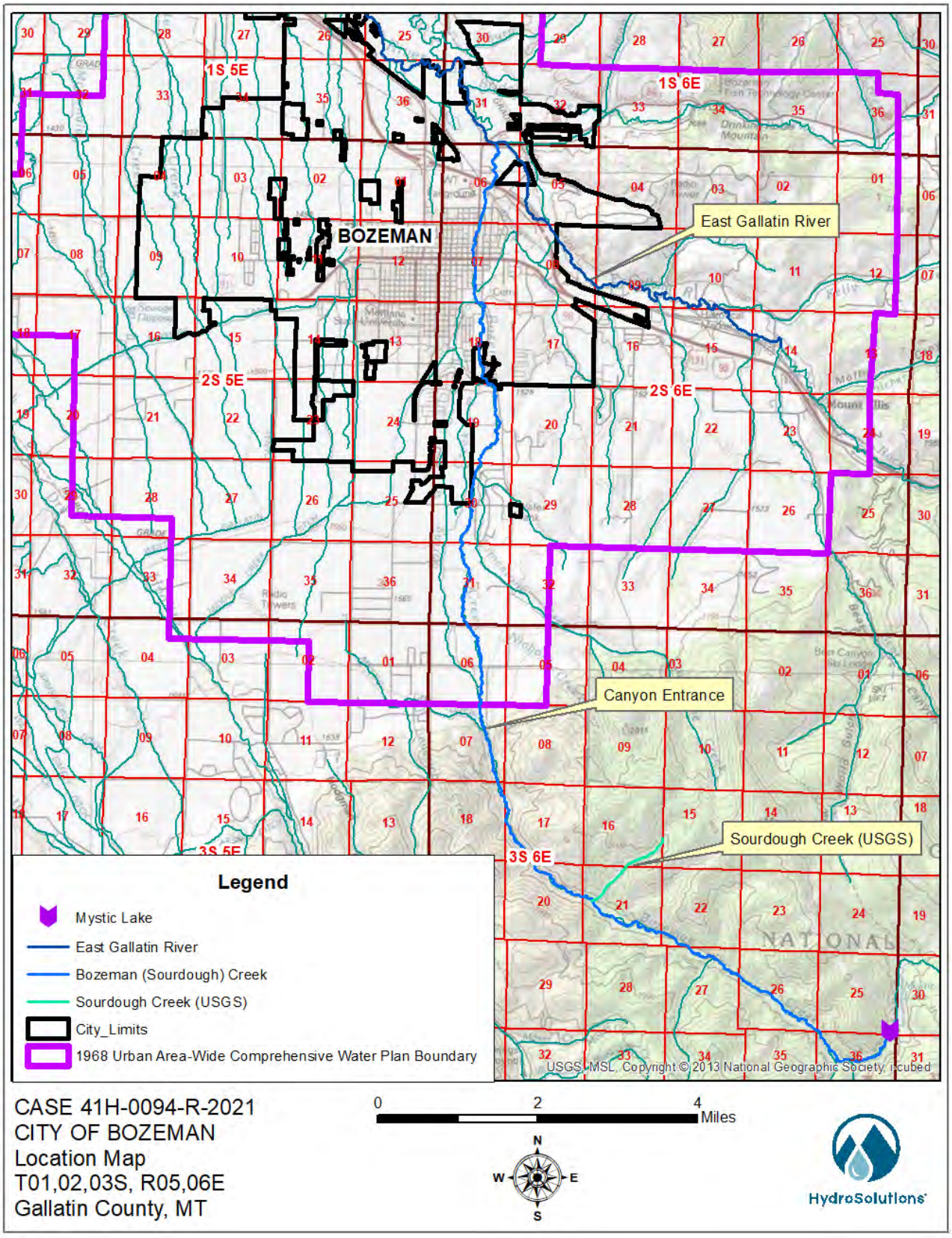
I am a Senior Hydrogeologist and Senior Water Rights Specialist with HydroSolutions Inc in Helena, Montana. I earned a bachelor's degree in geology from the University of Montana in 1978 and worked as an exploration geologist for 17 years. In 1997, I graduated with a master’s degree in hydrogeology from Montana Tech. From 1995 to 2000 I was a Senior Hydrogeologist and Geoscience Program Manager for Integrated Geoscience Inc in Helena, Montana. I have worked in the field of water rights since 2000 when I co-founded Water Right Solutions Inc. Water Right Solutions merged into HydroSolutions in 2016.

I have worked as an expert witness in numerous water rights cases and have testified in Water Court and in DNRC administrative hearings. I have worked on many cases, including adjudication issues that settled prior to formal hearings or prior to court proceedings.

3. BACKGROUND

The Sourdough Creek drainage originates in the Gallatin Range south of Bozeman, Montana (Figure 1). Sourdough Creek is also known as Bozeman Creek. Names are sometimes differentiated by creek location relative to the USFS gate at the Mystic Lake parking lot, with Sourdough Creek above this point and Bozeman Creek below it. US Geological Survey (USGS) maps list the entire drainage as Bozeman Creek and shows Sourdough Creek as a very small tributary entering from the north about 2.6 miles above the entrance to the canyon above the COB treatment plant (Figure 1). Also, the name Bozeman Creek is used in the Water

Figure 1. Location map.



Resource Survey (1961) (WRS). The USGS and WRS usage of Bozeman Creek are the first and second choices for source name based on (ARM 36.12.114 – Source Name Standards). The listing in the DNRC water rights database, although allowed as the third choice, causes confusion, as does local use of the name Sourdough Canyon and Sourdough Canyon Road. This report interchanges the names but attempts to utilize Sourdough Creek only when discussing water rights.

The basin above the start of the canyon is 30.1 square miles in area. Elevations ranging from 5,254 feet to 9,593 feet provide a relief of 4,339 feet and a mean basin elevation of 7,054 feet. Mystic Lake is at an elevation of about 6,400 feet in SESESE Section 25, T3S R6E, about 11 miles southeast of Bozeman. The basin above the dam site is about 5.1 square miles.

Bozeman Creek Reservoir Company (BCRC) was first incorporated on March 6, 1901 for a period of 20 years for the purpose of capturing and storing water not already claimed from Mystic Lake and Bozeman Creek. Capital stock of 20 shares were issued at $500/share, with 15 shares subscribed. The purpose of the company was to appropriate excess water from Bozeman Creek with a storage component in Mystic Lake. On September 12, 1901 BCRC filed a claim on 3,000 mi (75 cfs) continuous flow on waters for all the surplus waters of Mystic Lake and Bozeman Creek not owned by prior appropriators. A future Mystic Dam was called out for diversion of the storage component and Bozeman Creek was claimed as a natural carrier to COB and other places of use within the historic service area.

On June 27, 1922, BCRC filed to reestablish the company for a period of 40 years. Capital stock was issued consisting of 60 shares at $500/share. Twenty shares were subscribed including four to COB. In 1962 BCRC passed a resolution extending the company another 40 years and in 2002, they filed an amendment to form a perpetual corporation. Each subscribed share is 100 MI (2.5 CFS) for 14 total days, providing an instantaneous flow rate of 50 CFS (for 20 shares). COB owned 10 shares of this BCRC stock.

Mystic Dam operated until it was breached in stages from 1982 to 1985 for safety reasons. On September 9, 1985 COB Commission Resolution 2572 relinquished all interest in the Mystic Dam site to the US Forest Service. On April 30, 2019, BCRC deeded all interest in claims 41H 30459-00 and 41H 30460-00 to COB. BCRC shareholders continue to use their shares of water when it is available in priority.

4. SOURDOUGH CREEK WATER RIGHTS

A. Water Rights from Sourdough Creek

Water right places of use (POU) from Sourdough Creek are shown on Figure 2 and summarized in Table 1 below. COB claims are summarized in Sections 4.B and 4.C below. An index by priority is provided in Appendix A.

Figure 2. POUs for all claimed water from Sourdough Creek.

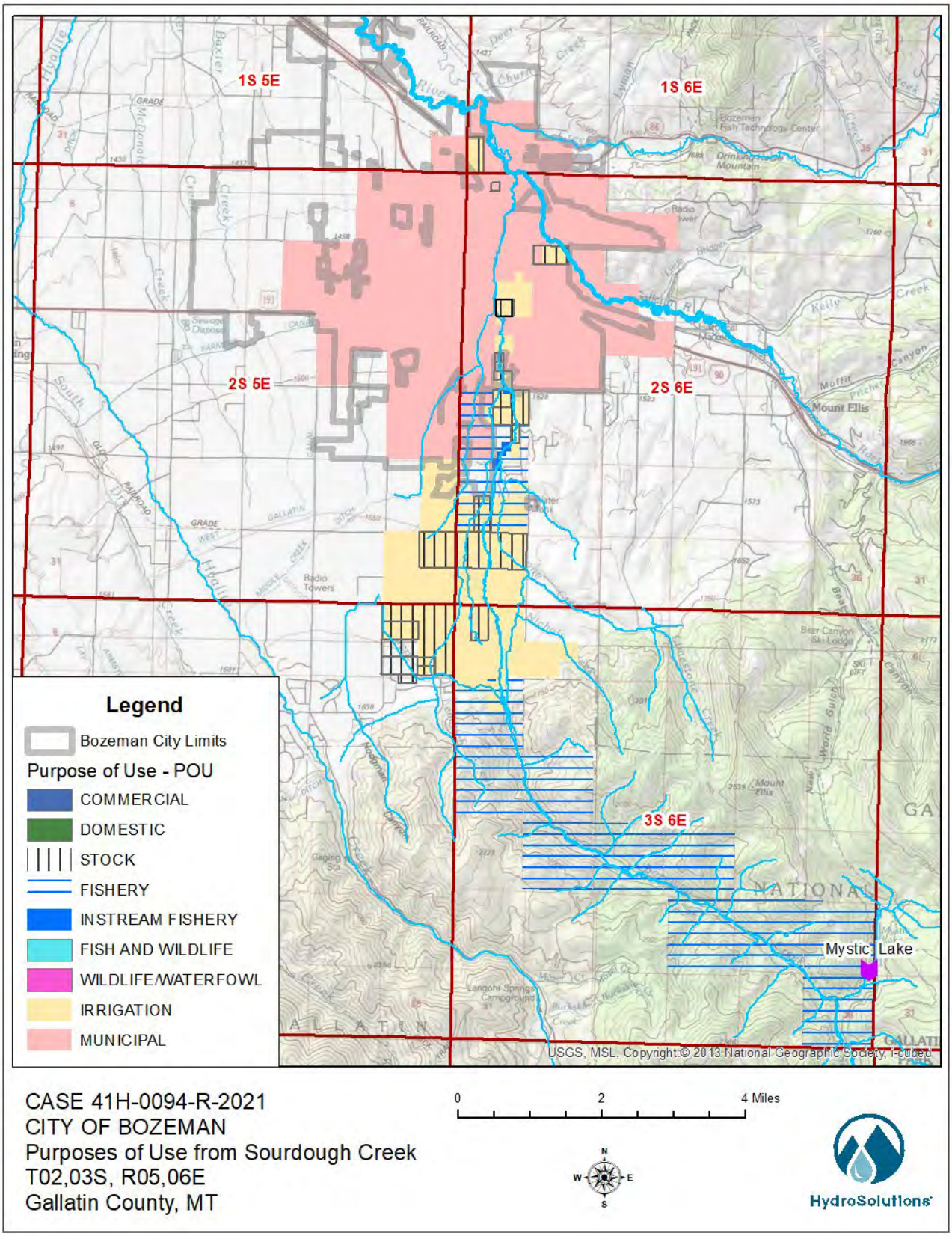


Table 1. Summary of water rights claiming Sourdough Creek as source.

# Claims	Description
421	Active statement of claim place of use listings for all claimed purposes
116	Unique claims (93.6 CFS, 38,596 AF)
>76	Irrigation claims (74.8 CFS, 7,034 acres)(COB 41H 30460-00 for 13,000 AF)
>22	Stock claims (direct from source)
>10	Municipal claims (all COB, 6.7 CFS, 13,635 AF)
>2	Each for commercial and instream fishery
>1	Each for domestic, fish and wildlife, fishery, and wildlife+waterfowl
102	Non-COB claims (83.6 CFS and 11,736 AF)
79	Non-COB claims senior to Mystic Lake storage (66.3 CFS and 3,299 AF)
55	Non-COB IR claims senior to Mystic Lake storage (65.4 CFS and 3,058 AF)

B. City of Bozeman Water Rights from Sourdough Creek

COB has 14 water rights claiming Sourdough Creek as the source (Table 2)(Figure 3). Of these, 13 are pre-July 1, 1973 claims (9.94 CFS and 22,310 AF). Included is a COB 1985 water reservation listed for 47.3 CFS and 2,857 AF, but this is reduced to 10.1 CFS and 609 AF if a contract between COB and DNRC is signed for water from expansion of Hyalite Reservoir.

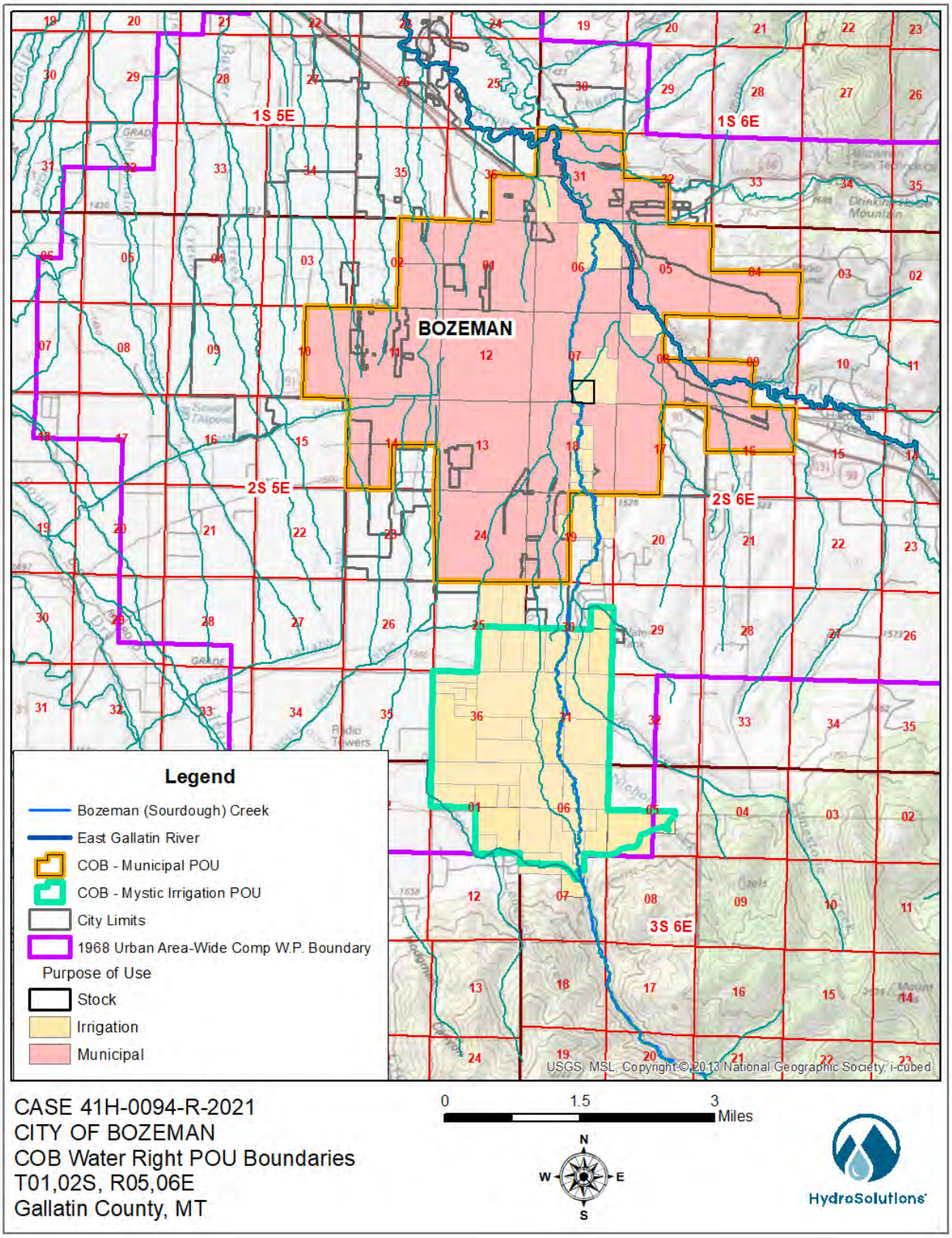
COB rights are summarized as:

- Ten claims for municipal use (including the reservation).
- One claim for stock direct from source.
- Three claims for irrigation use.
- The active direct-flow rights total 9.9 CFS and 5,003.3 AF including irrigation
- Municipal rights (non-reservation, non-Mystic) total 6.59 CFS and 4,778.29 AF

Table 2. Priority Index - City of Bozeman water rights from Sourdough Creek.

