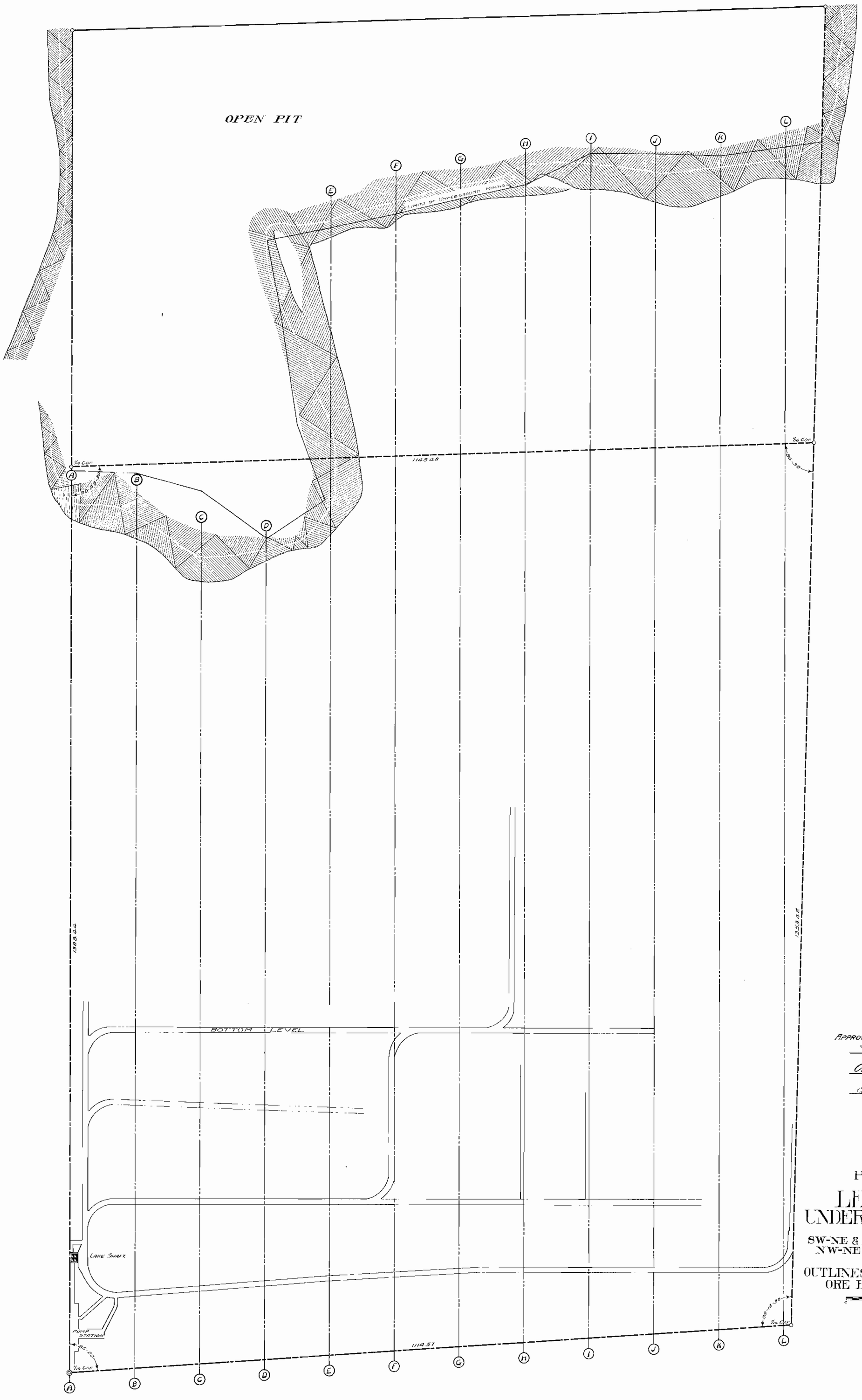


APPROVED:-

INTERSTATE IRON COMPANY.

ARTHUR IRON MINING CO.

PINE LAND COMPANY.

PLAN MAP OF LEETONIA UNDERGROUND MINE

ON THE SW-NE & A PORTION OF THE NW-NE OF SEC. 10-57-21

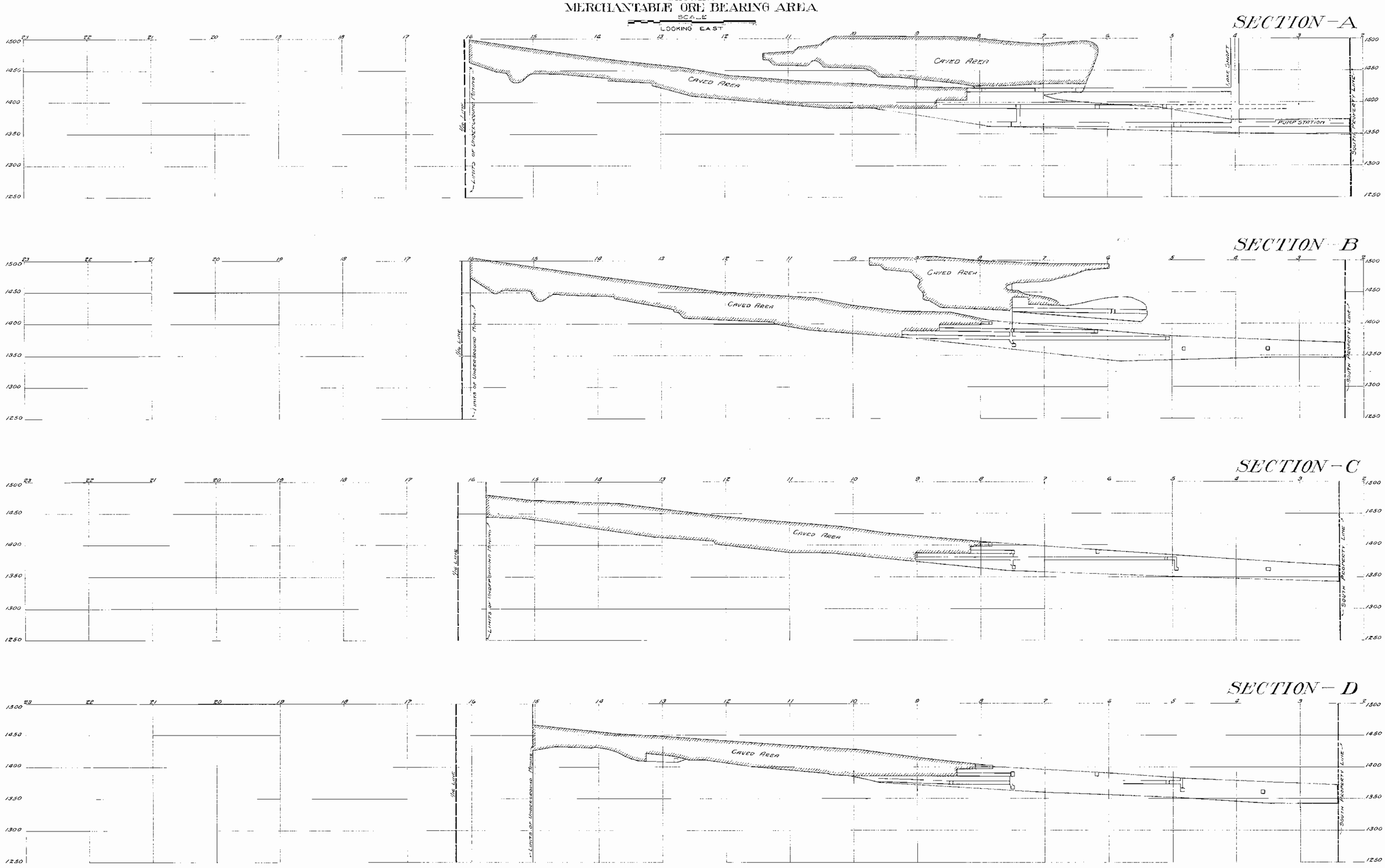
SHOWING

OUTLINES OF MERCHANTABLE ORE BEARING AREA

SCALE

CROSS SECTIONS
OF
LEETONIA UNDERGROUND MINE
ON THE
SW-NE & A PORTION OF THE
NW-NE OF SEC. 10-57-21
SHOWING
MERCHANTABLE ORE BEARING AREA

SCALE
LOOKING EAST



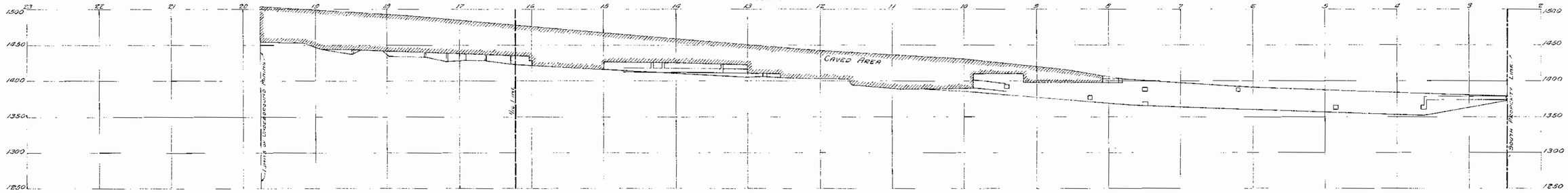
ORE BEARING AREAS

APPROVED:-
Mont Elliott
INTERSTATE IRON COMPANY.
B. M. Conklin Chf Eng
ARTHUR IRON MINING CO.
Frank M. Warren
PINE LAND COMPANY.