WR #	TYPE	VER TYPE	PRIORITY	D TYPE	PURP	Max Flow (CFS)	Max VOL (AF)	Acres Irr
41H 99632 00	SOC	CHANGE	1865.09.30	HGATE	IR	3.0	225.0	86
41H 140873 00	SOC	P DEC	1866.07.31	HGATE	MC	0.15	108.37	
41H 140880 00	SOC	P DEC	1866.07.31	HGATE	MC	0.18	127.8	
41H 140987 00	SOC	REEXAM	1866.07.31	HGATE	IR	0.35	0	60
41H 140874 00	SOC	P DEC	1866.12.31	HGATE	MC	1.25	907.38	
41H 140875 00	SOC	P DEC	1866.12.31	HGATE	MC	1.25	907.38	
41H 140876 00	SOC	P DEC	1866.12.31	HGATE	MC	1.25	907.38	
41H 140878 00	SOC	P DEC	1866.12.31	HGATE	MC	1.25	907.38	
41H 140877 00	SOC	P DEC	1877.12.31	HGATE	MC	0.63	456.3	
41H 140879 00	SOC	P DEC	1877.12.31	HGATE	MC	0.63	456.3	
41H 30459 00	SOC	REEXAM	1901.09.12	HGATE	MC	Mystic Res	6,000	
41H 30460 00	SOC	REEXAM	1901.09.12	HGATE	IR	Mystic Res	13,000	2518
41H 132781 00	SOC	P DEC	1942.08.01	DIRECT	ST			
41H 70118 00	WatRes	ORIG	1985.07.01	- -	MC	47.3	2,857	

Figure 3. Sourdough Creek diversions and places of use.



Abstracts for COB water rights are provided in Appendix B.

C. Mystic Lake Water Rights

Claims 41H 30459-00 and 41H 30460-00 were filed by BCRC on September 12, 1901 for 3000 MI (75 CFS) of waters from Mystic Lake and Bozeman Creek and their tributaries, inlets, and outlets. Boundaries of legal descriptions for claims 41H 30459-00 and 41H 30460-00 are shown on Figure 3 above. Purposes of use claimed by the original notice of appropriation include:

> *(9) Said water is also appropriated for the purpose of selling, leasing and delivering the same to any city, town, village or municipality in said County of Gallatin, Montana, or to the inhabitants thereof, to be by them used for any lawful, useful or beneficial purpose (10) it is further declared to be one of the purposes of said Corporation in appropriating and conserving said water to develop, improve, use, lease, sell, convey or otherwise dispose of water powers and the sites thereof and lands necessary and useful therefore or .for the industries and habitations arising or growing up or to arise or grow up in connection with or about the same.*

The appropriation is for junior direct-flow water that clearly included municipal use, industrial use, as well as the ability to lease or sell water. Storage was an important component for extending use into the summer. COB was a historical owner of shares and municipal use was an original purpose of use in the appropriation. COB purchased shares whenever they became available, expanding their ownership to 10 of the 20 subscribed shares before BCRC transferred ownership of claims 41H 30459-00 and 41H 30460-00 to COB by Quit Claim Deed on April 30, 2019. Abstracts and Statements of Claim are provided in Appendix B.

There is no record of a call on claims 41H 30459-00 and 41H 30460-00.

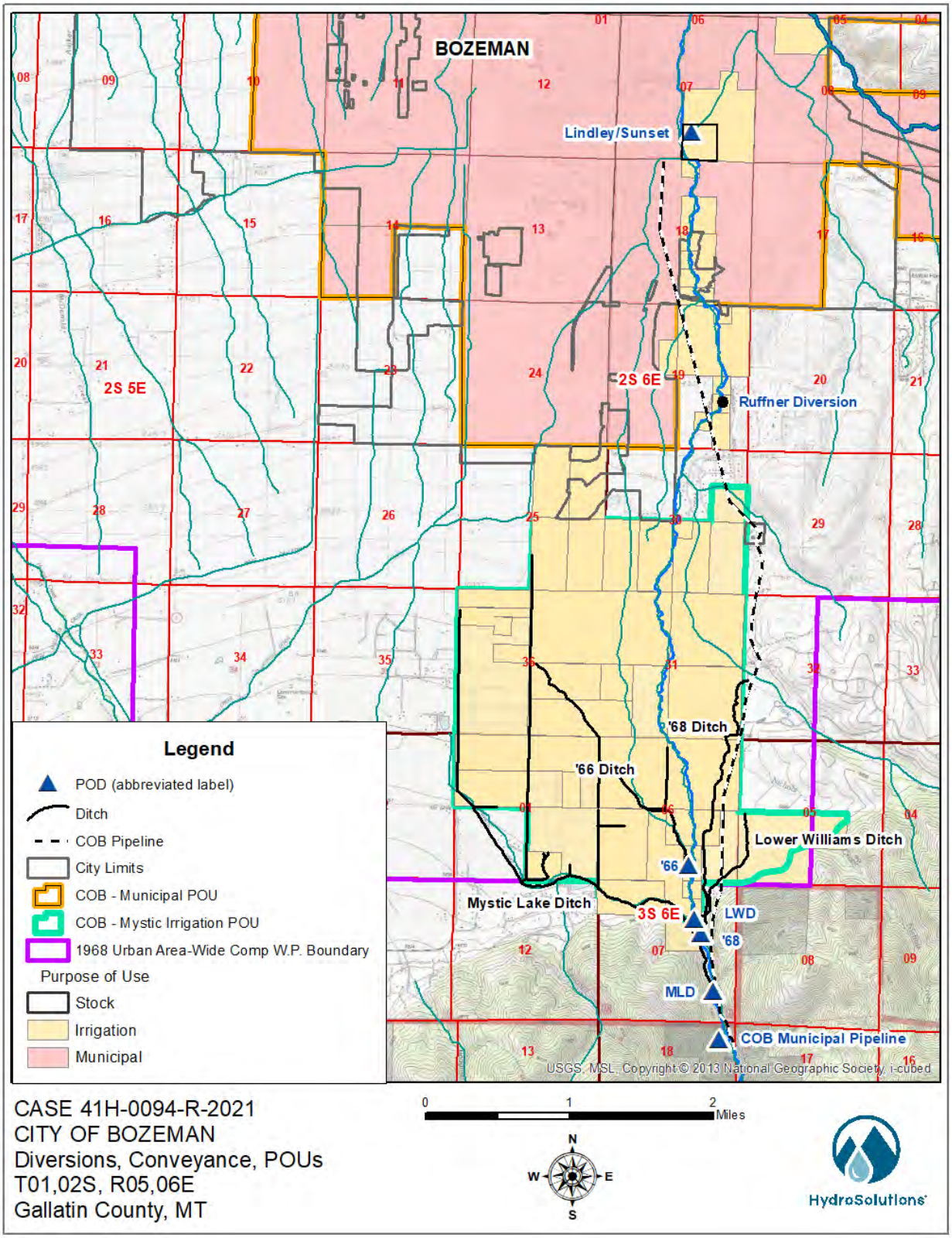
5. DIVERSION OF SOURDOUGH CREEK WATER

All Sourdough Creek water-right diversions below the COB intake and above the Ruffner diversion are shown in Figure 4. Four are still active, plus the COB intake facility which diverts and pipes water to the treatment plant before conveyance to places of use. The Upper Williams Ditch is no longer used and is not shown in. Table 3 provides active diversion locations by latitude-longitude and legal description.

Table 3. Active ditches on upper Sourdough Creek below canyon entrance

Diversion	Lat	Long	Legal
COB intake facility (pipeline)	45.5821	-111.02221	SE.NE.NE, Sec 18, T3S R6E
Mystic Lake Ditch (west side)	45.5878	-111.02516	NW.SE.SE, Sec 7, T3S R6E
Lower Williams Ditch (east side)	45.5944	-111.02673	NW.SE.NE, Sec 7, T3S R6E
68 Ditch (east side)	45.5922	-111.02650	SW.SE.NE, Sec 7, T3S R6E
66 Ditch (west side)	45.9999	-111.02898	SE.SW.SE, Sec 6, T3S R6E

Figure 4. City of Bozeman diversions and conveyance.



Estimates of the ditch capacity needed for full-service irrigation from the four historical diversions on Sourdough Creek (Table 3, not including COB intake diversion) are shown in Table 4. The claimed flow rates in column 2 are derived from a DNRC Query System search of irrigation diversions by ditch name. The resulting total of 63.9 CFS is the total combined flow rate claimed by the four ditches. Duplicate listings, where flow was carried by two ditches, was split evenly. Column 3 shows percentage of the total flow rate claimed for each ditch. The 75 CFS of claimed BCRC flow rate was applied to each ditch by the percentage of flow in column 3, producing a total estimated combined flow rate of 138.9 CFS. Based on available Bozeman Creek flow data from 1937-1986 (COB, 1991 (by HKM)), this combined flow rate can be provided in some years by Sourdough Creek flows in May or June. The flow rates attributed to each diversion in Table 4 are reasonable and are consistent with site visit observations.

Table 4. Flow rates claimed by Sourdough Creek ditches.

DITCH	Claimed (CFS)	% Flow	BCRC (CFS)	Total (CFS)
Mystic Lake Ditch	36.50	57.1%	42.8	79.31
66 Ditch	13.38	20.9%	15.7	29.08
68 Ditch	11.55	18.1%	13.6	25.10
Lower Williams Ditch	2.5	3.9%	2.9	5.43
Totals	63.9	100%	75.0	**138.9**

6. MYSTIC LAKE VOLUME CAPACITY

Both Mystic Lake claims have a volume issue remark stating, “THE CLAIMED VOLUME APPEARS TO BE EXCESSIVE FOR THE CLAIMED PURPOSE. THE CLAIMED VOLUME EQUALS 9.5 TIME THE CAPACITY OF THE RESERVOIR.” Claim 41H 30459-00 has a further issue remark comment stating, “RESERVOIR RECORD HAS BEEN MODIFIED AS A RESULT OF DRC REVIEW UNDER MONTANA WATER COURT REEXAMIY DNRNATION ORDERS.” Under reservoir capacity, both claims state, “THE CAPACITY, DAM HEIGHT, MAXIMUM DEPTH AND SURFACE AREA HAVE BEEN ESTIMATED BY DNRC.

There is no record of the DNRC Mystic Lake volume estimation in the DNRC claim files. A request for the volume estimate from the DNRC Bozeman Regional Office indicates no formal estimate is available.

A landslide that dammed Bozeman Creek created the original Mystic Lake, which had a surface area of 15.8 acres (Fargo, 1969). Mystic Dam was constructed in 1903-1904 to a height of 43 feet (Fargo, 1969). In 1959 the dam height was raised an additional two feet. The total capacity of Mystic Lake Reservoir was calculated by Fargo (1969) at 1,190.44 AF.

Mystic Lake volume is also estimated in other reports.

1. USCOE (1980, Section 2.2.2) reports the dam impounds 1,520 AF, with a volume of 1,190 AF at the spillway crest.

2. CSSA (1982, Section 1.2) gives an impoundment volume of 1,520 AF based on a dam height of 48 feet and a dam crest elevation of 6,401.9 feet. The volume based on the spillway crest of 6,396.2 feet is reported by CSSA at 1,190 AF.
3. AE2S (2024) also estimates the capacity of the historic Mystic Reservoir at 1,190 AF.

A conservative estimate of the historical usable volume of Mystic Lake is 1,190 AF.

7. 41H 30460-00 – HISTORICAL AND CURRENT IRRIGATED ACRES

Water right 41H 30460-00 claims 2,518 acres of irrigation within a legal description for the service area boundary of 3,116 acres.

The Gallatin County Water Resource Survey (WRS) shows irrigation as it existed at publication in January, 1953. Figure 5 combines the four individual WRS township/range maps that cover the area. The POU boundary for municipal claim 41H 30460-00 and the Urban Area-wide Comprehensive Water Plan boundary are shown for reference. Also shown is the legal description boundary of the 2,518-acre irrigation POU claimed by COB for Mystic Lake claim 41H 30460-00. The WRS irrigated area within the COB POU outline is 2,075 acres. There are an additional 275 irrigable acres not colored on the WRS map, indicating this area may not have been actively irrigated when inspected. These acres raise the total WRS irrigable area in the COB POU to 2,345 acres. Figure 6 is a copy of a BCRC-produced map using the WRS map to show historic shareholder irrigation, including an additional 530 acres to the north and east of the POU boundary for claim 41H 30460-00. Based on the WRS and BCRC map reviews of acres within the claimed POU, total WRS irrigation (2,075), other irrigable land (275 ac), and 530 acres of additional BCRC shareholder land outside the claimed POU total 2,875 acres.

Current irrigation within the claimed POU was evaluated by interpretation of 2021 imagery (MSL, 2023) showing 2,818 total irrigable acres - 1,835 acres of cropland and 983 acres of residential land with irrigation or irrigable landscaping (Figure 7). Streams and wetlands totaling 223 acres are not included in the acreage totals.

Table 5 provides a summary of the acres discussed above.

Table 5. Summary of acres identified in and near COB POU of 41H 30460-00.

Acres	Description
2,518	Ac– claimed under water right 41H 30460-00
3,360	Ac – WRS + BCRC shareholder map+ other irrigable land in 41H 30460-00 POU
2,818	Ac – on 2021 air photo: 1,835 cropland + 983 residential (landscape)

Figure 8 shows the locations of original BCRC shareholders (also shown on Figure 6) and the 2021 locations of owners having ‘share rights’. These share rights were established when BCRC shareholders transferred all shares and ownership of Mystic storage claims 41H 30459-00 and 41H 30460-00 to COB in the August 5, 1982 escrow agreement between the ‘city’ and

Figure 5. WRS irrigated and irrigable acres in COB POU legal boundary.

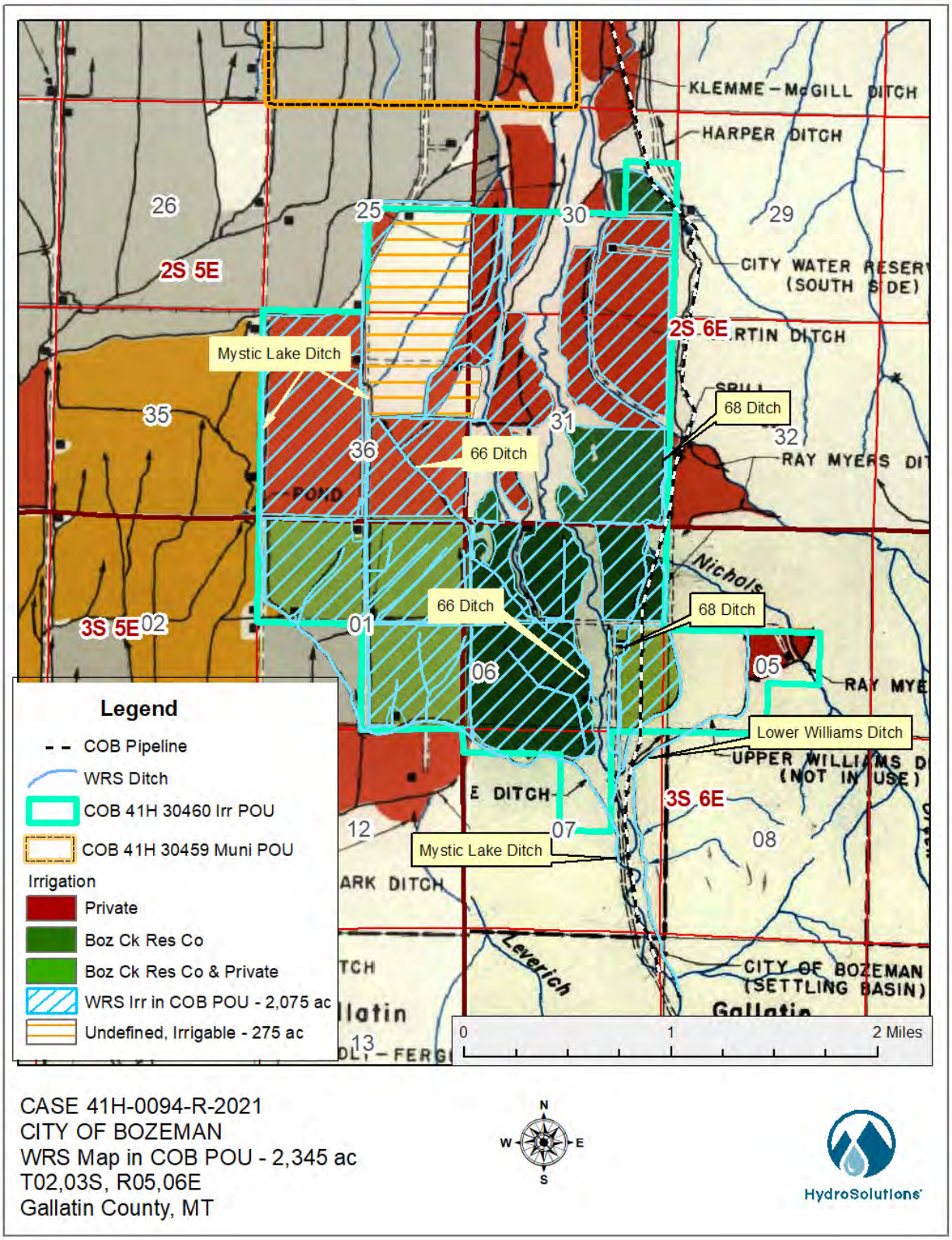


Figure 6. BCRC map showing COB POU boundaries and additional shareholder use.

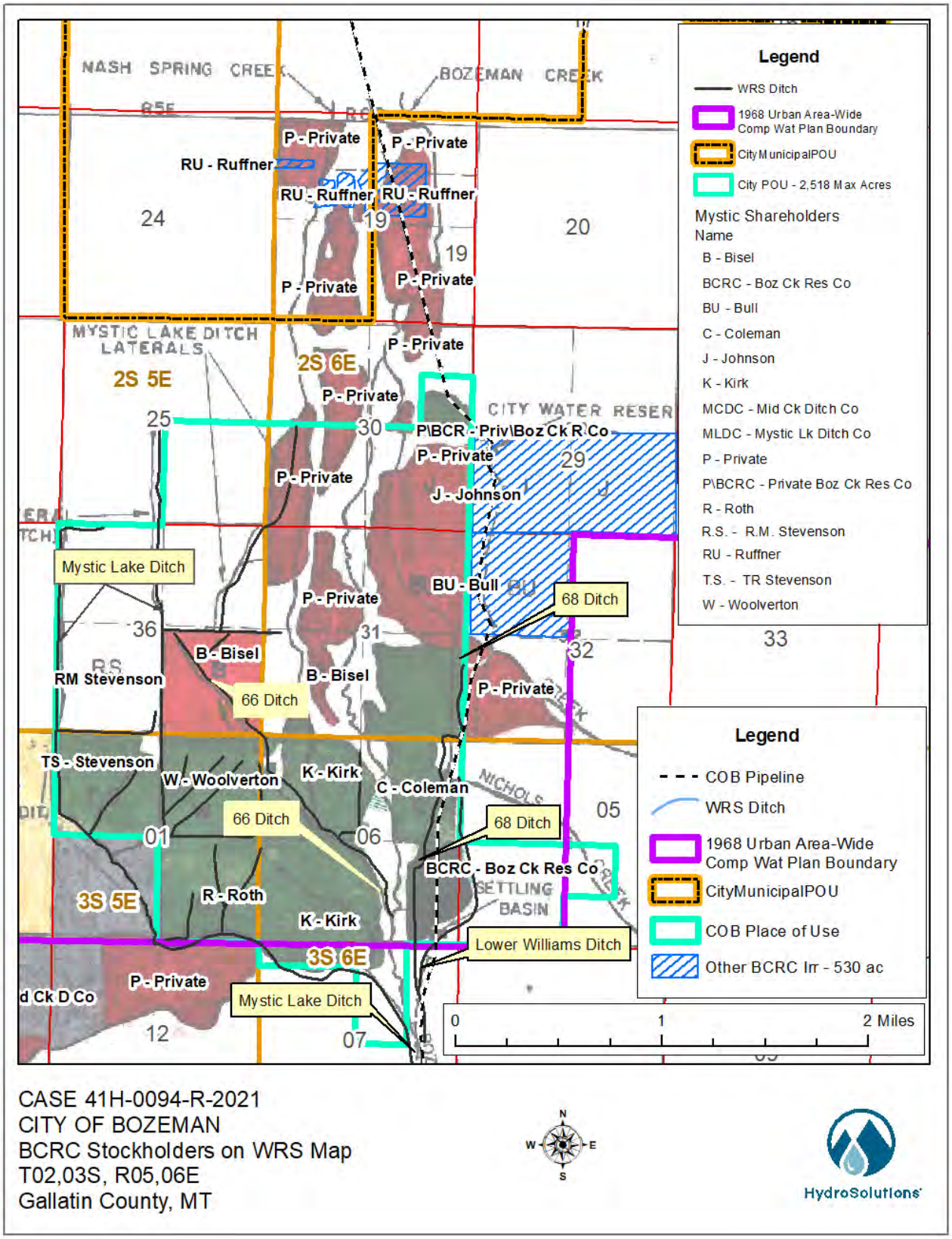


Figure 7. 2021 irrigation within COB 41H 30460-00 POU boundary.

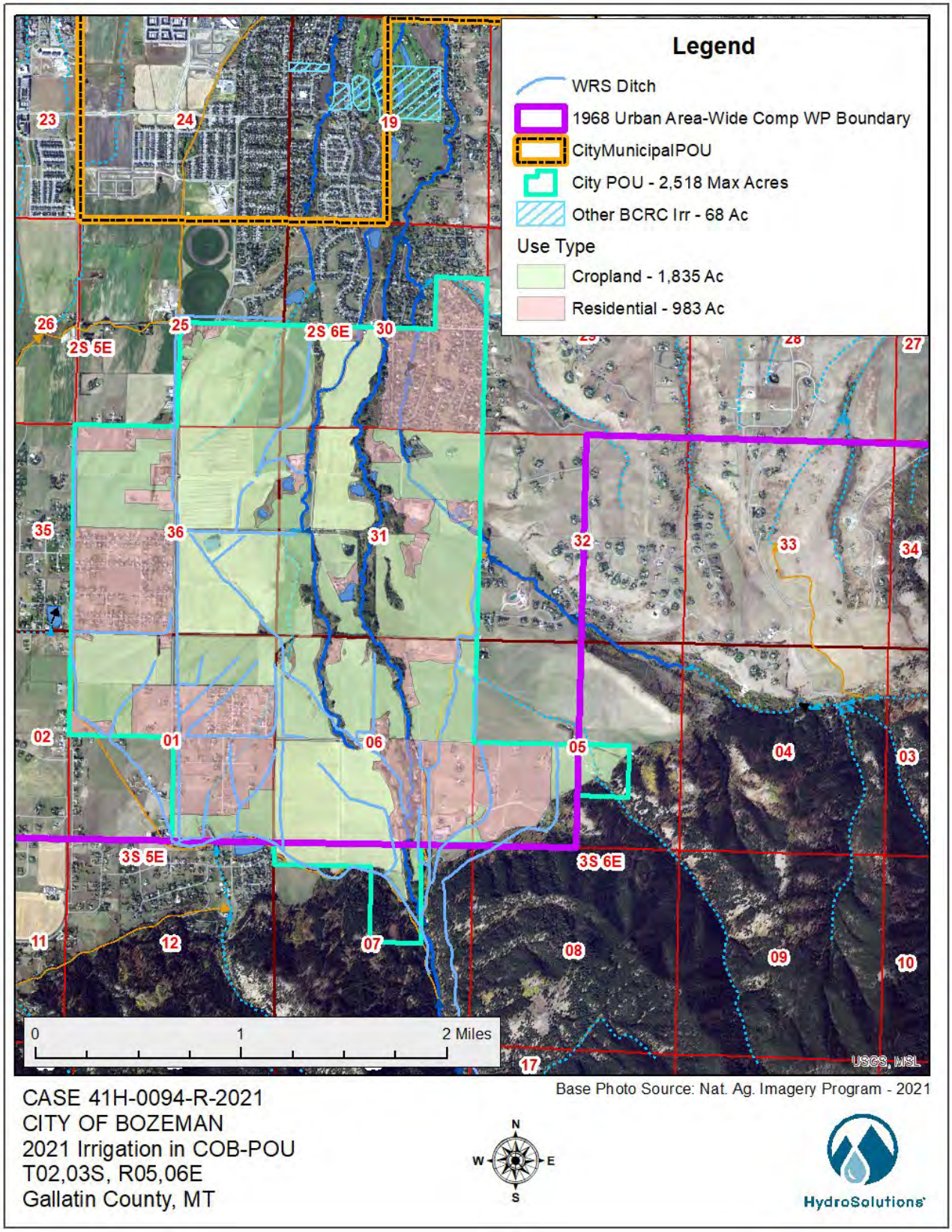
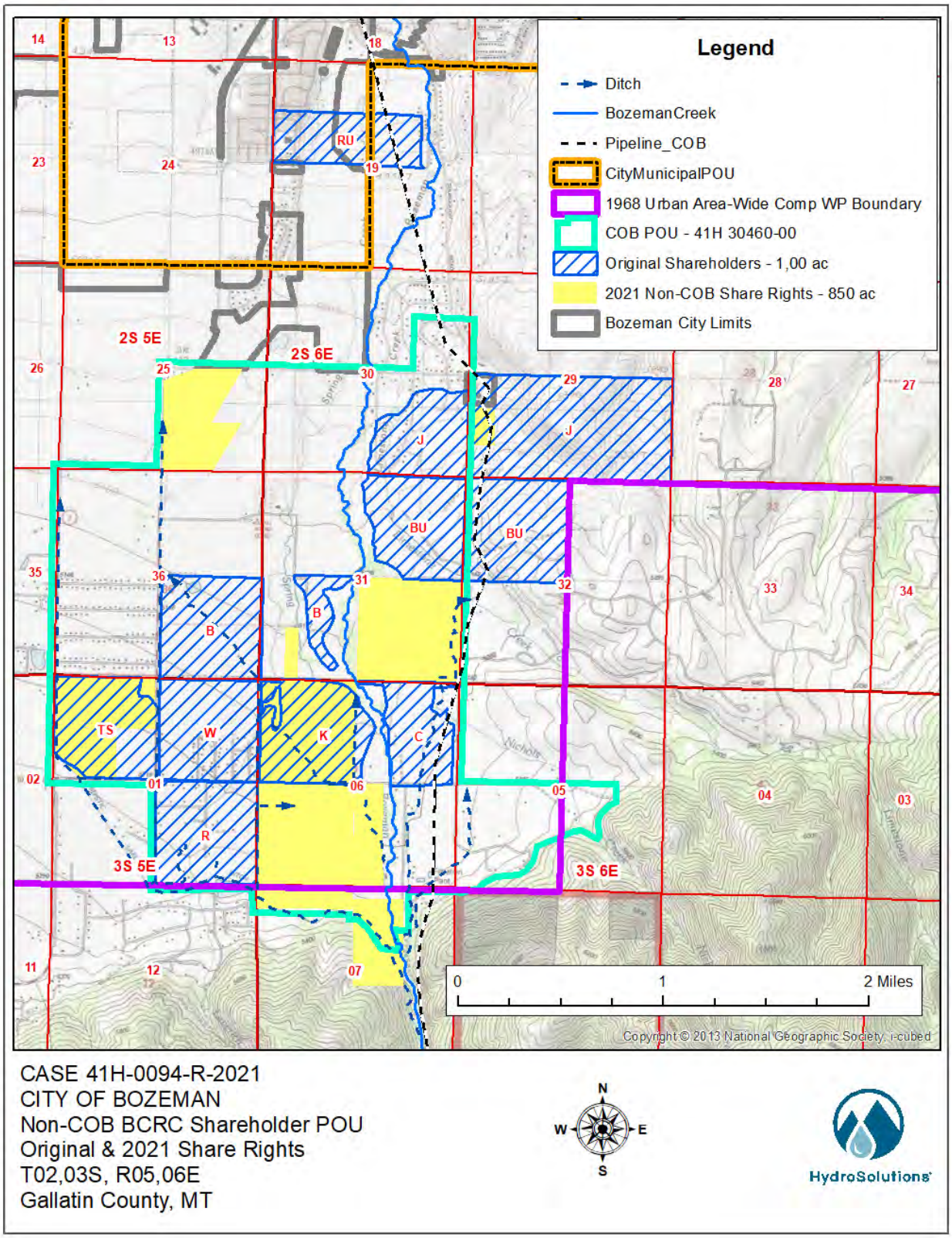


Figure 8. Locations of original BCRC shareholders and 2021 locations of share rights.



the named 'irrigators' (Appendix C). The transfer formally occurred on April 30, 2019 when BCRC deeded all interest in claims 41H 30459-00 and 41H 30460-00 to COB. The agreement retained rights of irrigators to any stored water that COB might develop if a new dam could be permitted and financed. The City agreed to deliver 59.5 AF per former share with 50 MI up to 28 days/year. Any increased storage capacity would be "*allocated for use by the City*". COB also retained right of first refusal for anyone wanting to sell their share rights.

8. SERVICE AREA FOR COB IRRIGATION CLAIM 41H 30460-00

The POU for water right 41H 30460-00 claims 2,518 acres of irrigation. within a legal description area of 3,116 total acres. The following items discuss the service area.

1. Shareholders bought and sold BCRC shares over time. COB increased their ownership from 3 shares to 10 shares by purchasing shares over time.
2. The historical transfer of shares included movement of water within the established larger municipal service area.
3. Upon change in ownership of claims 41H 30459-00 and 41H 30460-00, COB agreed (1982 Escrow Agreement, Appendix C) to distribute water to former shareholders. Shares are still bought and sold and transferred and used within COB's service area. COB retains right of first refusal to purchase shares.
4. A review of the 2021 air photo shows 983 acres within the claimed POU of 41H 30460-00 have been converted to residential use. If 80% of this area is considered available for irrigation and landscaping (786 acres), these residential areas are potential delivery areas for COB.
5. Available shareholder water from Bozeman Creek could be utilized, in priority, on lands having junior priority to the 9/12/1901 priority date of COB claim 41H 30460-00. These distributions by COB would be during high spring flow in May through July and during/after large summer precipitation events.
6. COB has been diverting and using water under municipal claim 41H 30459-00 since Mystic Dam was removed in 1984 (see Section 12).
7. Original BCRC shareholders used water within the COB municipal (41H 30459-00) boundary and within the irrigation (41H 30460-00) boundary (Figure 8). Both claimed POUs are within the 1968 Urban Area-Wide Comprehensive Water Plan boundary (Figure 3).

The original appropriation contemplated the delivery and use of water for municipal and other stated purposes, including water sales, as needed to meet growing demands. It is my opinion that the historical record supports these claimed uses within the historic planning area identified in the 1968 Urban Area-Wide Comprehensive Water Plan boundary, which reflects the COB service area.

9. 41H 30460-00 – ESTIMATE OF MAXIMUM HISTORICAL IRRIGATION VOLUME

Water right 41H 30460-00 claims 2,518 acres of irrigation. Based on DNRC standards established in ARM 36.12.1902 and using the MSU weather station, the historical crop consumptive volume is 2,850 AF (2,518 acres x 1.54 ft/ac (17.76 in./12 in/ft.) x 73.5% management factor). The applied volume at 60% field efficiency (flood-level border) is 4,565 AF, or 3.8 reservoir fills based on a Mystic Lake storage capacity of 1,190 AF. This calculation does not include diverted volume not applied (ditch loses). Considering supplemental use with direct-flow claims plus usage during high flows before commissioner deliveries, this is the maximum volume likely applied.