CROSS SECTIONS
OF
LEETONIA UNDERGROUND MINE
ON THE
SW-NE & A PORTION OF THE
NW-NE OF SEC. 10-57-21
SHOWING
MERCHANTABLE ORE BEARING AREA

SCALE
LOOKING EAST

SECTION-E



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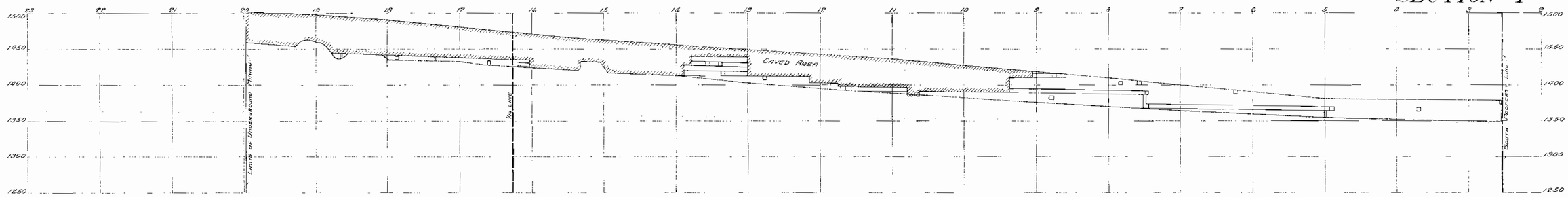

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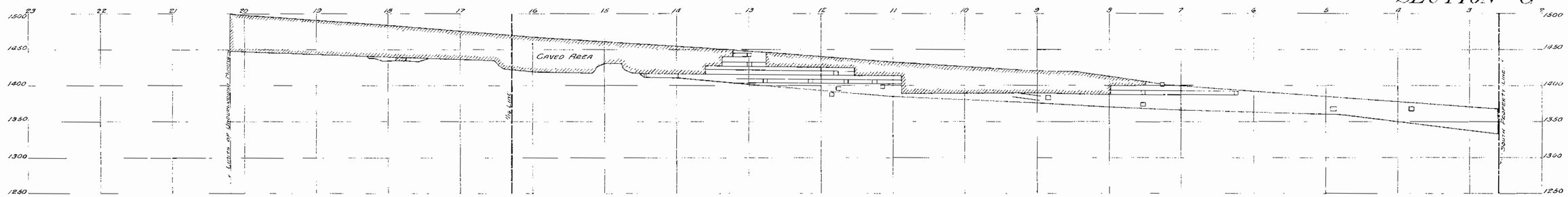

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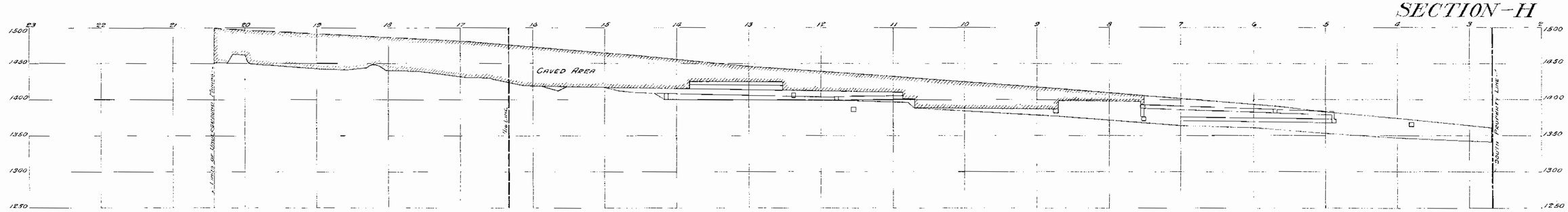


ORE BEARING AREAS

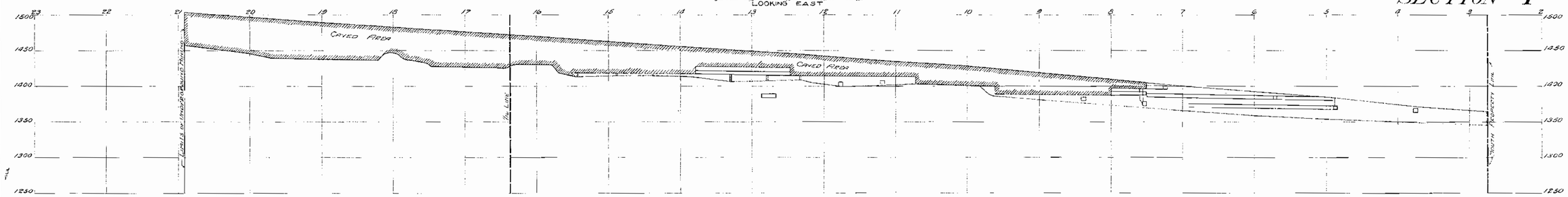
APPROVED :-
INTERSTATE IRON COMPANY.
ARTHUR IRON MINING CO.
PINE LAND COMPANY.

CROSS SECTIONS
OF
LEETONIA UNDERGROUND MINE

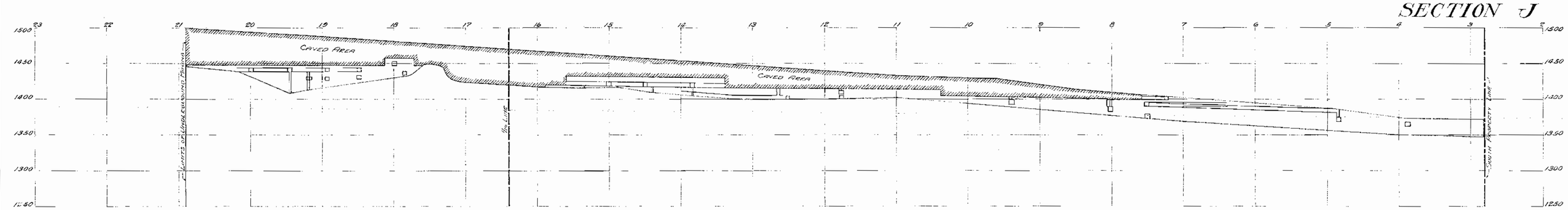
ON THE
SW-NE & A PORTION OF THE
NW-NE OF SEC. 10-57-21
SHOWING
MERCHANTABLE ORE BEARING AREA

SCALE
LOOKING EAST

SECTION – I



SECTION J



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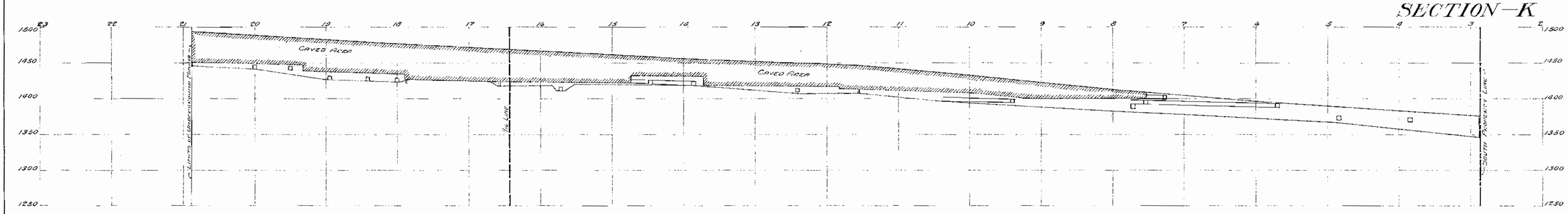