The maximum historical irrigation use contemplated under claim 41H 30460-00 can be estimated based on the 20 shares of BCRC shares subscribed and 60 BCRC shares issued. Each share entitles the owner to 100 MI/day for 14 days/year. The 20 shares currently subscribed equates to 28,000 MI x 0.0495 AF/MI = 1,386 AF. Based on a total of the 60 shares issued by BCRC, the volume is 4,158 AF, which is 3.5 fills using the 1,190 AF storage capacity of Mystic Lake.

10. MYSTIC LAKE DAM REMOVAL

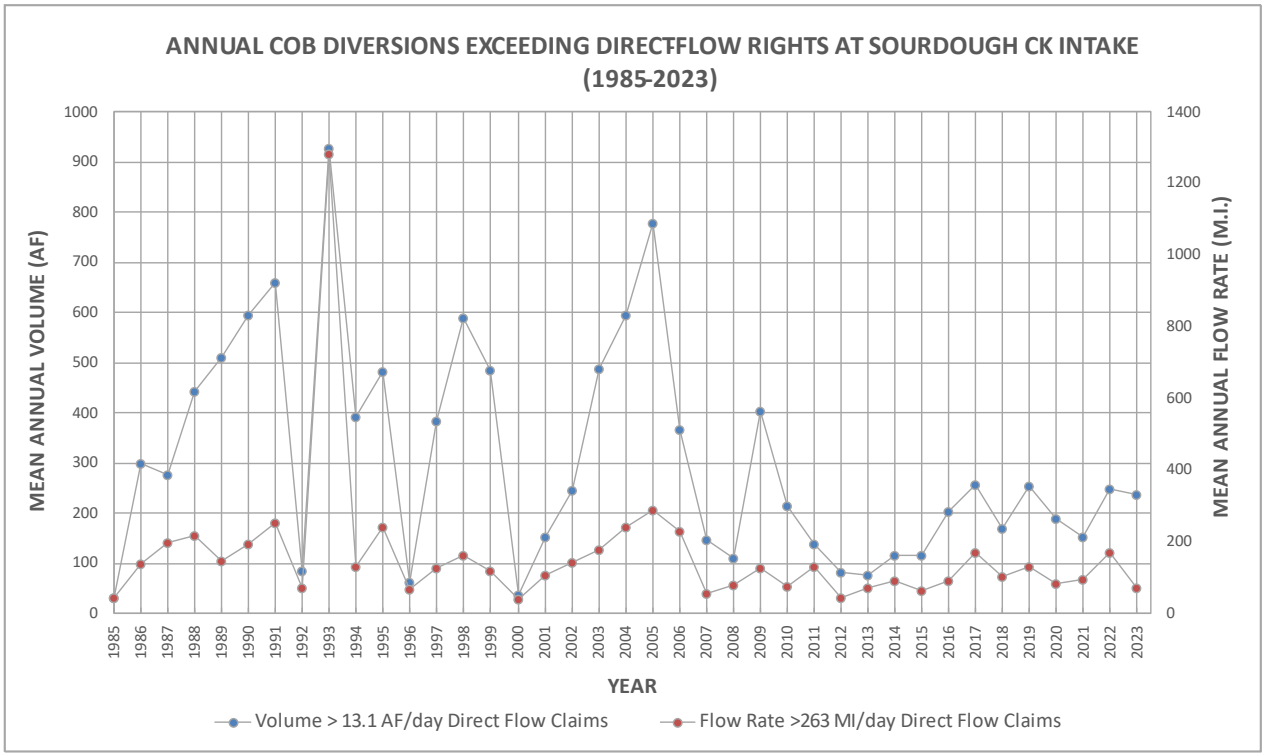
Due to safety issues, Mystic Lake Dam was removed from service by BCRC in stages between 1982 and 1985. These safety issues were delineated in a USCOE (1982) report, which described a sink hole that developed in the dam in 1977, breaks in the 12-inch outlet pipe in 1977, and breaks in the 16-inch outlet pipe in 1978. Immediate elimination of the seepage conditions and rehabilitation or replacement of outlet pipelines was recommended. Further, CH2M Hill recommended consideration of dam removal if the unsafe conditions could not be resolved in a timely manner. COB responded quickly to remove the dam to ensure public safety.

11. CITY OF BOZEMAN CONTINUED USE OF 41H 30459-00 AND 41H 30460-00

After removal of Mystic Dam in 1984 COB continued to use Sourdough Creek claims 41H 30459-00 and 41H 30460-00. Figure 9 shows mean annual volume and flow rate diversions exceeding COB direct-flow rights into their intake prior to conveyance to the treatment plant (Heaston, 2024).

COB commissioner deliveries from 1946 to dam removal in 1984 are described by Heaston (2024).

Figure 9. COB diversions exceeding direct-flow rights at intake to treatment plant.



12. CITY OF BOZEMAN INTENDED CONTINUED USE OF WATER RIGHTS

It is my opinion that COB had no intent to stop using claims 41H 30459-00 and 41H 30460-00 to meet reasonably foreseeable future needs. This opinion is based on the following factors:

1. COB purchased three of the original 15 BCRC shares subscribed and continued to purchase shares as they became available, eventually owning 10 of the 20 subscribed shares. COB also actively purchased direct-flow water rights. Purchases of shares and water rights is evidence of COB plans for expanding the use of water.
2. COB considered loans and applied for grants from DNRC to study and fund a new reservoir site.
3. COB commissioned an engineering study to evaluate the possibility of rehabilitating the dam and reservoir (CSSA, 1982). In response to this study the US Forest Service Director of Engineering accepted the proposed spillway design (CSSA, 1982). The work associated with this study included testing by Northern Engineering and Testing, Inc. (1984) that included a subsurface investigation with a site seismicity evaluation, geotechnical drilling and sampling, a surface investigation, and general geological reconnaissance.
4. A preliminary reservoir site studies and a cost estimate was evaluated by USDA Soil Conservation Service (1980, 1985). Sites I and II were considered at locations on Bozeman Creek above the existing COB pipeline diversion but were rejected due to cost

and logistical reasons. Storage designs were up to 8,655 AF at Site I and 9,460 AF at Site II (SCS, 1985).

5. As recently as 1996 COB advertised in the Bozeman Daily Chronicle for an engineering firm to design a new dam.
6. At the intake to the treatment plant pipeline, COB continues to divert water exceeding their Sourdough Creek direct-flow rights. This excess represents water diverted under municipal claim 41H 30459-00.
7. COB expanded their water treatment plant and continued to upgrade distribution as identified in Heaston (2024).
8. COB applied for and received a water reservation for a reservoir in Bozeman Creek (Priority Index - Appendix A).
9. BCRC paid the HB-22 adjudication fees assessed for total volume of water claimed under both water rights in 2005.
10. In an escrow agreement signed August 5, 1982 COB and BCRC agreed to transfer all shares and ownership of both claims 41H 30459-00 and 41H 30460-00 to COB, indicating COB intent to continue use of the water. COB retained right of first refusal for any shares sold.
11. All water rights were reserved when Mystic Lake property was released to the USFS in 1996.
12. BCRC deeded all interest in claims 41H 30459-00 and 41H 30460-00 to COB April 30, 2019. COB now owns all 20 shares of stock subscribed by BCRC.
13. Statements of Claim for 41H 30459-00 and 41H 30460-00 were timely filed.
14. COB participated in the temporary preliminary adjudication process which included issuance of a Master's report on February 26, 1997 changing the place of use of 41H 30459-00.
15. Shareholders continue to have annual meetings.

Water is a precious resource for COB. When confronted with dam stability issues, COB responded quickly to ensure public safety. This was a monumental and extraordinary decision. The evidence presented in this report and in Heaston (2024) clearly shows COB had no intent to discontinue use of claims 41H 30459-00 and 41H 30460-00.

13. REFERENCES

1. AE2S, 2023, Sourdough Creek Mystic Lake Physical Hydrology Analysis, Technical Memorandum from Z. Magdo, PE and M. Eytel.
2. Bozeman Watershed Council (BWC), 2004, Sourdough Creek Watershed Assessment.
3. Christian, Spring, Sielbach & Associates (CSSA), 1982, Report of Engineering Feasibility for Repair and/or Rehabilitation of Mystic Lake Dam, Gallatin County, Montana, MT-880.

4. City of Bozeman, 1991, Exhibit (HKM) with water Reservation Application Pre-Filed Direct Testimony and Exhibits.
5. Fargo, Roman, 1969, City of Bozeman Engineer report.
6. Heaston, Brian, 2024, Expert Report for Case 41H-0094-R-2021, 27p.
7. Montana State Library (MSL), 2023, NAIP Aerial imagery 2021, National Agricultural Imagery Program, https://msl.mt.gov/geoinfo/data/aerial_photos/
8. Northern Engineering and Testing, Inc. (1984), Report of Geotechnical Studies - Mystic Lake Dam South of Bozeman, Montana.
9. USCOE, 1980, Mystic Lake Dam, Bozeman, Montana, Gallatin County, MT-880.
10. USDA Soil Conservation Service (SCC), 1980, Preliminary Investigation Report – Bozeman Creek Watershed, Gallatin County MT.
11. USDA Soil Conservation Service Memo (SCC), 1985, To: Ron Nadwornick, Subject: BAP Bozeman Creek Watershed, Summary of Reservoir Sites.

APPENDIX A

SOURDOUGH CREEK INDEX BY PRIORITY

Sourdough Creek Index by Priority Date - 116 claims

WR #	OWNER	TYPE	PRIORITY	PURPOSE	Flow-cfs	VOL-af	ACRES
41H 99632 00	BOZEMAN, CITY OF	STOC	18650930	IRRIGATION	3.00	225	86
41H 117327 00	2020 FAIT PERRY TRUST	STOC	18651231	INST FISHERY	0.31	114.49	
41H 138769 00	BRIDGER VIEW HOLDINGS LLC	STOC	18651231	IRRIGATION	0.32		65.5
41H 110432 00	DAY JOHN H	STOC	18651231	IRRIGATION	0.03	2	1
41H 139055 00	GERRITY SEAN R	STOC	18651231	IRRIGATION	0.08		2.88
41H 27661 00	JAMES LAURA	STOC	18651231	IRRIGATION	0.08		3.75
41H 18925 00	JOHNSON DEBORAH D	STOC	18651231	IRRIGATION	0.15		5
41H 110372 00	KENNEY BRIAN S	STOC	18651231	STOCK			
41H 110373 00	KENNEY BRIAN S	STOC	18651231	IRRIGATION	0.05		2
41H 107155 00	KROPP KAREN L	STOC	18651231	STOCK			
41H 107156 00	KROPP, KAREN L REVOCABLE LIVING TRUST	STOC	18651231	IRRIGATION	0.05		2
41H 107157 00	KROPP, KAREN L REVOCABLE LIVING TRUST	STOC	18651231	FISH / WILDLIFE	0.05	36.5	
41H 139064 00	LAWSON JAY E	STOC	18651231	IRRIGATION	0.025		2.72
41H 113247 00	MARTEL, WILLIAM PROPERTIES	STOC	18651231	COMMERCIAL	0.28	15	
41H 141101 00	MAXWELL KATHRYN L	STOC	18651231	IRRIGATION	0.01		1.5
41H 122633 00	REYNOLDS HUGO	STOC	18651231	IRRIGATION	0.03		2.65
41H 141132 00	SHUTE MATTHEW A	STOC	18651231	IRRIGATION	0.10		2.62
41H 126933 00	VALLEY VIEW GOLF CLUB	STOC	18651231	IRRIGATION	1.50		64
41H 30155805	VANCE GORDON	STOC	18651231	IRRIGATION	0.21		44.5
41H 31396 00	ICENOGGLE MELVIN R	STOC	18660531	STOCK			
41H 140873 00	BOZEMAN, CITY OF	STOC	18660731	MUNICIPAL	0.15	108.37	
41H 140880 00	BOZEMAN, CITY OF	STOC	18660731	MUNICIPAL	0.18	127.8	
41H 140987 00	BOZEMAN, CITY OF	STOC	18660731	IRRIGATION	0.35		60
41H 40524 00	MONTANA, STATE OF DEPT OF FISH WILDLIFE & PARKS	STOC	18660731	STOCK			

WR #	OWNER	TYPE	PRIORITY	PURPOSE	Flow-cfs	VOL-af	ACRES
41H 140874 00	BOZEMAN, CITY OF	STOC	18661231	MUNICIPAL	1.25	907.38	
41H 140875 00	BOZEMAN, CITY OF	STOC	18661231	MUNICIPAL	1.25	907.38	
41H 140876 00	BOZEMAN, CITY OF	STOC	18661231	MUNICIPAL	1.25	907.38	
41H 140878 00	BOZEMAN, CITY OF	STOC	18661231	MUNICIPAL	1.25	907.38	
41H 138801 00	BRIDGER VIEW HOLDINGS LLC	STOC	18661231	IRRIGATION	2.50		92
41H 138767 00	GOLDENSTEIN GERALD R	STOC	18661231	IRRIGATION	1.25		145
41H 30462 00	HOLMQUIST PAUL	STOC	18661231	IRRIGATION	1.25		216
41H 114980 00	LIEBMANN STEVEN & NASH LLC	STOC	18661231	IRRIGATION	1.50		94.8
41H 110317 00	LIEBMANN, STEVEN P LIVING TRUST	STOC	18661231	IRRIGATION	1.00		124
41H 40526 00	MONTANA, STATE OF DEPT OF FISH WILDLIFE & PARKS	STOC	18661231	IRRIGATION	2.16	256	50
41H 131983 00	RED CLOUD LLC	STOC	18661231	IRRIGATION	2.50	981.75	320
41H 131984 00	RED CLOUD LLC	STOC	18661231	STOCK			
41H 138768 00	RED CLOUD LLC	STOC	18661231	IRRIGATION	1.25		54.7
41H 30159524	RED CLOUD LLC	STOC	18661231	IRRIGATION	1.02		124
41H 30159523	VANCE GORDON	STOC	18661231	IRRIGATION	0.97		117.5
41H 127366 00	BECK GENERATIONAL TRUST LLC	STOC	18681231	STOCK			
41H 127372 00	BECK GENERATIONAL TRUST LLC	STOC	18681231	IRRIGATION	2.50	981.75	160
41H 138799 00	BRIDGER VIEW HOLDINGS LLC	STOC	18681231	IRRIGATION	2.50	550	137
41H 15853 00	HARPER, GREGORY K REVOCABLE TRUST	STOC	18681231	IRRIGATION	2.50		150
41H 117322 00	HURLBURT ANDREW J and NASH	STOC	18681231	IRRIGATION	2.50		130
41H 30159522	RED CLOUD LLC	STOC	18681231	IRRIGATION	1.02		124
41H 30159521	VANCE GORDON	STOC	18681231	IRRIGATION	0.97		117.5

WR #	OWNER	TYPE	PRIORITY	PURPOSE	Flow-cfs	VOL-af	ACRES
41H 117326 00	2020 FAIT PERRY TRUST	STOC	18721231	INST FISHERY	0.19	68.15	
41H 115585 00	BETTS DOUGLAS N	STOC	18721231	IRRIGATION	0.10		10.07
41H 30461 00	HOLMQUIST PAUL	STOC	18721231	IRRIGATION	3.13		216
41H 46104 00	KRAFT K VAUGHN	STOC	18721231	IRRIGATION	1.25		160
41H 115536 00	OLSEN JON	STOC	18721231	IRRIGATION	0.20		20.13
41H 30155807	RED CLOUD LLC	STOC	18721231	IRRIGATION	0.60		35
41H 138770 00	RUFFATTO, SHELIA M LIVING TRUST	STOC	18721231	IRRIGATION	1.13		65.5
41H 115501 00	SHRAUGER JASON K	STOC	18721231	IRRIGATION	0.95		40.26
41H 30155806	VANCE GORDON	STOC	18721231	IRRIGATION	0.77		44.5
41H 138795 00	BRIDGER VIEW HOLDINGS LLC	STOC	18741231	IRRIGATION	1.25	225	137
41H 30155810	NOPPER THOMAS A	STOC	18741231	IRRIGATION	0.07		0.5
41H 30155809	RED CLOUD LLC	STOC	18741231	IRRIGATION	0.48		124
41H 30155808	VANCE GORDON	STOC	18741231	IRRIGATION	0.46		117.5
41H 140877 00	BOZEMAN, CITY OF	STOC	18771231	MUNICIPAL	0.63	456.3	
41H 140879 00	BOZEMAN, CITY OF	STOC	18771231	MUNICIPAL	0.63	456.3	
41H 148662 00	HOLT ELIZABETH	STOC	18831231	STOCK			
41H 141073 00	HUDGENS, MARY C REVOCABLE TRUST	STOC	18831231	IRRIGATION	0.63		73
41H 141077 00	HUDGENS, TERRY F REVOCABLE TRUST	STOC	18831231	STOCK			
41H 148628 00	HYALITE PEAK LLC	STOC	18831231	IRRIGATION	0.025		1
41H 139725 00	KARNOP CHARLES H	STOC	18831231	STOCK			
41H 139729 00	KARNOP CHARLES H	STOC	18831231	IRRIGATION	1.23		30
41H 15380 00	KRAFT K VAUGHN	STOC	18831231	IRRIGATION	0.63		160
41H 30110606	JACKSON, TERRY R & LESLIE K REVOCABLE LIVING TRUST	STOC	18870903	STOCK			
41H 99627 00	SUBRYAN LINDA	STOC	18870903	STOCK			
41H 125490 00	DUBOIS SHIRLEY N	STOC	18880501	IRRIGATION	1.25		4

WR #	OWNER	TYPE	PRIORITY	PURPOSE	Flow-cfs	VOL-af	ACRES
41H 141165 00	GUZMAN-ASPEVIG, CLYDE RAY & CAROL TRUST	STOC	18880501	IRRIGATION	2.50	60	10
41H 117324 00	HURLBURT ANDREW J and NASH	STOC	18880501	IRRIGATION	2.50		125
41H 138698 00	KRAFT K VAUGHN	STOC	18880501	IRRIGATION	5.71		150.6
41H 141164 00	METCALF, JOHN & RUTH LIVING TRUST	STOC	18880501	DOMESTIC	0.06	7	2.5
41H 122667 00	MOORE KATHRYN A	STOC	18880501	IRRIGATION	5.00		136.8
41H 13189 00	NASH SHIRLEY J	STOC	18880501	IRRIGATION	1.25		5
41H 138766 00	RED CLOUD LLC	STOC	18880501	IRRIGATION	2.69		71
41H 30114766	WILLIAMS, KENNETH IRREVOCABLE TRUST	STOC	18880501	IRRIGATION	0.91		24
41H 139727 00	KARNOP CHARLES H	STOC	18880711	STOCK			
41H 139728 00	KARNOP CHARLES H	STOC	18880711	STOCK			
41H 138759 00	BRIDGER VIEW HOLDINGS LLC	STOC	18901210	STOCK			
41H 139868 00	ROTAR HOLLY G	STOC	18920808	STOCK			
41H 141865 00	DAVIS WILLIAM L	STOC	18940926	IRRIGATION	0.04		2.4
41H 30146271	ACKERMANN MARY	STOC	18960404	STOCK	0.022	1	
41H 136798 00	PONCELET GREGORY R	STOC	18990124	STOCK			
41H 136799 00	PONCELET GREGORY R	STOC	18990124	IRRIGATION	0.58		15.26
41H 141078 00	HUDGENS, TERRY F REVOCABLE TRUST	STOC	19010311	STOCK			
41H 30459 00	BOZEMAN, CITY OF	STOC	19010912	MUNICIPAL		6000	
41H 30460 00	BOZEMAN, CITY OF	STOC	19010912	IRRIGATION		13000	2518
41H 166753 00	AIRSTREAM RANCH, LLC	STOC	19110701	IRRIGATION	0.01	2.6	1.96
41H 166754 00	AIRSTREAM RANCH, LLC	STOC	19110701	STOCK			
41H 30063583	JACKSON, TERRY R & LESLIE K REVOCABLE LIVING TRUST	STOC	19110701	IRRIGATION	0.023		6.78
41H 30063582	LITTLE GREEN LLC	STOC	19110701	IRRIGATION	0.008		2.25

WR #	OWNER	TYPE	PRIORITY	PURPOSE	Flow-cfs	VOL-af	ACRES
41H 114981 00	NASH LLC	STOC	19200630	IRRIGATION	0.30		8
41H 132253 00	WELLS MICHAEL K	STOC	19320919	IRRIGATION	0.13		4
41H 9275 00	BOWEN DAVID W	STOC	19390529	IRRIGATION	0.15		4
41H 138704 00	COWDREY TRACY R	STOC	19390601	IRRIGATION	0.06		1.75
41H 101146 00	PANACHE PROPERTIES LLC	STOC	19390601	IRRIGATION	0.10		3
41H 9390 00	GADDIS KATHERINE	STOC	19390630	IRRIGATION	0.04		1.17
41H 39155 00	JACKSON, TERRY R & LESLIE K REVOCABLE LIVING TRUST	STOC	19390812	IRRIGATION	1.08		15
41H 99625 00	SUBRYAN LINDA	STOC	19390812	IRRIGATION	0.09		0.73
41H 132781 00	BOZEMAN, CITY OF	STOC	19420801	STOCK			
41H 153965 00	MARTEL WALTER	STOC	19451231	IRRIGATION	0.07		4.08
41H 138743 00	DUNN SHARON F	STOC	19460501	IRRIGATION	0.04		1.02
41H 103703 00	KLEIMER STEVEN J	STOC	19501231	IRRIGATION	0.19		5.06
41H 22563 00	EVANS MCRAY	STOC	19521205	IRRIGATION	0.016		1.5
41H 25654 00	BRANDIS KATHLEEN	STOC	19580701	COMMERCIAL	0.15	13.41	
41H 25654 00	VLASES MICHAEL	STOC	19580701	COMMERCIAL	0.15	13.41	
41H 6168 00	MURRAY SHELBURN	STOC	19661112	STOCK			
41H 141166 00	PLATT JOHN A	STOC	19680615	IRRIGATION	0.05		1.2
41H 215703 00	HOLMQUIST PAUL	STOC	19730630	IRRIGATION	2.50		100
41H 211923 00	HUDGENS, MARY C REVOCABLE TRUST	STOC	19730630	IRRIGATION	1.25	438	73
41H 70118 00	BOZEMAN, CITY OF	WRWR	19850701	MUNICIPAL	47.30	2857	
41H 30008923	MONTANA, STATE OF DEPT OF FISH WILDLIFE & PARKS	WRWR	19850701	FISHERY	11.00	7963.09	
41H 84070 00	JACQUES FRANK J	PRPM	19921222	WDLIFE/WFOUL	0.07	20.28	

APPENDIX B

CITY OF BOZEMAN
MYSTIC LAKE STORAGE CLAIMS – 41H 30459-00 AND 41H 30460-00
ABSTRACTS AND STATEMENTS OF CLAIM

PRELIMINARY DECREE
GALLATIN RIVER
BASIN 41H
ABSTRACT OF WATER RIGHT CLAIM

IMPORTANT NOTICE

YOUR WATER RIGHT AS SHOWN ON THIS ABSTRACT MAY HAVE CHANGES FROM YOUR WATER RIGHT AS CLAIMED OR AMENDED. AN ASTERISK (*) HAS BEEN PLACED NEXT TO EACH ITEM CHANGED BY THE MONTANA WATER COURT AFTER ISSUANCE OF THE TEMPORARY PRELIMINARY DECREE OR BY THE DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION (DNRC) DURING THE PREPARATION OF THIS PRELIMINARY DECREE. THESE CHANGES ARE AUTHORIZED BY THE MONTANA SUPREME COURT WATER RIGHT CLAIMS EXAMINATION RULES OR BY ORDER OF THE WATER COURT.

OBJECTIONS MAY BE FILED ACCORDING TO THE PROCEDURES OUTLINED IN THE DOCUMENT ENTITLED "NOTICE OF ENTRY OF PRELIMINARY DECREE AND NOTICE OF AVAILABILITY."

Water Right Number: **41H 30459-00** STATEMENT OF CLAIM
Version: 2 -- REEXAMINED
Status: ACTIVE

Owners: BOZEMAN CREEK RESERVOIR CO
8323 NASH RD
BOZEMAN, MT 59715

Priority Date: SEPTEMBER 12, 1901

Type of Historical Right: FILED

Purpose(use): MUNICIPAL

***Flow Rate:** A SPECIFIC FLOW RATE HAS NOT BEEN DECREED FOR THIS USE FROM THIS ONSTREAM RESERVOIR.

FLOW RATE FOR THIS RIGHT IS LIMITED TO THE HISTORIC CAPACITY OF THE DIVERSION STRUCTURE AND THE CONVEYANCE SYSTEM.

Volume: 6,000.00 AC-FT

Source Name: SOURDOUGH CREEK
Source Type: SURFACE WATER

Point of Diversion and Means of Diversion:

ID	Govt Lot	Qtr Sec	Sec	Twp	Rge	County
1		SESESE	25	3S	6E	GALLATIN

Period of Diversion: JANUARY 1 TO DECEMBER 31
Diversion Means: HEADGATE
Ditch Name: MYSTIC LAKE DAM

***Reservoir:** ONSTREAM **Reservoir Name:** MYSTIC LAKE

Govt Lot	Qtr Sec	Sec	Twp	Rge	County
	SESESE	25	3S	6E	GALLATIN

Diversion to Reservoir: DIVERSION # 1
Dam Height: 25.00 FEET
Depth: 20.00 FEET
Surface Area: 78.00 ACRES
Capacity: 624.00 ACRE-FEET

THE CAPACITY, DAM HEIGHT, MAXIMUM DEPTH AND SURFACE AREA HAVE BEEN ESTIMATED BY DNRC.

Period of Use: JANUARY 1 TO DECEMBER 31

***Place of Use:**

ID	Acres	Govt Lot	Qtr Sec	Sec	Twp	Rge	County
1			SE	36	1S	5E	GALLATIN
2				31	1S	6E	GALLATIN
3			SW	32	1S	6E	GALLATIN
4				1	2S	5E	GALLATIN
5			SE	2	2S	5E	GALLATIN
6			NE	2	2S	5E	GALLATIN
7			E2	10	2S	5E	GALLATIN
8				11	2S	5E	GALLATIN
9				12	2S	5E	GALLATIN
10				13	2S	5E	GALLATIN
11			SW	14	2S	5E	GALLATIN
12			N2	14	2S	5E	GALLATIN
13				24	2S	5E	GALLATIN
14			S2	4	2S	6E	GALLATIN
15				5	2S	6E	GALLATIN
16				6	2S	6E	GALLATIN
17				7	2S	6E	GALLATIN
18			SE	8	2S	6E	GALLATIN
19			W2	8	2S	6E	GALLATIN
20			SW	9	2S	6E	GALLATIN
21			N2	16	2S	6E	GALLATIN
22			W2	17	2S	6E	GALLATIN
23				18	2S	6E	GALLATIN
24			W2	19	2S	6E	GALLATIN

Remarks:

THE WATER RIGHTS LISTED FOLLOWING THIS STATEMENT ARE MULTIPLE USES OF THE SAME RIGHT. THE USE OF THIS RIGHT FOR SEVERAL PURPOSES DOES NOT INCREASE THE EXTENT OF THE WATER RIGHT. RATHER IT DECREES THE RIGHT TO ALTERNATE AND EXCHANGE THE USE (PURPOSE) OF THE WATER IN ACCORD WITH HISTORICAL PRACTICES.

30459-00 30460-00

THE FOLLOWING ISSUES WERE IDENTIFIED BY THE DNRC DURING ITS EXAMINATION OF THIS WATER RIGHT CLAIM.

THE CLAIMANT DID NOT IDENTIFY THE PERIOD OF DIVERSION FOR THIS RIGHT. A PERIOD OF DIVERSION HAS BEEN ADDED TO MATCH THE PERIOD OF USE. IF NO OBJECTIONS ARE RECEIVED TO THE PERIOD OF DIVERSION OR PERIOD OF USE, THOSE ELEMENTS WILL BE DECREED AS SHOWN ON THIS ABSTRACT AND THIS ISSUE REMARK WILL BE REMOVED FROM THIS CLAIM.

RESERVOIR RECORD HAS BEEN MODIFIED AS A RESULT OF DNRC REVIEW UNDER MONTANA WATER COURT REEXAMINATION ORDERS. IF NO OBJECTIONS ARE FILED TO THIS CLAIM, THESE ELEMENTS WILL REMAIN AS THEY APPEAR ON THIS ABSTRACT AND THE REMARK WILL BE REMOVED FROM THE CLAIM.

THE CLAIMED VOLUME APPEARS TO BE EXCESSIVE FOR THE CLAIMED PURPOSE. THE CLAIMED VOLUME EQUALS 9.5 TIMES THE CAPACITY OF THE RESERVOIR.

A BETTER UNDERSTANDING OF YOUR CLAIMED WATER RIGHT CAN BE OBTAINED BY COMPARING YOUR RIGHT WITH OTHER CLAIMS IN THE BASIN. FOR EXAMPLE, COMPARE PRIORITY DATES, FLOW RATES, VOLUMES, OR ACRES IRRIGATED. ALSO, YOUR WATER RIGHT MAY BE SUBJECT TO WATER RIGHTS IN ADJOINING SUBBASINS OR BASINS AS WELL AS BEING SUBJECT TO OTHER RIGHTS ON YOUR SOURCE OF SUPPLY. FINALLY, YOUR WATER RIGHT MAY BE SUBJECT TO INDIAN RESERVED AND FEDERAL RESERVED WATER RIGHTS.

COMPLETE DETAILS REGARDING THE DNRC PREPARATION OF THIS PRELIMINARY DECREE AND RELATED MATERIALS CAN BE REVIEWED AT THE OFFICE LOCATIONS IDENTIFIED IN THE DOCUMENT ENTITLED "NOTICE OF ENTRY OF PRELIMINARY DECREE AND NOTICE OF AVAILABILITY."

SEE GENERAL FINDINGS OF FACT AND CONCLUSIONS OF LAW FOR FURTHER EXPLANATION OF YOUR CLAIMED WATER RIGHT. THESE FINDINGS CAN BE FOUND AS INDICATED IN THE DOCUMENT ENTITLED "NOTICE OF ENTRY OF PRELIMINARY DECREE AND NOTICE OF AVAILABILITY." IF YOU NEED OBJECTION FORMS, OR HAVE QUESTIONS ABOUT WATER COURT PROCEDURES OR CHANGES TO YOUR RIGHT, YOU CAN CONTACT THE WATER COURT BY CALLING 1-800-624-3270 (WITHIN MONTANA ONLY) OR 1-406-586-4364, OR BY WRITING TO P.O. BOX 1389, BOZEMAN, MT 59771-1389.

Form No 76-O R2/80

G30459 41H

STATEMENT OF CLAIM FOR EXISTING WATER RIGHTS OTHER USES

For the Water Courts of the State of Montana

RECEIVED
SEP 9 1981
MONTANA D.N.R.C.
BOZEMAN FIELD OFFICE

GA-U
40-015-01-13
-40-

1. **Owner of Water Right** BOZEMAN CREEK & RESERVOIR CO. / / (Last / First / Middle Initial)

Co-Owner or Other Interest Owner / / (Last / First / Middle Initial)

Address 8323 NASH RD.

City BOZEMAN State MONT. Zip Code 59715

Home Phone No. Business Phone No.

2. **Person completing form** MOORE / KATHRYN / A. (Last / First / Middle Initial)

Address 8323 NASH RD.

City BOZEMAN State MONT. Zip Code 59715

Home Phone No. Business Phone No.