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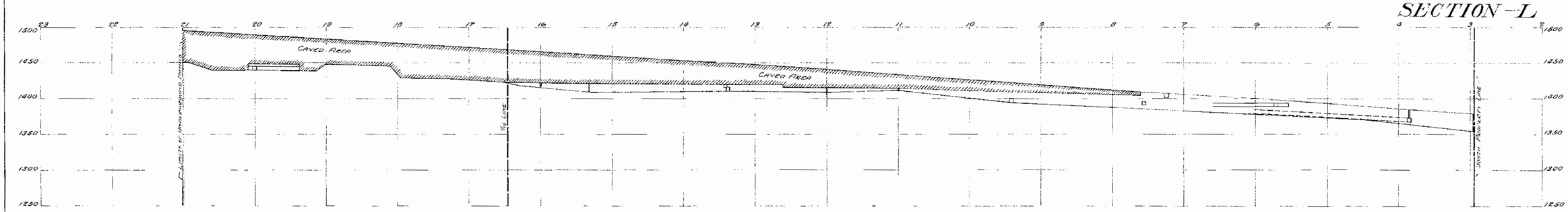


ORE BEARING AREAS

APPROVED:-

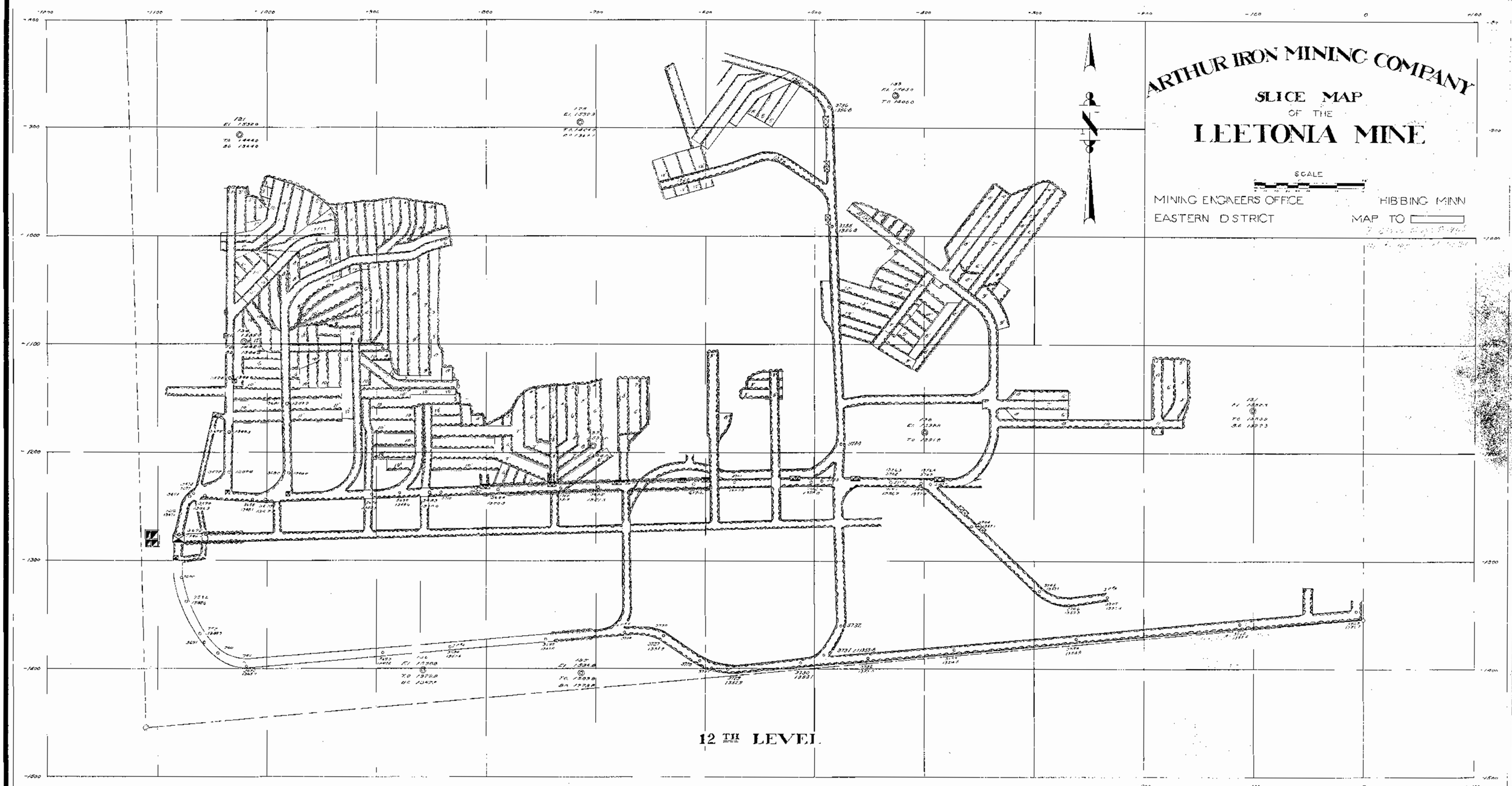
Frank Elliott
INTERSTATE IRON COMPANY.

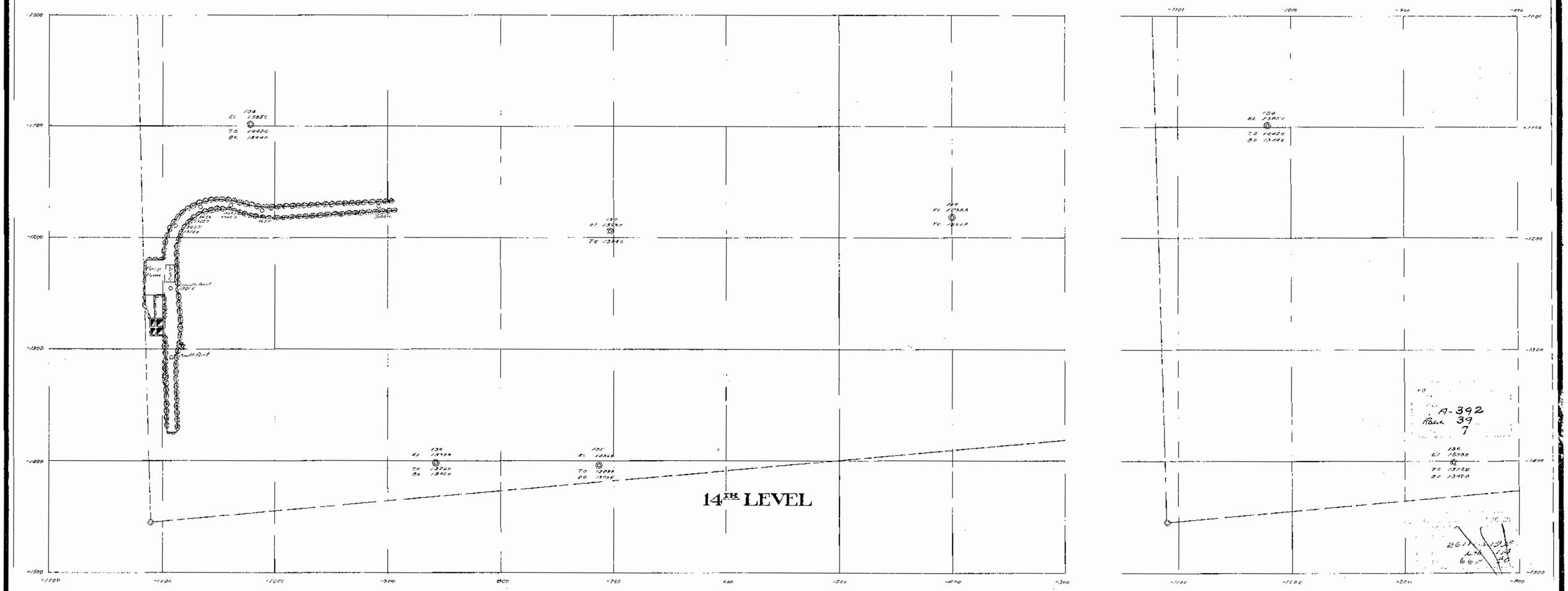
B. M. Franklin Chf. Eng.
ARTHUR IRON MINING CO.