3. **Use:** (Check Only One)

FR ☐ Fish Raceways	GE ☐ Geothermal	MN ☐ Mining
FW ☐ Fish & Wildlife	NV ☐ Navigation	PG ☐ Power Generation
CM ☐ Commercial	FP ☐ Fire Protection	RC ☐ Recreation
IN ☐ Industrial	AS ☐ Agricultural Spraying	OT ☐ Other
MC ☒ Municipal	OF ☐ Oil Well Flooding	Explain

4. **Source of Water:** (Check Only One) DNRC

- ☐ Spring — Name
- ☐ Well — Name
- ☐ Stream — Name — Tributary of
- ☐ Lake — Name — Stream
- Tributary of
- ☒ Reservoir — Name MYSTIC LAKE — Stream (BOZ. CREEK AKA) or SOURDOUGH CR
- Tributary of E. GALLATIN. RV.

5. **Point of Diversion:** County GALLATIN

SE ¼ SE ¼ SE ¼, Section 25, T 3 N/S, R 6 E/W

Lot , Block , Subdivision

6. **Means of Diversion:**

- ☐ Well
- ☐ Pump Capacity gpm
- ☒ Headgate with ditch or pipeline
- ☐ Instream use
- ☐ Other Explain

7. **Means of Conveyance:**

- ☒ Ditch
- ☒ Pipeline
- ☐ Instream
- ☒ Other: BOZEMAN CR. or SOURDOUGH CR.

DNRC

8. **Place of Use:** County GALLATIN

☐ Instream ☒ City or Town ☐ Other: Explain CITY of BOZEMAN.

Lot, Block, ¼ ¼ ¼, Section 1, T 2 N/S, R 5 E/W

Lot, Block, ¼ ¼ ¼, Section , T 2 N/S, R 6 E/W

Lot, Block, ¼ ¼ ¼, Section , T N/S, R E/W

Lot, Block, ¼ ¼ ¼, Section , T N/S, R E/W

Lot, Block, ¼ ¼ ¼, Section , T N/S, R E/W

Subdivision

9. **Flow rate claimed:** 1000
☐ cubic feet per second
☐ gallons per minute
☒ miner's inches

10. **Volume claimed:** 6000 acre-feet per year

11. **Period(s) of use:** JAN. 1 (Month Day) to DEC. 31 (Month Day)

12. **Check one:**
☐ Decreed Water Right
☒ Filed Appropriation Right
☐ Use Water Right

Priority date or date of first use: 1 (Hour) 9 (Month) 12 (Day) 1901 (Year)

13. **Attach** copies of the Decree, Record of Filing or Proof of Use Right. Exhibit A.

14. **Attach** copies of aerial photographs, U.S. Geological Survey maps or such other documents necessary to show point of diversion, place of use, place of storage, and conveyance facilities. Exhibit B & C. D & E.

15. **Notarized Statement signed by claimant.**

STATE OF MONTANA)
:ss.
County of GALLATIN)

I, Kathryn A. Moore, having been duly sworn, depose and say that I, being of legal age and being the claimant of this claim of existing water right, and the person whose name is signed to it as the claimant, know the contents of this claim and the matters and things stated there are true and correct.

Kathryn A. Moore

Subscribed and sworn before me, this 10 day of September 19 81.

Shelly Driskell
Notary Public for the State of Montana

Residing at Bozeman

My Commission expires 1-15-84

City of Bozeman

030459

Form No. 76-A-3

ADDENDUM TO STATEMENT OF CLAIM
FOR EXISTING WATER RIGHTS

For the Water Courts of the State of Montana

ADDITIONAL PLACE OF USE SHEET

Use this sheet if you have more places of use than can be listed on the claim form or if places of use are in different counties. Use the spaces on the claim form first.

County Gallatin Subdivision

	Acres	Lot	Block	¼	¼	¼	Section	T	N/S	R	E/W
04							12	2	~~N~~/S	5	E/~~W~~
							11	2	~~N~~/S	5	E/~~W~~
						E2	10	2	~~N~~/S	5	E/~~W~~
							14	2	~~N~~/S	5	E/~~W~~
							13	2	~~N~~/S	5	E/~~W~~
						NE	24	2	~~N~~/S	5	E/~~W~~
							6	2	~~N~~/S	6	E/~~W~~
							7	2	~~N~~/S	6	E/~~W~~
						W2	5	2	~~N~~/S	6	E/~~W~~
							8	2	~~N~~/S	6	E/~~W~~
						W2	17	2	~~N~~/S	6	E/~~W~~
							18	2	~~N~~/S	6	E/~~W~~
04						W2	19	2	~~N~~/S	6	E/~~W~~
									N/S		E/W
									N/S		E/W
									N/S		E/W
									N/S		E/W
									N/S		E/W
									N/S		E/W
									N/S		E/W
									N/S		E/W
									N/S		E/W
									N/S		E/W
									N/S		E/W

Use additional sheets if necessary

41H 30460-00

STATE OF MONTANA
DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION
1424 9TH AVENUE P.O.BOX 201601 HELENA, MONTANA 59620-1601

GENERAL ABSTRACT

Water Right Number: 41H 30460-00 STATEMENT OF CLAIM
Version: 2 -- REEXAMINED
Version Status: ACTIVE

Owners: BOZEMAN, CITY OF
%CITY CLERK
PO BOX 1230
BOZEMAN, MT 59771-1230

Priority Date: SEPTEMBER 12, 1901

Enforceable Priority Date: SEPTEMBER 12, 1901

Type of Historical Right: FILED

Purpose (use): IRRIGATION

Irrigation Type: SPRINKLER/FLOOD

Maximum Flow Rate: A SPECIFIC FLOW RATE HAS NOT BEEN DECREED FOR THIS USE FROM THIS ONSTREAM RESERVOIR.

FLOW RATE FOR THIS RIGHT IS LIMITED TO THE HISTORIC CAPACITY OF THE DIVERSION STRUCTURE AND THE CONVEYANCE SYSTEM.

Maximum Volume: 13,000.00 AC-FT

Climatic Area: 4 - MODERATELY LOW

Maximum Acres: 2,518.00

Source Name: SOURDOUGH CREEK

Source Type: SURFACE WATER

Point of Diversion and Means of Diversion:

ID	Govt Lot	Qtr Sec	Sec	Twp	Rge	County
1		SESESE	25	3S	6E	GALLATIN

Period of Diversion: APRIL 1 TO OCTOBER 31

Diversion Means: HEADGATE

Ditch Name: MYSTIC LAKE DITCH

Reservoir: ON STREAM **Reservoir Name** MYSTIC LAKE

Govt Lot	Qtr Sec	Sec	Twp	Rge	County
	SESESE	25	3S	6E	GALLATIN

Diversion to Reservoir: DIVERSION # 1

Dam Height: 25.00 FEET

Depth: 20.00 FEET

Surface Area: 78.00 ACRES

Current Capacity: 624.00 ACRE-FEET

THE CAPACITY, DAM HEIGHT, MAXIMUM DEPTH AND SURFACE AREA HAVE BEEN ESTIMATED BY DNRC.

Period of Use: APRIL 1 to OCTOBER 31

Place of Use:

ID	Acres	Govt Lot	Qtr Sec	Sec	Twp	Rge	County
1	422.00			31	2S	6E	GALLATIN
2	310.00		S2	30	2S	6E	GALLATIN
3	41.00		SENE	30	2S	6E	GALLATIN
4	129.00		SE	1	3S	5E	GALLATIN
5	293.00		N2	1	3S	5E	GALLATIN
6	469.00			6	3S	6E	GALLATIN
7	113.00		SW	5	3S	6E	GALLATIN
8	15.00		NWSE	5	3S	6E	GALLATIN
9	31.00		N2N2NW	7	3S	6E	GALLATIN
10	34.00		W2NE	7	3S	6E	GALLATIN
11	541.00			36	2S	5E	GALLATIN
12	120.00		SE	25	2S	5E	GALLATIN
Total:	2,518.00						

Remarks:

Remarks:

THE WATER RIGHTS LISTED FOLLOWING THIS STATEMENT ARE MULTIPLE USES OF THE SAME RIGHT. THE USE OF THIS RIGHT FOR SEVERAL PURPOSES DOES NOT INCREASE THE EXTENT OF THE WATER RIGHT. RATHER IT DECREES THE RIGHT TO ALTERNATE AND EXCHANGE THE USE (PURPOSE) OF THE WATER IN ACCORD WITH HISTORICAL PRACTICES.

30459-00 30460-00

OWNERSHIP UPDATE RECEIVED

OWNERSHIP UPDATE TYPE 608 # 186448 RECEIVED 05/06/2019.

THE CLAIMANT DID NOT IDENTIFY THE PERIOD OF DIVERSION FOR THIS RIGHT. A PERIOD OF DIVERSION HAS BEEN ADDED TO MATCH THE PERIOD OF USE. IF NO OBJECTIONS ARE RECEIVED TO THE PERIOD OF DIVERSION OR PERIOD OF USE, THOSE ELEMENTS WILL BE DECREED AS SHOWN ON THIS ABSTRACT AND THIS ISSUE REMARK WILL BE REMOVED FROM THIS CLAIM.

DITCH NAME AND RESERVOIR RECORD HAVE BEEN MODIFIED AS A RESULT OF DNRC REVIEW UNDER MONTANA WATER COURT REEXAMINATION ORDERS. IF NO OBJECTIONS ARE FILED TO THIS CLAIM, THESE ELEMENTS WILL REMAIN AS THEY APPEAR ON THIS ABSTRACT AND THE REMARK WILL BE REMOVED FROM THE CLAIM.

THE CLAIMED VOLUME APPEARS TO BE EXCESSIVE FOR THE CLAIMED PURPOSE. THE CLAIMED VOLUME EQUALS 9.5 TIMES THE CAPACITY OF THE RESERVOIR.

Form No. 76-I R2/80

41 H

330460

GA-U

10-015-01-12

40

STATEMENT OF CLAIM FOR EXISTING WATER RIGHTS

IRRIGATION

For the Water Courts of the State of Montana

RECEIVED
SEP 9 1981
MONTANA D.N.R.C.
BOZEMAN FIELD OFFICE

1. **Owner of Water Right** BOZEMAN CREEK RESERVOIR COMPANY / / (Last / First / Middle Initial)

Co-Owner or Other Interest Owner / / (Last / First / Middle Initial)

Address 8323 Nash Rd.

City Bozeman State Montana Zip Code 59715

Home Phone No. 586- 6446 Business Phone No.

2. **Person completing form** Moore / Kathryn / A. (Last / First / Middle Initial)

Address 8323 Nash Rd.

City Bozeman State Montana Zip Code 59715

Home Phone No. 586-6446 Business Phone No.

3. DNRC **Name of ditch, creek or river** Bozeman Creek or Sourdough Creek

DNRC **Use:** XX Irrigation

4. DNRC **Method of Irrigation Use:** E [X] Sprinkler [ ] Furrow [X] Flood

5. DNRC **Source of Water:** (Check Only One)

- [ ] Spring Name
- [ ] Well Name
- [ ] Stream Name Tributary of
- [ ] Lake Name Stream
  Tributary of
- [XX] Reservoir Name Mystic Lake Sec 30 T 3S R 1E Stream (AKA Bozeman Creek) or Sourdough Creek
  Tributary of East Gallatin

6. DNRC **Point of Diversion:** County Gallatin

SE ¼ SE ¼ SE ¼, Section 25, T 3 N S R 6 E W

Lot , Block , Subdivision

7. **Means of Diversion:**

- [ ] Pump Capacity gpm
- [XX] Headgate and ditch or pipe
- [ ] Flood and dike

8. **Means of Conveyance:**

- [XX] Ditch
- [ ] Pipeline
- [XXX] Other: Explain Bozeman Creek (or Sourdough Creek)

See attached copy. p. 2

9. **Place of use and acres irrigated.** County Gallatin

422	acres,		Lot,		Block,		¼		¼		¼, Section	31	, T 3 N (S) R 6 (E) W
310	acres,		Lot,		Block,		¼		¼	S2	¼, Section	30	, T 2 N (S) R 6 (E) W
41	acres,		Lot,		Block,		¼	SE	¼	NE	¼, Section	30	, T 2 N (S) R 6 (E) W
129	acres,		Lot,		Block,		¼		¼	SE	¼, Section	1	, T 3 N (S) R 5 (E) W
293	acres,		Lot,		Block,		¼		¼	N2	¼, Section	1	, T 3 N (S) R 5 (E) W

2518 **Total acres.** Subdivision

10. **Flow rate claimed:** 2000 ☐ cubic feet per second ☐ gallons per minute XX miner's inches

11. **Volume claimed:** 13,000 acre-feet per year

12. **Period(s) of use:** April (Month) / 1 (Day) to Oct. (Month) / 31 (Day)

13. **Check one:** ☐ Decreed Water Right ☒ Filed Appropriation Right ☐ Use Water Right

Priority date or date of first use: 4:30pm (Hour) 9 (Month) / 12 (Day) / 1901 (Year)

14. **Attach** copies of the Decree, Record of Filing or Proof of Use Right. See Exh "A"

15. **Attach** copies of aerial photographs, U.S. Geological Survey maps or such other documents necessary to show point of diversion, place of use, place of storage, and conveyance facilities. See Exhibits "B" & "C" "D"

16. **Notarized Statement signed by claimant.**

STATE OF MONTANA)
:ss.
County of GALLATIN)

I, Kathryn A. Moore, having been duly sworn, depose and say that I, being of legal age and being the claimant of this claim of existing water right, and the person whose name is signed to it as the claimant, know the contents of this claim and the matters and things stated there are true and correct.

X Kathryn A. Moore

Subscribed and sworn before me, this 10 day of September 1981.

Shelly Driskell
Notary Public for the State of Montana

Residing at Bozeman

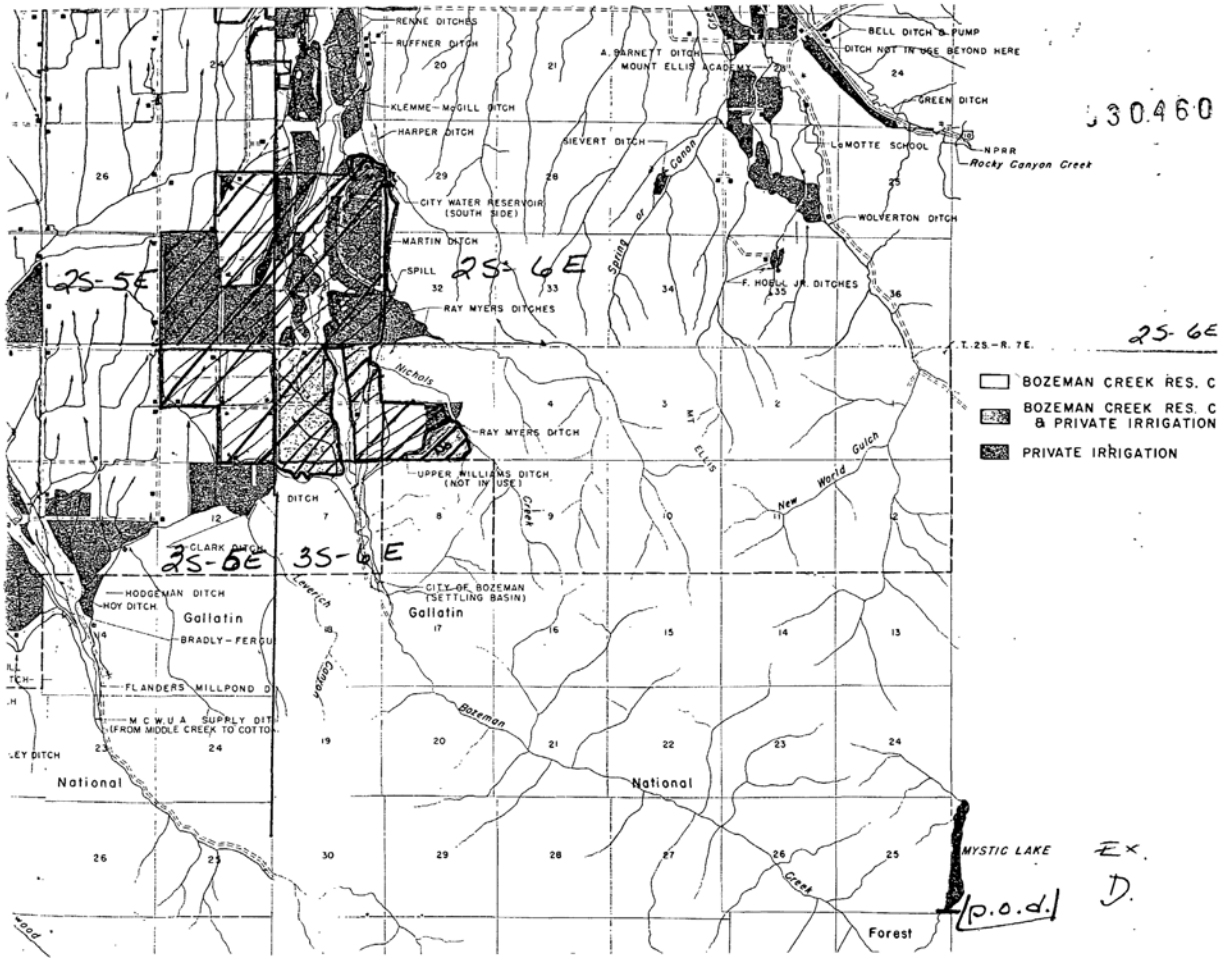
My Commission expires 1-15-1984

Gallatin Co P.O.U. ADDENDUM P. 2

030450

ADDENDUM TO STATEMENT OF CLAIM
FOR EXISTING WATER RIGHTS

469 acres		Section 6	T 3 S, R 6 E
113 acres	SW ¼	Section 5	T 3 S, R 6 E
15 acres	NW ¼ SE ¼	Section 5	T 3 S, R 6 E
31 acres	N ½ N ½ NW¼	Section 7	T 3 S, R 6 E
34 acres	NW ¼ NW¼ NE¼	Section 7	T 3 S, R 6 E
541 acres		Section 36	T 2 S, R 5 E
120 acres	SE¼	Section 25	T 2 S, R 5 E


RENNE DITCHES
RUFFNER DITCH
A. BARNETT DITCH
MOUNT ELLIS ACADEMY
BELL DITCH & PUMP
DITCH NOT IN USE BEYOND HERE
KLEMME-McGILL DITCH
HARPER DITCH
SIEVERT DITCH
GREEN DITCH
LaMOTTE SCHOOL
NPRR
Rocky Canyon Creek
CITY WATER RESERVOIR (SOUTH SIDE)
WOLVERTON DITCH
MARTIN DITCH
SPILL
25-5E
25-6E
RAY MYERS DITCHES
F. HOBLL JR. DITCHES
T. 2S. - R. 7E.
25-6E
BOZEMAN CREEK RES. C
BOZEMAN CREEK RES. C & PRIVATE IRRIGATION
PRIVATE IRRIGATION
Nichols
RAY MYERS DITCH
UPPER WILLIAMS DITCH (NOT IN USE)
CLARK DITCH
25-6E
3S-6E
CITY OF BOZEMAN (SETTLING BASIN)
HODGEMAN DITCH
HOY DITCH
Gallatin
Gallatin
BRADLY-FERGU
FLANDERS MILLPOND
M.C.W.U.A. SUPPLY DITCH (FROM MIDDLE CREEK TO COTTON
National
National
MYSTIC LAKE
Ex. D.
p.o.d.
Forest

APPENDIX C

CITY OF BOZEMAN
1982 SHAREHOLDER ESCROW AGREEMENT

D. Holmes

AGREEMENT

THIS AGREEMENT is made and entered into this 5th day of August, 1982, by and between the CITY OF BOZEMAN, a municipal corporation, organized and existing under the laws of the State of Montana, hereinafter referred to as "city", and KENNETH KRAFT, KATHRYN A. MOORE, JOHN F. NASH, STEVEN P. LIEBMANN, MARIANNE C. LIEBMANN, ALVIN J. GOLDENSTEIN, WILLIAM HOFFMAN, CHRISTIAN HOFFMAN, MARY REILLY and NASH-SOURDOUGH PROPERTIES, all residing in Gallatin County, Montana, hereinafter referred to as "irrigators".

W I T N E S S E T H

WHEREAS, these parties each own one or more shares in Bozeman Creek Reservoir Company; and

WHEREAS, the parties recognize that Mystic Lake Dam is in need of substantial renovation and repair; and

WHEREAS, it is in the interest of the city to increase the storage capacity of the reservoir at the time such renovation and repair is accomplished with the recognition by the parties that any additional water which is available because of the increased storage capacity will be allocated for use by the city; and

WHEREAS, it has been mutually determined that a proper method to acquire financing for the repairs is for the city to apply for appropriate grants from the State of Montana to complete the repairs; and

WHEREAS, the condition of successful grant applications is that the dam and all associated structures and facilities be owned by the municipality and used for municipal purposes; and

WHEREAS, the parties desire to establish an agreement to allow the city to acquire all shares of stock in the Reservoir if the grant applications are approved.

NOW, THEREFORE, in consideration of the mutual convenants and conditions contained herein, it is hereby agreed as follows:

1. The city shall make application to the Department of Natural Resources and Conservation of the State of Montana for a Renewable Resource

or a Water Development Grant
Development Grant / for funds to be utilized for the purpose of repair, reconstruction and renovation of Mystic Lake Dam. The application shall be for the greatest amount of money available for that purpose. ~~It is understood by the parties hereto that said amount may be $320,000.00.~~

2. The city has or shall make application to the State of Montana for a and/or other available funding.
Community Development Block Grant ~~in the amount of $400,000.00. The Development Block Grant funds shall also be utilized for the purpose of repair, reconstruction and renovation of Mystic Lake Dam in the event that such grant funds become available to the city and in the further event that the city receives a Renewable Resource Developmental Grant in an amount not less than $320,000.00.~~

3. It is contemplated that additional funds ~~in an amount of approximately $30,000.00~~ shall be required to complete the repair, reconstruction and renovation of the dam. The city shall provide such additional funds from whether they be grant
whatever source it has available to it for the purpose ~~and in amounts not to~~ or grant and loan funds.
~~exceed $30,000.00.~~

4. Each irrigator shall deliver to the Clerk of the City Commission of the City of Bozeman, as escrow agent, the share or shares of stock in the Reservoir Company which he or she holds. Additionally, each irrigator shall deliver to the Clerk of the City Commission an executed stock power which authorizes the Clerk to execute the share or shares of stock in the Reservoir Company on behalf of such irrigator in accordance with the terms and conditions of this agreement.

5. In the event that the city shall receive a Renewable Resource or a Water Development Grant
Developmental Block Grant ~~in an amount not less than $320,000.00~~ and receives or some other funding
a Community Developmental Block Grant ~~in an amount not less than $400,000.00~~ in the total amount of the reconstruction costs.
~~and in the further event that the contract for repair, reconstruction and renovation of Mystic Lake Dam shall not exceed $750,000.00,~~ the following shall occur

(a) At the time the contract for repair, reconstruction and renovation is signed by the city the Clerk is authorized to and shall execute on behalf of each irrigator an assignment to the city of the share or shares of stock in the Reservoir Company held by that irrigator. The city shall become

the sole owner of all shares of stock in the company and through the ownership of the shares, become the holder of all of the assets of the Company. The city shall have the right to liquidate the Company or undertake any other activity relating to the Company or its assets. All of the liabilities of the Company as well as its assets shall become the sole responsibility of the city.

(b) The city shall, at no expense to any irrigator, commence and complete within a reasonable time the repair, reconstruction and renovation of Mystic Lake Dam in accordance with the specifications and requirements of the United States Forest Service and in such further manner as the city shall determine is proper and desirable.

(c) The city and each irrigator shall negotiate a contract which shall provide for delivery by the city to the irrigator of ~~seventy (70)~~ 59.50 acre feet of water from Mystic Lake Reservoir for each share of stock that the irrigator held in the Company. The delivery shall be at such times as the irrigator shall demand the water during each irrigation season from and after the date of completion of the repair, reconstruction and renovation of the dam. The water shall be delivered at the rate of fifty (50) miner's inches of flow for a period of up to twenty-eight (28) days or increments thereof. The delivery and measurement of the water by the city shall be at those places along Sourdough Creek at which such delivery and measurement have historically been made.

In the event of drought, earthquake or other unforeseen natural occurrence resulting in the maximum amount of water which is actually stored in the reservoir in the year of the occurrence, when added together with any amounts of water delivered to any one or more irrigators prior to the time when the maximum amount of water within the reservoir is reached during that year, being less than the maximum storage capacity of the reservoir, each irrigator shall receive, as his pro rata share of such water, a percentage amount which is equal to the percentage of such water as compared to the total storage capacity. The reduction in the amount of water delivered to each irrigator shall not be allowed if the reduction in the amount of water in storage occurs as a result of any

deliberate or negligent act or any deliberate or negligent omission on the part of the city in its control of the dam and reservoir.

In the event of reduction of delivery of water by the city to any irrigator for the reasons set forth above, the irrigator shall not be required to pay assessment for water not delivered by the city and therefore, not received by him.

(d) Each irrigator shall pay to the city an annual assessment for the water he or his successor in interest shall receive or is entitled to receive. During the first five years after initial receipt of water the rate shall be ~~$5.50~~ the actual cost of the water including principal, interest and operation and maintenance, per acre foot for each acre foot the irrigator receives. However, should the quantity of the water in the dam be insufficient to provide the ~~70~~ 59.5 acre foot requirement per irrigator, then each irrigator shall pay only for the water actually received by him. ~~Commencing on the fifth annual anniversary due of receipt of the water and continuing on every fifth year thereafter the assessment per acre foot shall be adjusted to reflect the increased cost of operation and maintenance of the dam during the preceding five years. The average increase or decrease in the cost of operation and maintenance~~ actual costs divided by the water available. and financing of the dam and associated structures and facilities ~~over the first five years~~ shall be determined by computing the annual ~~percentage increase or decrease in~~ cost for each year, adding those figures together and dividing by five. ~~That figure shall be multiplied by the base assessment of $5.50. The resultant product shall be added to the base rate and such figure shall be the new base rate for the succeeding five years. Payment shall be made by the irrigator each year in cash within thirty (30) days after receipt of statement of account from the city.~~ water available.

In computing the cost of operation and maintenance of the dam and associated structures and facilities ~~no amount~~ all costs shall be included which represents a ~~capital~~ necessary expenditure.

~~In no event, however, shall the increase or decrease in the amount of the assessment on any adjustment date be greater than 20% of the assessment rate for the previous five year period.~~

The date in each year from which computations are to be made shall be the anniversary date of the first statement of account mailed by the city to each irrigator.

6. The contractual right of each irrigator to receive water shall be freely assignable, subject only to the right of first refusal hereinafter described.

In the event any irrigator shall, at any time, receive a bona fide offer to purchase his or her contractual right to receive water from Mystic Lake Reservoir, or any part thereof, and in the further event that the irrigator shall decide to sell the same for the amount and on the terms set forth in the offer then in that event, the irrigator must, before selling such right, promptly give the city actual notice in writing of the terms of the offer and of irrigator's willingness to sell for the price and on the terms offered, and the city shall have a first right of refusal to purchase the contractual right at the price and on the terms contained in the offer. In the event any such right of first refusal is not exercised within sixty (60) days from the date of receipt of such offer by certified mail or the delivery of such written offer in person, then the irrigator shall be free to sell the contractual right on the same or better terms than those offered, but shall not be free to sell on any lesser terms than those offered to the city.

The failure of the city to accept any such offer shall not constitute a waiver by the city of its right of first refusal on any other contractual right to receive water from Mystic Lake Reservoir. It is the intention of the parties hereto that this right of first refusal shall be binding on each irrigator, his heirs, successors and assigns.

7. It is understood and agreed that in the event any irrigator shall have no need for the use of any or all of the water which he is entitled to receive from the city from Mystic Lake Reservoir in any one year, the irrigator may give notice to the city that he does not desire to receive such water and the city shall not deliver the water to him but may use the water for its own purposes. The irrigator shall then have the obligation to pay an assessment for that year of $1.00 per acre foot for the water which he is otherwise entitled to receive but did not elect to receive.

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8. In the event that the city shall receive a Renewable Resource or Water Development Grant requested Development ~~Block~~ Grant in an amount less than ~~$420,000.00~~ or shall receive no such grant at all, or in the event that the city shall receive a Community or other funding the balance of the construction cost Developmental Block Grant in an amount less than ~~$400,000.00~~ or shall receive no such grant at all, or in the further event that the contract for repair, that proposed in the reconstruction and renovation of Mystic Lake Dam shall exceed ~~$750,000.00, the~~ preliminary engineering report prepared by its consultants, the city may elect to receive the shares of stock in the Reservoir Company which are held in the escrow account and undertake all responsibilities and obligations of this agreement and receive the benefits of this agreement. Alternatively, the city may terminate this agreement and direct the Clerk of the City Commission to return the share certificates and accompanying stock powers held in the escrow account to the owners of the certificates. In the event of such termination, all rights and responsibilities of any party hereunder shall cease and no party shall be further bound by the terms and provisions of this agreement.

It is recognized, understood and agreed that the repair, reconstruction and renovation of Mystic Lake Dam will probably prevent the storage of water during the construction period. The city shall have no obligation to deliver water to any irrigator if it is prevented from doing so because of such construction activity and no irrigator shall have any obligation to pay an assessment for water during the construction period when the city is unable to make delivery of water to the irrigator.

9. During the term of the escrow, the Bozeman Creek Reservoir Company shall continue in existence and shall remain the owner of Mystic Lake Dam and its associated structures and facilities. During the term of the escrow each present shareholder shall have the right to vote his or her shares in the Company at all Company meetings in accordance with the Company By-Laws and shall have all of the responsibilities resulting from the ownership of the stock. Furthermore, each shareholder shall have the right to use the water represented by his or her shares of stock as though such shareholder held physical possession of the shares.

6

10. All covenants and agreements herein contained shall extend and be obligatory upon the heirs, personal representatives or assigns of the respective parties hereto.

IN WITNESS WHEREOF, the parties hereto have signed and sealed this agreement the day and year first above written.

CITY OF BOZEMAN:

BY: Alfred M. Stiff

ATTEST:

IRRIGATORS:

Kenneth Kraft

Kathryn A. Moore

Steven P. Liebmann

John F. Nash

Marianne C. Liebmann

Goldenstein Brothers by

Alvin J. Goldenstein

William Hoffman

Christian Hoffman

Mary Reilly

Nash-Sourdough Properties

BY:

State of Montana)
: ss.
County of Gallatin)

I, the undersigned, hereby certify that the above, Alfred M. Stiff, did place his signature with an attestation by Robin L. Sullivan, in my presence, this 5th day of August, 1982.

Notary Public for
State of Montana
Residing at Bozeman, Montana
My Commission expires 4-30-85

(Notary Seal)

Technical Memorandum

To: Peter Scott Law Offices, PLLC
Brian Heaston, PE, City of Bozeman

From: Zach Magdol, PE
Michael Eytel

Re: **Sourdough Creek Mystic Lake Physical Hydrology Analysis**

Date: **March 15, 2024**

Introduction

This technical memorandum documents the methods, results, and analysis involved in developing the physical hydrology (i.e., yield) model of Sourdough Creek for the historic Mystic Lake impoundment. The City of Bozeman (City) seeks to understand the available physical hydrology to validate their municipal and irrigation reservoir claims, 41H 30459 00 and 41H 30460 00, respectively. Opinions and conclusions in this analysis are based on the review and evaluation of historical records provided by the City of Bozeman and are based on professional experience and education.

Founded in 1881 by the Bozeman Creek Reservoir Company to store water, the Mystic Lake Dam was constructed approximately 7 miles upstream from the mouth of the canyon and the City's municipal diversion. After several dam repairs, modifications, and improvements, the final reservoir active (i.e., usable) storage was 1,190 acre-feet m(ac-ft). In 1980, the dam was found unsafe due to seismic activity and was fully breached in 1985.

A United States Geological Survey (USGS) Thornthwaite Monthly Water Balance model for the Sourdough Creek basin was originally developed in 2013 to support the City's Integrated Water Resources Plan. In 2021, the model was updated and recalibrated as part of their Water Supply Optimization and Management Tool (WSOMT) project. The model estimates monthly streamflow volume at the City's municipal diversion (approximately the mouth of the canyon – see ***Figure 1***). This model was modified to compute the available yield at Mystic Lake.