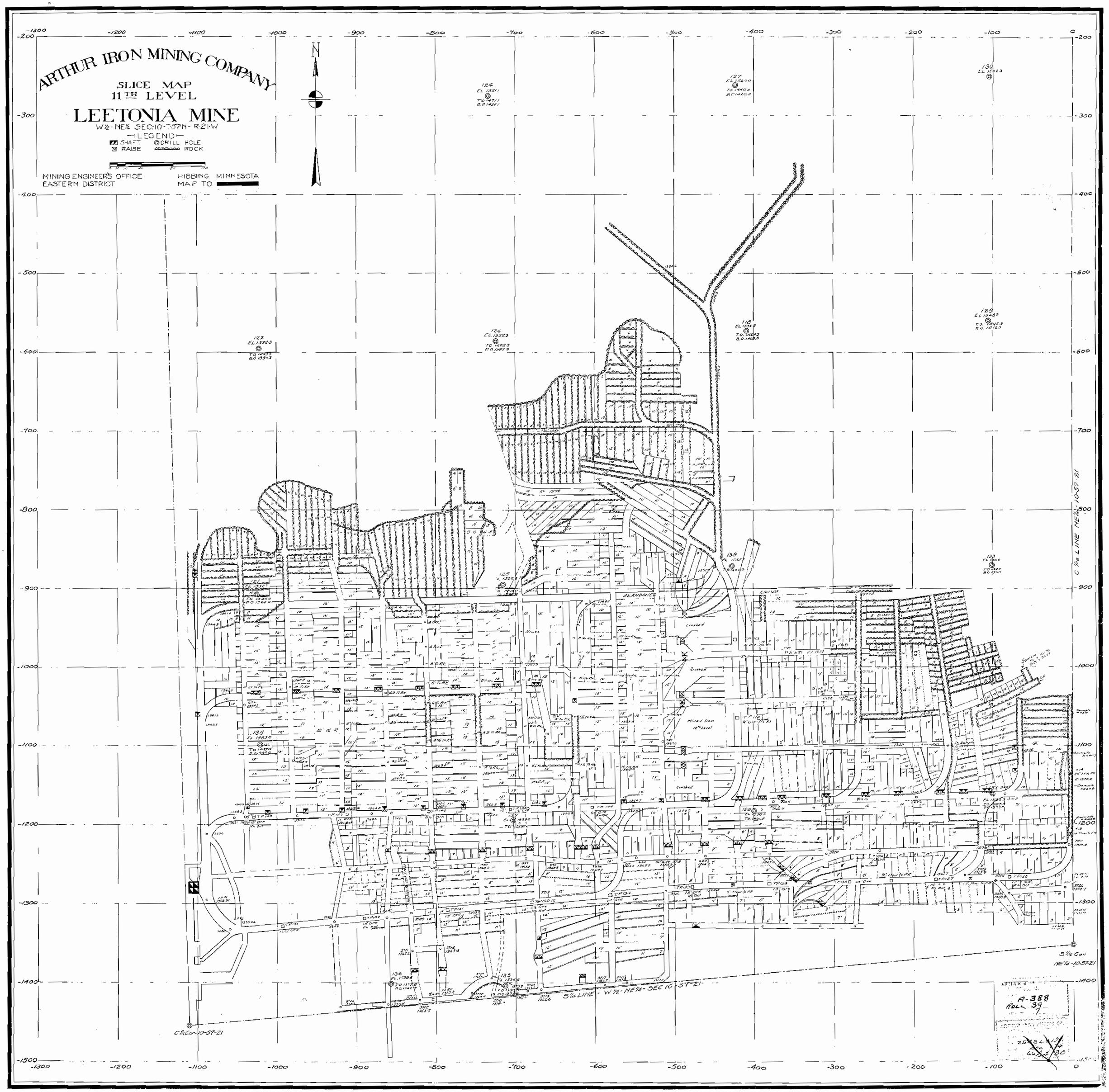
Frank M. Williams
PINE LAND COMPANY.

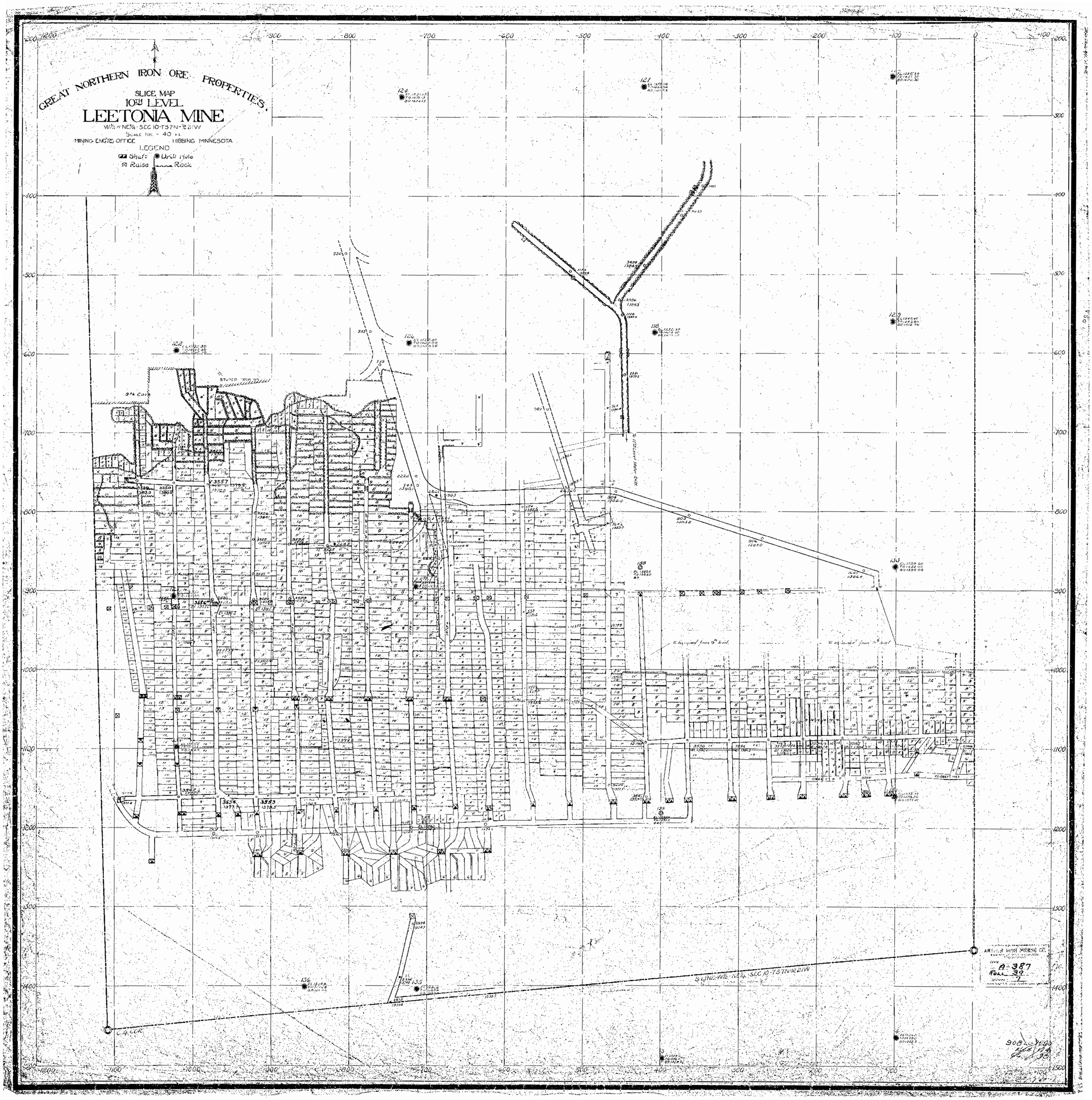
ARTHUR IRON MINING COMPANY
SURFACE MAP
OF THE
DALE - LEETONIA
MINES AND VICINITY
SCALE OF FEET
LAKE SUPERIOR DATUM
MINING ENGINEERING DEPT
CENTRAL DISTRICT
Oct. 1st 1919.
HAROLD MINE OFFICE
HIBBING MINN
DALE
5W of SE
MAHONING
SE of SE
S. UNO N.P.
SW of SW
LEETONIA
NW of NE
MAHONING
NE of NE
HAROLD MINE
NW of NW
LEETONIA
SW of NE
TYLER
SE of NE
TYLER
SW of NW
Leetonia Rock Dump
Leetonia Dump
LEETONIA
TOWNSHIP
ROAD
LOCATION
Area Cleaned 1915
Area Cleaned 1916
Area Cleaned 1917
Area Cleaned 1918
Area Cleaned 1919
Cleaned Area
Timber Sour
Leetonia Caves
Great Tank
School
Office
Covered Mine Frame
Iron Pipe
Line between Sec 10 & 15-51-21
Line between Sec 10 & 15-52-21
East and West Center Line Section 10-52-21
N.W.-S.E.
O.I.M.Co. STATE
Roll I-62
4
5

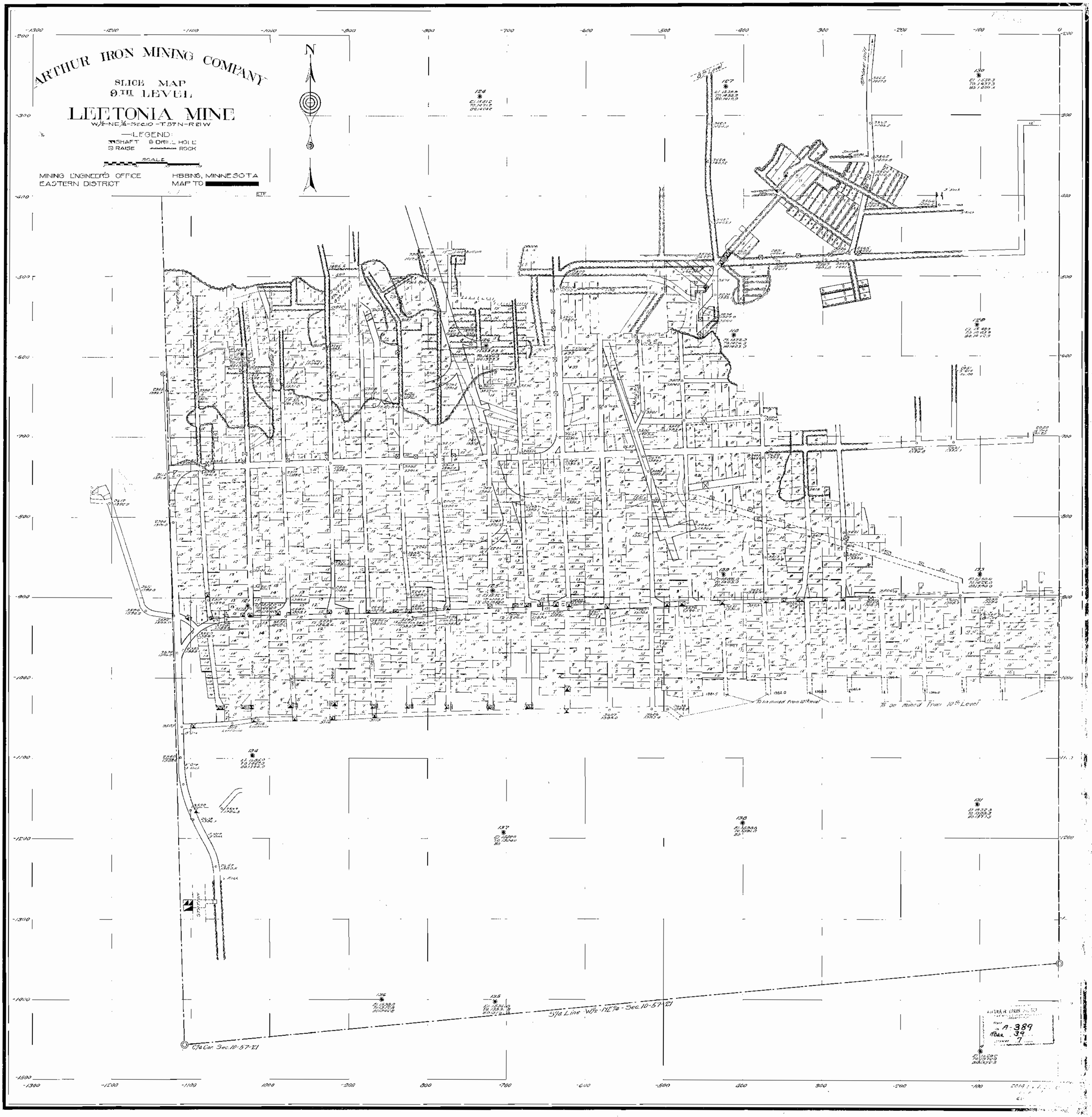
-1000
-1100
-1200
-1300
-1400
-1500
-1200
-1100
-1000
-900
-800
-700
-600
-500
-400
-300
Pump Room
North Point
South Point
14TH LEVEL

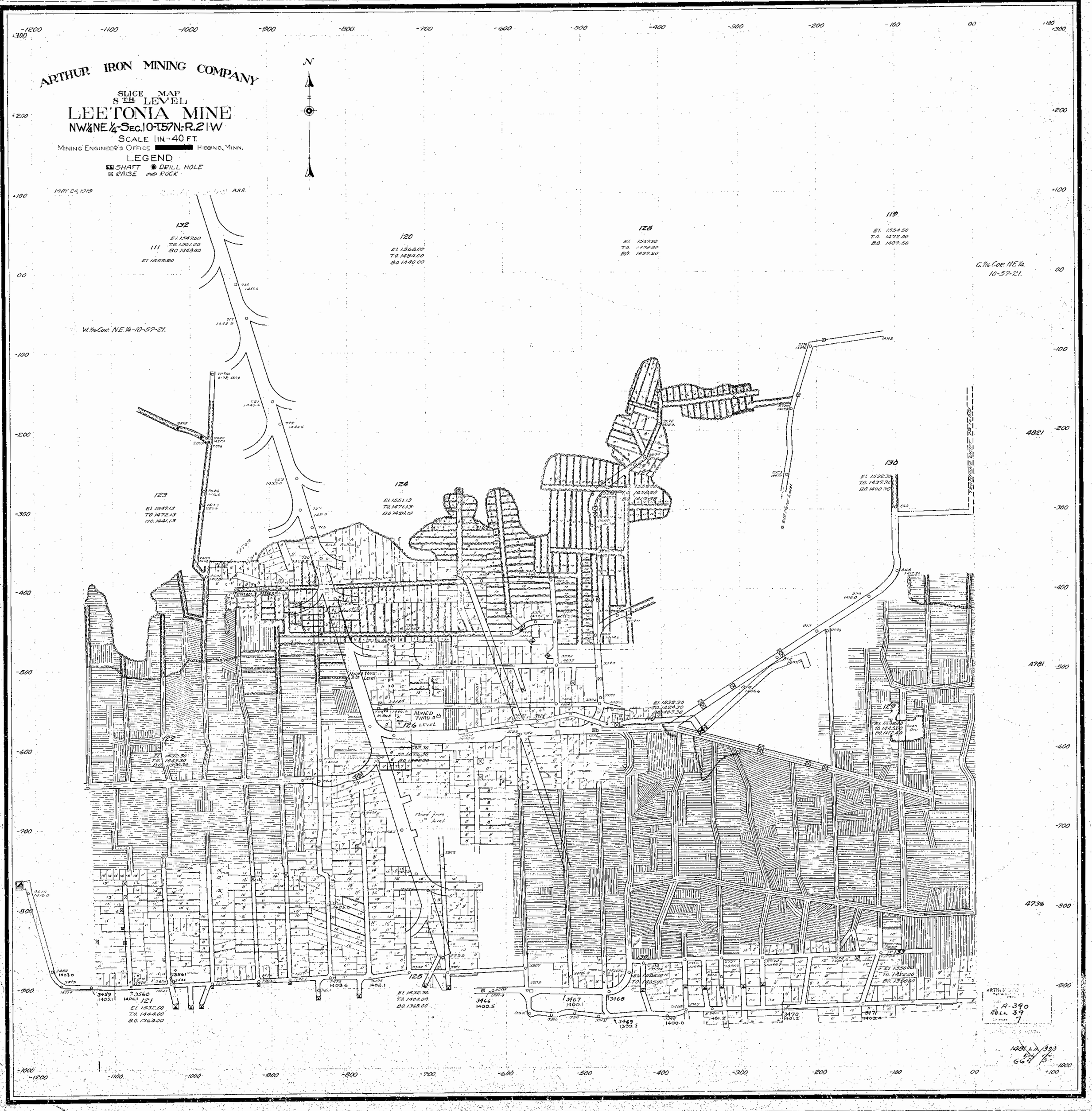

ARTHUR IRON MINING COMPANY
SLICE MAP
OF THE
LEETONIA MINE
SCALE
MINING ENGINEERS OFFICE
EASTERN DISTRICT
HIBBING MINN
MAP TO
12 TH LEVEL