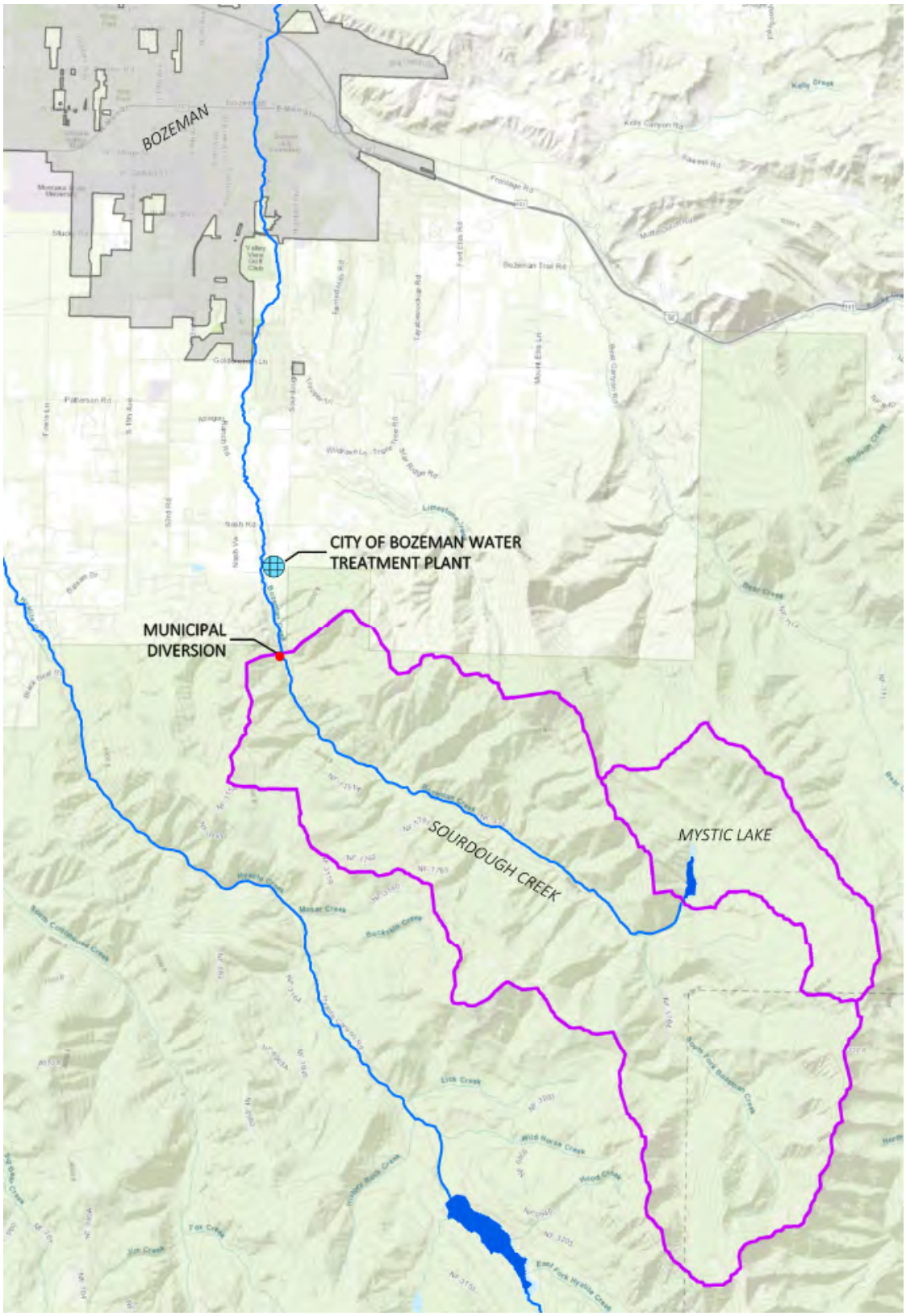

Figure 1. Sourdough Creek and Mystic Lake Watershed

Data Sources and References

This modeling analysis builds upon previous efforts on Sourdough Creek hydrology. Data sources used in the analysis are listed below.

Data Sources (list of all data sources used in original model development and updates):

- USGS Sourdough Creek Gauge 06047500 (abandoned, PDF gauge record available from October 1947 through September 1986).
- Natural Resources Conservation Services (NRCS) Lick Creek SNOTEL Site #578 (precipitation and temperature data – 1948-2020)
- National Oceanic and Atmospheric Administration (NOAA) Climate Station, Bozeman Gallatin Field Airport (precipitation and temperature data – 1948-2020)

References:

- Phase 1 Inspection Report National Dam Safety Program, Mystic Lake Dam, United States Army Corps of Engineers (USACE), 1980
- A Monthly Water-Balance Model Driven by a Graphical User Interface, USGS, 2007
- Bozeman Integrated Water Resources Plan, City of Bozeman, 2013
- Bozeman Water Supply Optimization and Management Tool, City of Bozeman, 2022

Modeling Methodology

The USGS Thornthwaite Monthly Water Balance model was used for this analysis. This widely accepted physical hydrology modeling methodology relies on precipitation and temperature time series inputs. In addition to precipitation and temperature, model input parameters include basin centroid elevation and latitude, runoff factors, soil moisture storage capacity, rain temperature threshold, snow temperature threshold, and maximum snowmelt rate. The latter five parameters are adjusted to calibrate the model output.

The Sourdough model output was calibrated to the historic streamflow gauge record (USGS 06047500) for the period 1960-1970. The water balance model generates monthly allocations of water within the hydrologic system (e.g., soil moisture, evapotranspiration, snow accumulation) to provide a unit hydrograph (runoff in units of depth) for a given basin. The unit hydrograph is then converted to average streamflow and monthly volumetric yield by multiplying the basin size. The calibrated parameters, monthly precipitation, and temperature time series were used to develop a unit hydrograph (mm) for the basin from 1948 through 2020. Detailed information on this calibration analysis is provided in the Bozeman Integrated Water Resources Plan (2013) and the Bozeman Water Supply Optimization and Management Tool documentation (2022).

This unit hydrograph was multiplied by the watershed area to the City's municipal diversion (28.2 sq-mi) to provide average monthly streamflow. ***Figure 2*** shows the model output and highlights the calibration period. The gauged record is higher than the modeled flows during spring runoff peaks; however, the total volume and monthly patterns match – this was deemed an appropriately conservative model result since the analysis aimed to determine water supply and a focus on low-flow periods.

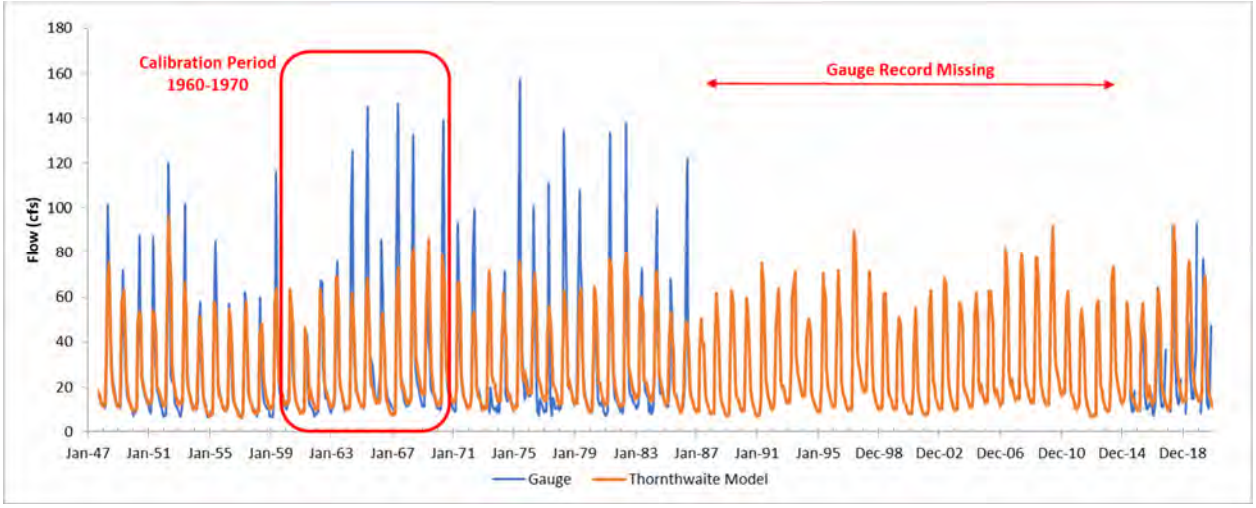

Figure 2. Sourdough Creek Comparison of Gauge Data and Thornthwaite Model at Municipal Diversion

An area weighting adjustment was made to adjust these results to the location of the historic impoundment. The watershed area of Mystic Lake is 5.3 sq-mi. The complete hydrograph at the historic impoundment is shown in ***Figure 3***.

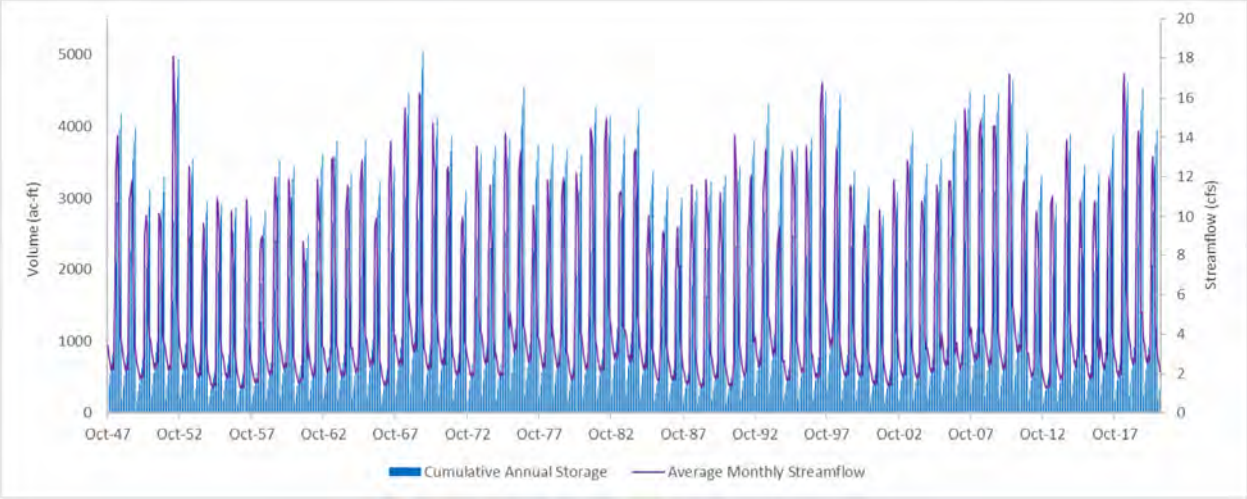

Figure 3. Sourdough Creek Modeled Streamflow and Annual Cumulative Volume at Mystic Lake

Results

The number of reservoir fills for Mystic Lake was calculated using the output from the Thornthwaite model (Figure 3) by dividing the total annual yield (water year) by the reservoir volume, 1,190 ac-ft. Over the 73 years of analysis (1948-2020), Mystic Lake would have been able to fill and refill 3.1 times the active storage volume - with a minimum of two fills and a maximum of over four fills. ***Table 1*** below summarizes the number of reservoir fills each year with a color gradient to help visualize dry and wet periods.

Table 1. Number of reservoir fills of active storage volume at Mystic Lake based on modeled physical yield (1940 – 2020).

Year	0	1	2	3	4	5	6	7	8	9
1940	~	~	~	~	~	~	~	~	3.5	3.3
1950	2.6	2.8	4.1	3.0	2.5	2.5	2.4	2.3	2.4	3.0
1960	2.9	2.1	3.0	3.2	2.8	3.2	2.7	2.9	3.8	4.2
1970	3.5	3.3	2.6	3.0	3.1	3.2	3.8	3.1	3.2	3.1
1980	3.0	3.6	3.5	3.2	3.6	2.8	2.7	2.5	2.6	2.7
1990	2.8	2.9	3.2	3.6	3.1	3.1	3.2	3.8	3.7	2.8
2000	2.6	2.3	2.6	3.3	2.9	3.0	3.4	3.8	3.7	3.7
2010	3.9	3.3	2.8	2.5	3.3	2.9	2.8	3.3	3.9	3.8
2020	3.3	~	~	~	~	~	~	~	~	~

Max:	4.2
Min:	2.1
Average:	3.1

Conclusion – Summary and Opinion

The Sourdough Creek Mystic Lake hydrologic analysis indicates that water storage and management would have been feasible for irrigation and municipal supplies. Our analysis shows that over the approximately 80-year record, Mystic Lake would have been able to fill and refill three times its active storage volume annually, assuming an annual re-set. The annual re-set is a conservative assumption of reservoir operations – water supply reservoirs are rarely emptied. Commonly incorporated reservoir operations could have optimized supply and municipal use. While modern technology has changed significantly in the last two decades, the technology available before 1973 would still have allowed for continuous operations of Mystic Lake to fill and re-fill up to three times its annual storage volume.

There are a number of significant historical events in the construction and development of Mystic Lake reservoir, which show the Bozeman Creek Reservoir Company (BCRC) and the City of Bozeman intended to continuously utilize Mystic Lake and Sourdough Creek water supplies while maintaining and improving the infrastructure related to Mystic Lake reservoir and Bozeman's water intake on Sourdough Creek up until 1985, when the City of Bozeman relinquished the Mystic Lake dam site easement with United States Forest Service. Since 1985

the City of Bozeman and BCRC shareholders have maintained the Mystic Lake water rights for BCRC shareholders and sought to utilize these rights continuously to serve the growing needs of the City of Bozeman and BCRC shareholders. The following is a summary of significant events related to Mystic Lake from 1901 – 1985:

- **1901** – Notice of water right claim by Bozeman Creek Reservoir Company for 3,000 miner inches from Bozeman Creek and construction of a 30' dam to create Mystic Lake.
- **1903 - 1904** – Construction of Mystic Lake with a reservoir capacity of 1,225 acre-feet. BRC issues 20 shares, and the City of Bozeman purchases 3 additional shares.
- **1919** – Construction of a new concrete spillway.
- **1929 – 1939** – City of Bozeman continues acquiring 3.5 additional BRC shares for a total of 6 BRC shares.
- **1959** – Mystic Lake Dam raised 2' and new concrete spillway.
- **1964** – New outlet gate.
- **1977** - Dam sinkhole and seepage discovered.
- **1985** – USFS orders full-depth dam breach.
- **1985** – Present – BRC and the City of Bozeman maintain BRC shares and evaluate alternative uses of Mystic Lake water rights.

In addition, operational records from **1946 – 1959** clearly show that the BCRC operated Mystic Lake in a manner that supports continuous operations and the ability to deliver Sourdough Creek water supply throughout the year.

- In most years, BCRC started storing water in February and March, with deliveries from storage occurring in most years from June through August.
- Historic Mystic Lake operations and deliveries often went into late October and culminated with delivering the entire reservoir contents, essentially re-setting the storage volume annually.

The significant events and operational records cited support the idea that the Sourdough basin can yield the decreed water supply volumes for the City of Bozeman to continue serving a growing population as the city grows into its water supply. Bozeman's water rights storage strategy must address the challenges posed by short-term and long-term water supply variability. Bozeman must continually monitor and evaluate its water supply and demand dynamics to support its growth and beneficial uses. This includes regularly assessing water availability, tracking population growth projections, and considering the impacts of climate change on the hydrological cycle.

With the population of Bozeman steadily increasing and the associated rise in water demand, the need for effective water storage solutions is becoming increasingly critical. Additionally, investing in infrastructure upgrades and maintenance is crucial to support the growing beneficial use of water rights. This may involve improving distribution networks, upgrading treatment facilities, and enhancing monitoring systems to ensure reliable and safe water supply

to the expanding population. By investing in infrastructure, Bozeman can maximize the potential of its water rights and ensure the long-term availability of its water resources.