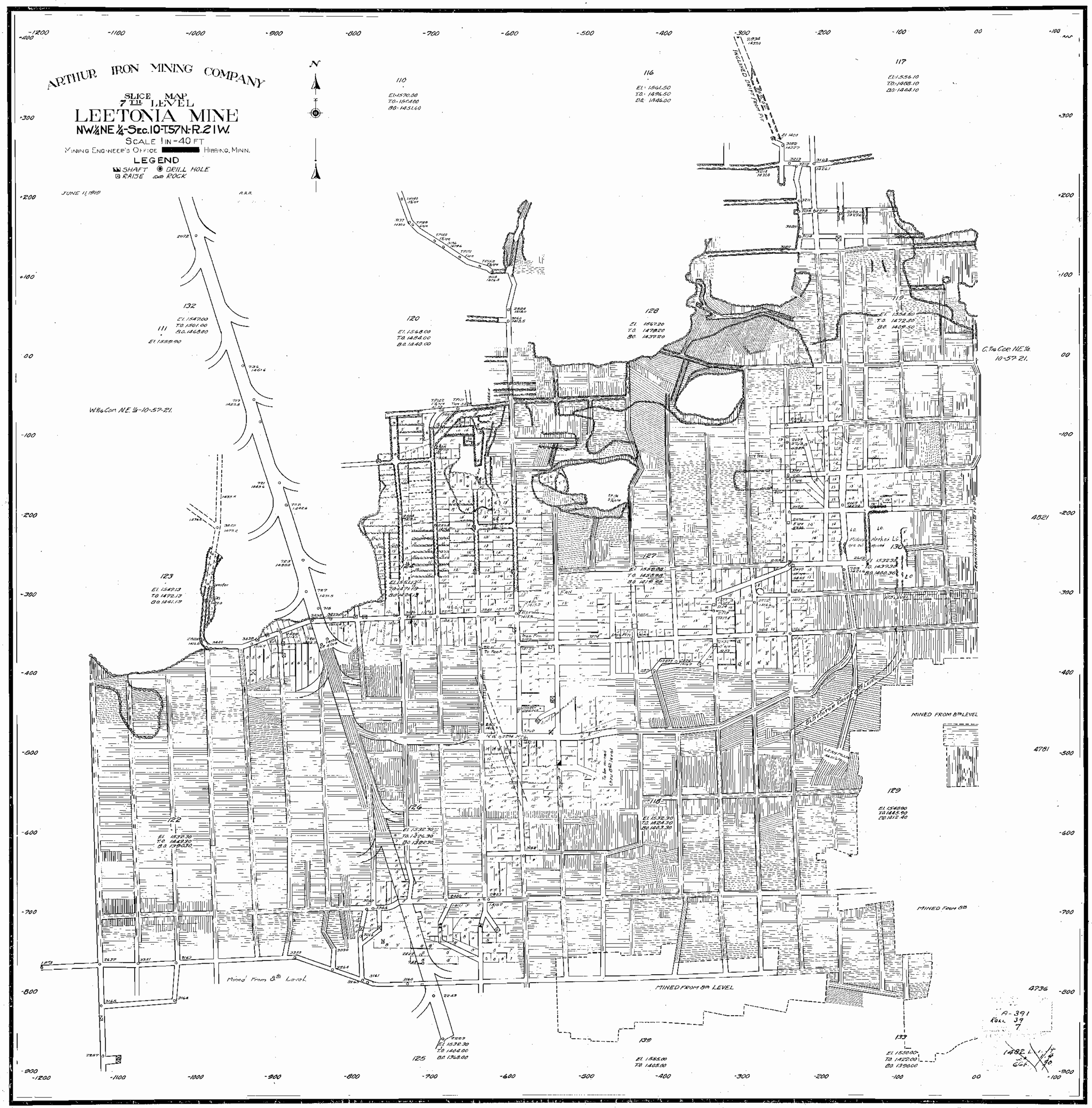

14TH LEVEL
A-392
Page 39
7

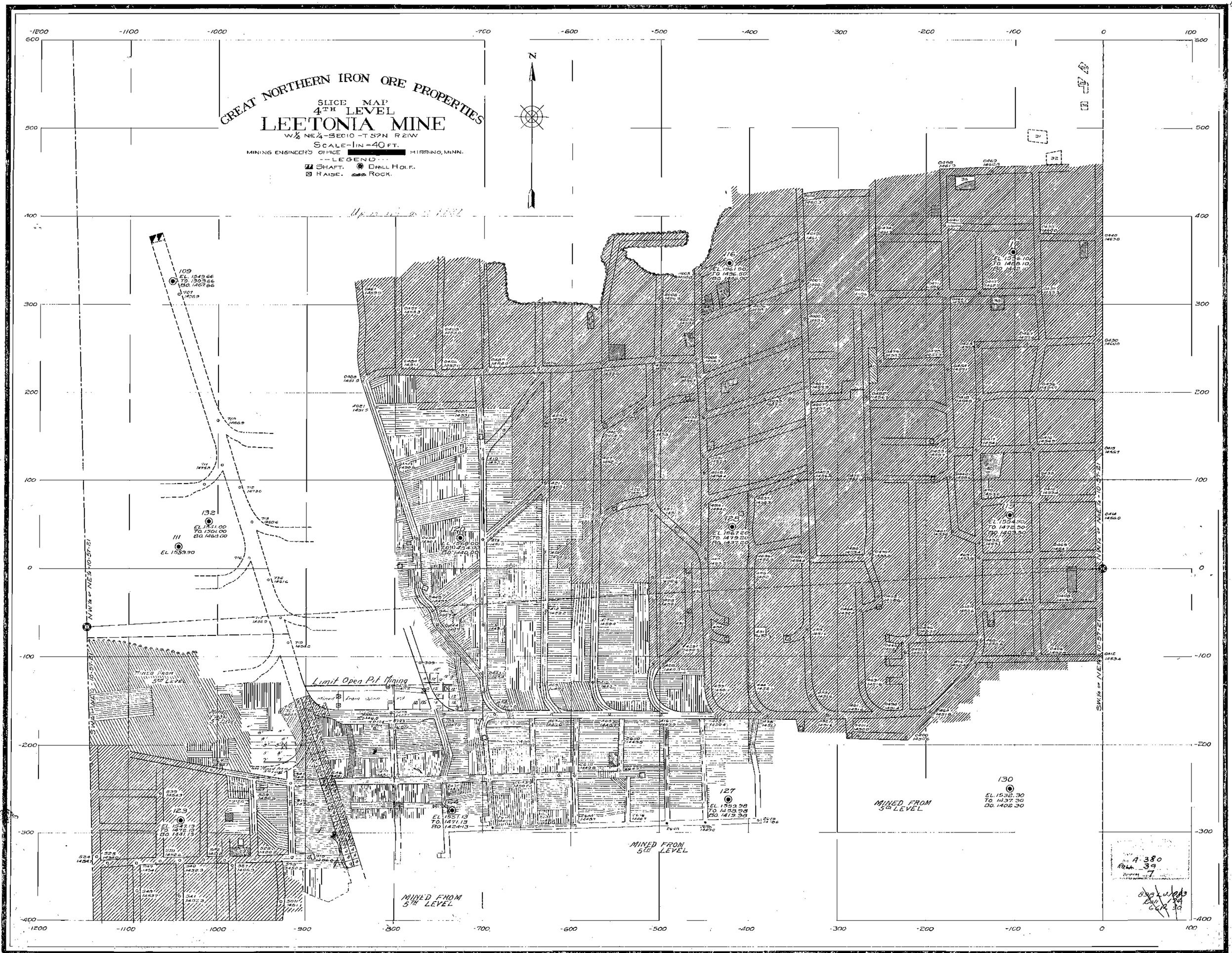

ARTHUR IRON MINING COMPANY
SLICE MAP
11TH LEVEL
LEETONIA MINE
W½-NE¼ SEC-10-T57N-R21W
LEGEND
SHAFT
DRILL HOLE
RAISE
ROCK
MINING ENGINEER'S OFFICE
EASTERN DISTRICT
HIBBING MINNESOTA
MAP TO
N
ABANDONED
Crushed
Mined from 12th Level
S¼ LINE - W½-NE¼-SEC 10-57-21
C¼ Cor-10-57-21
S¼ Cor
NE¼-10-57-21
C ¼ LINE NE¼-10-57-21
A-388
ROLL 39
7

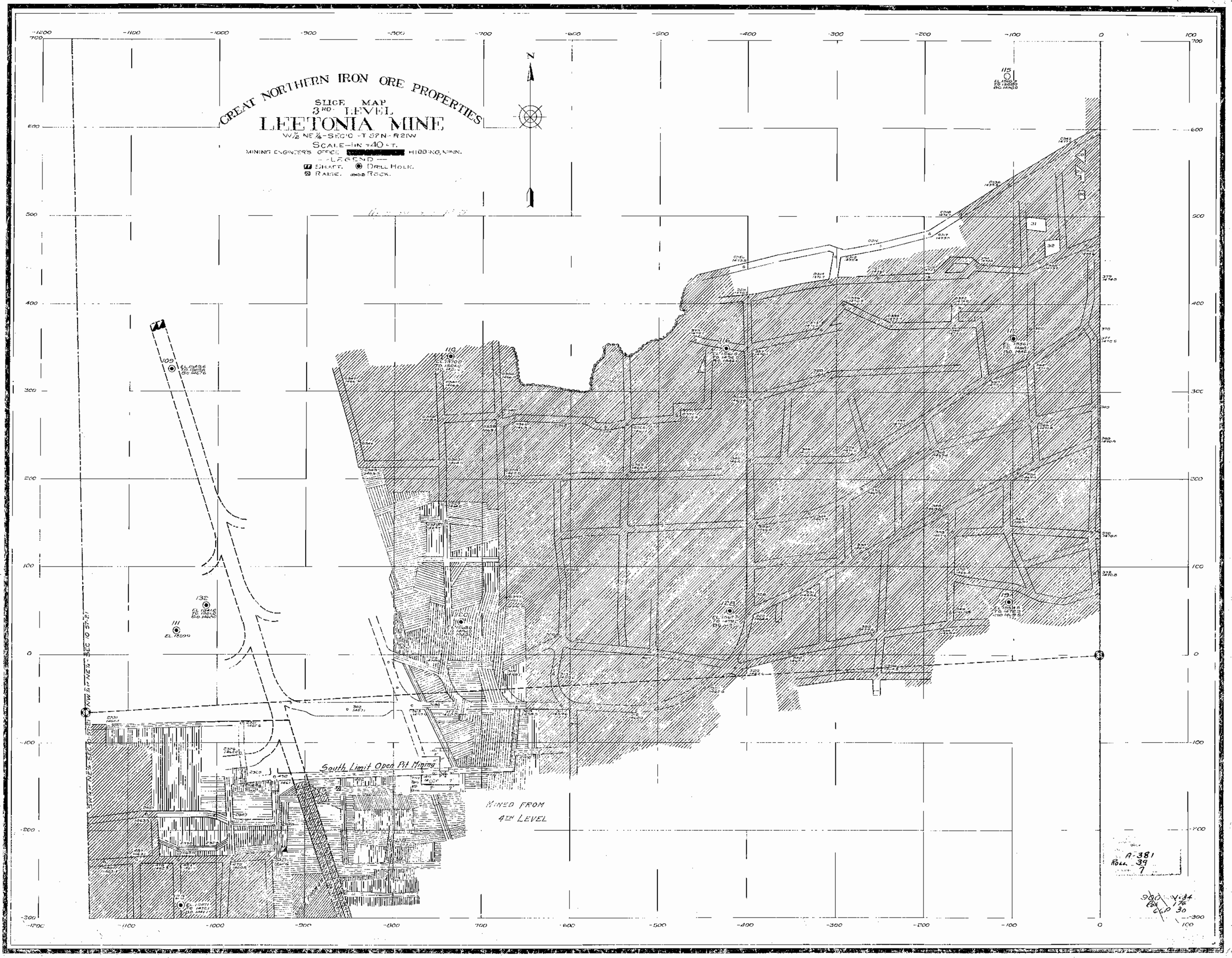

GREAT NORTHERN IRON ORE PROPERTIES.
SLICE MAP
10TH LEVEL
LEETONIA MINE
W½ of NE¼ - SEC 10-T57N-R21W
SCALE 1IN. = 40 FT.
MINING ENG'RS OFFICE HIBBING MINNESOTA
LEGEND
Shaft
Drill Hole
Raise
Rock
9th Cor.
To 12th Level Main Drift
To level from 9th level.
To level from 9th level.
S½NE¼ NW¼ SEC 10-T57N-R21W
C.4 COR.
ARTHUR IRON MINING CO.
A-387
ROLL 39
7

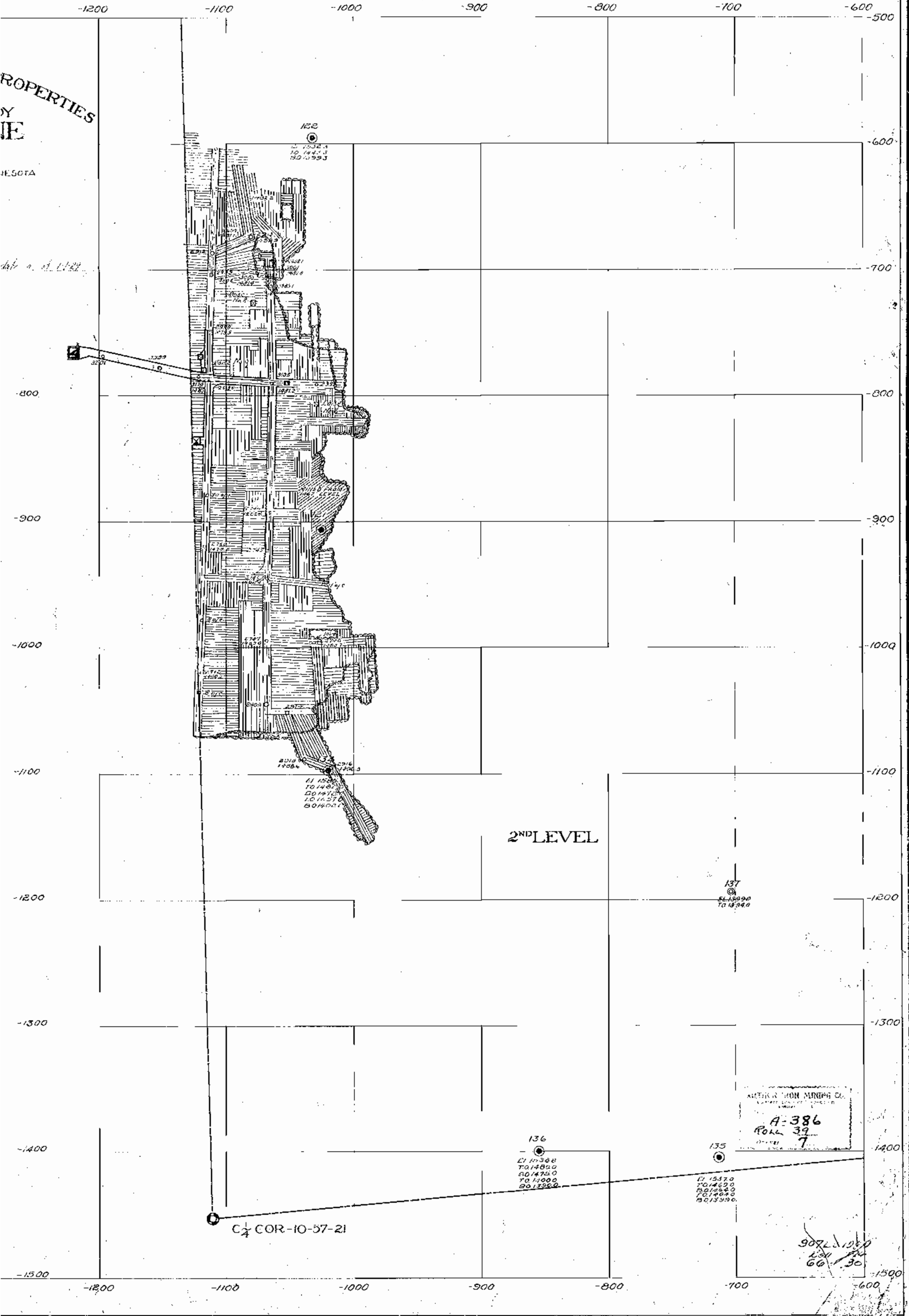

ARTHUR IRON MINING COMPANY
SLICE MAP
9TH LEVEL
LEETONIA MINE
W½-NE¼-SEC.10-T.57N-R.21W
LEGEND:
SHAFT
DRILL HOLE
RAISE
ROCK
SCALE
MINING ENGINEER'S OFFICE
EASTERN DISTRICT
HIBBING, MINNESOTA
MAP TO
N
To be mined from 10th Level
To be mined from 10th Level
S¼ Line W½-NE¼-Sec.10-57-21
C¼ Cor. Sec.10-57-21
A-389
39
7

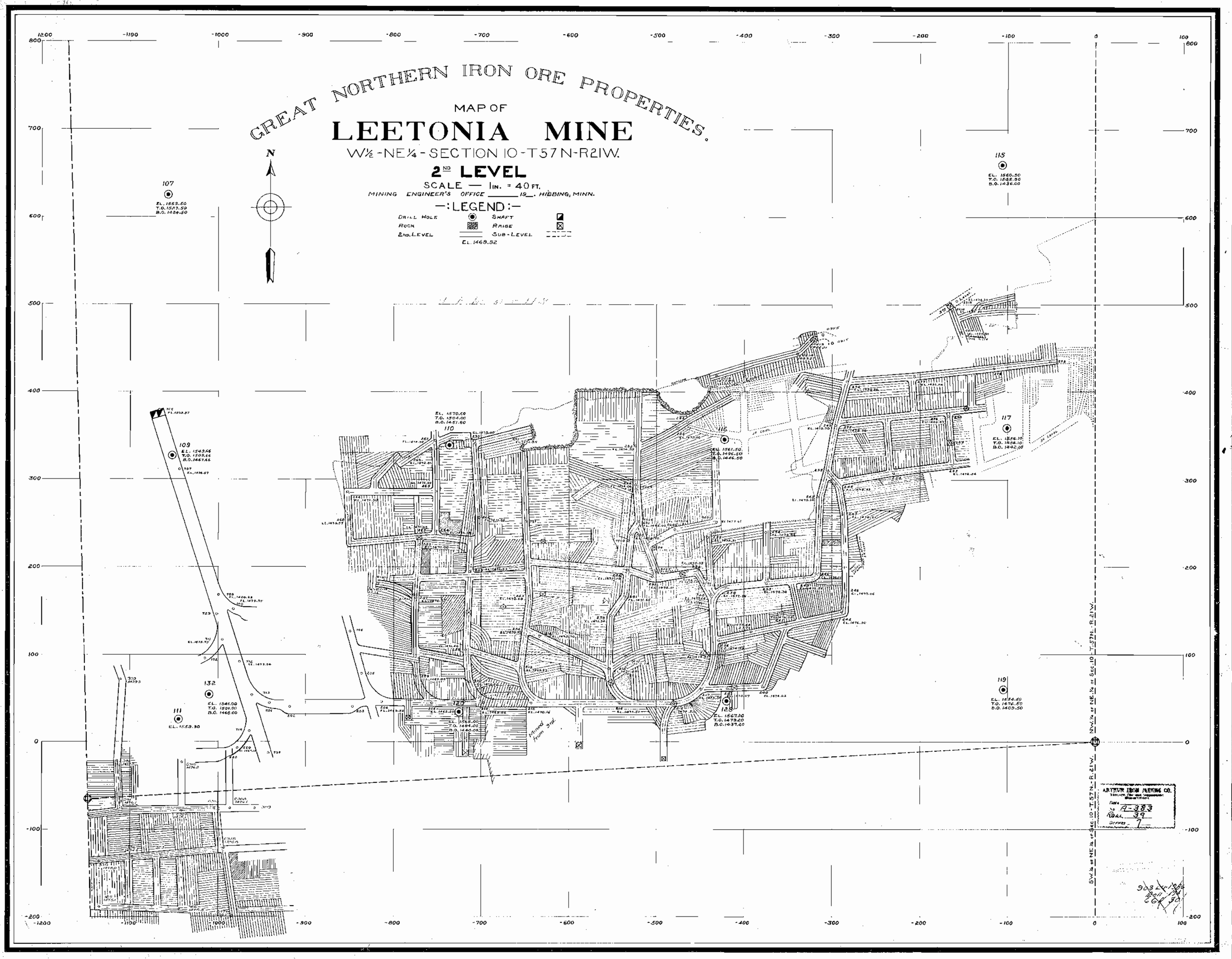

ARTHUR IRON MINING COMPANY
SLICE MAP
8TH LEVEL
LEETONIA MINE
NW¼NE¼-SEC.10-T.57N.-R.21W
SCALE 1IN.=40 FT.
MINING ENGINEER'S OFFICE HIBBING, MINN.
LEGEND
SHAFT
DRILL HOLE
RAISE
ROCK
N
MAY 24, 1919
W.1/16 COR. N.E.¼-10-57-21.
C.1/16 COR. N.E.¼. 10-57-21.
MINED THRU 9TH LEVEL
MINED THRU 3RD LEVEL
Mined from 3rd Level
Lean Ore
4821
4781
4736
A-390
ROLL 39
7

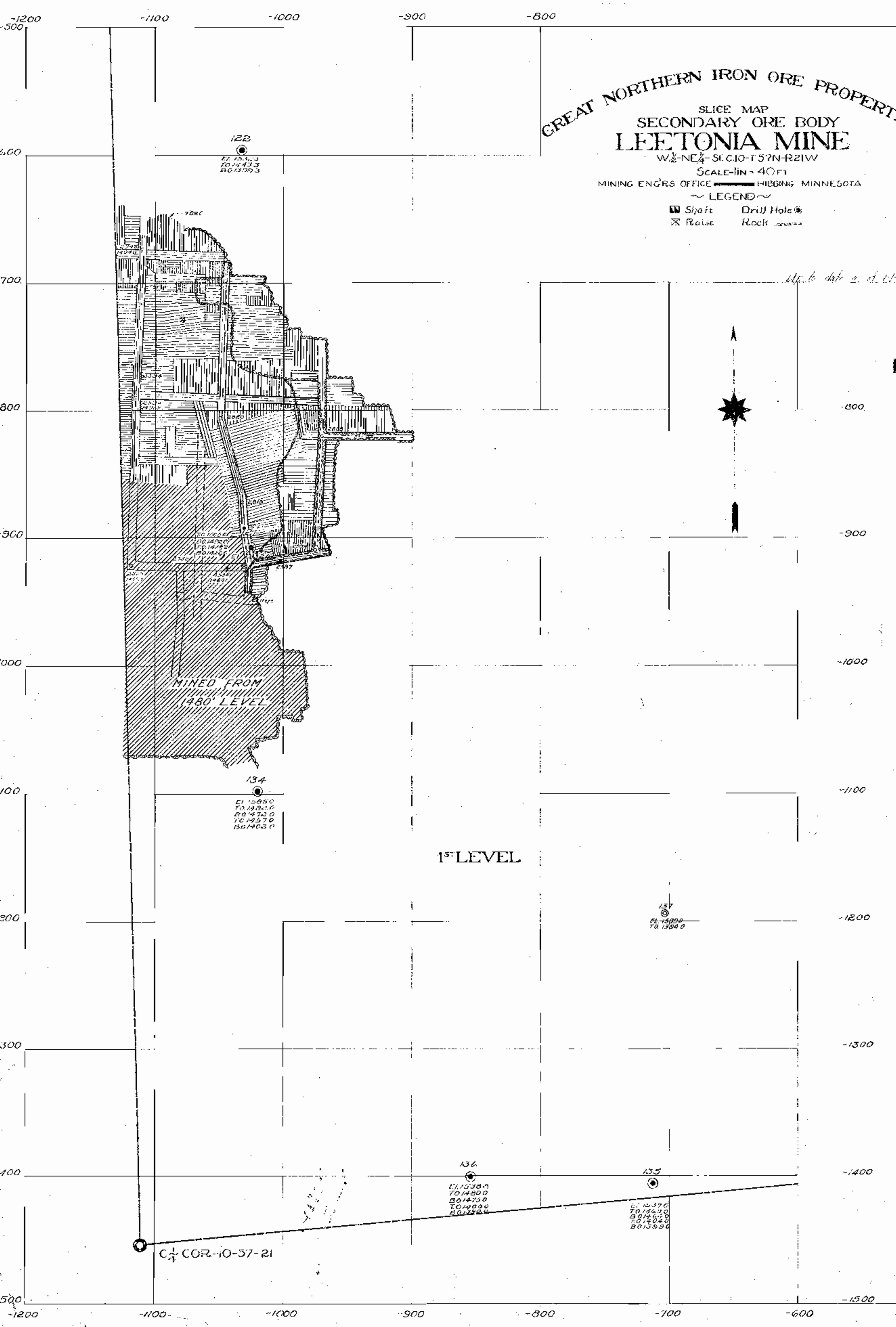

ARTHUR IRON MINING COMPANY
SLICE MAP
7TH LEVEL
LEETONIA MINE
NW¼NE¼-Sec.10-T.57N-R.21W.
SCALE 1 IN = 40 FT
MINING ENGINEER'S OFFICE HIBBING, MINN.
LEGEND
SHAFT
DRILL HOLE
RAISE
ROCK
JUNE 11, 1919
N
W.¼ Cor. N.E.¼-10-57-21.
C.¼ Cor. N.E.¼ 10-57-21.
INCLINED DRIFT FROM PIT
OLD MOTOR DRIVE 8TH LEVEL
MINED FROM 8TH LEVEL
Mined from 8th Level
To be mined thru 8th level
Transfer
Fan
Pillars Clerkes L.O. Mines
L.O.
110
116
117
119
120
122
123
125
126
127
128
129
130
132
133
A821
4781
4736
A-391
Roll 39
7

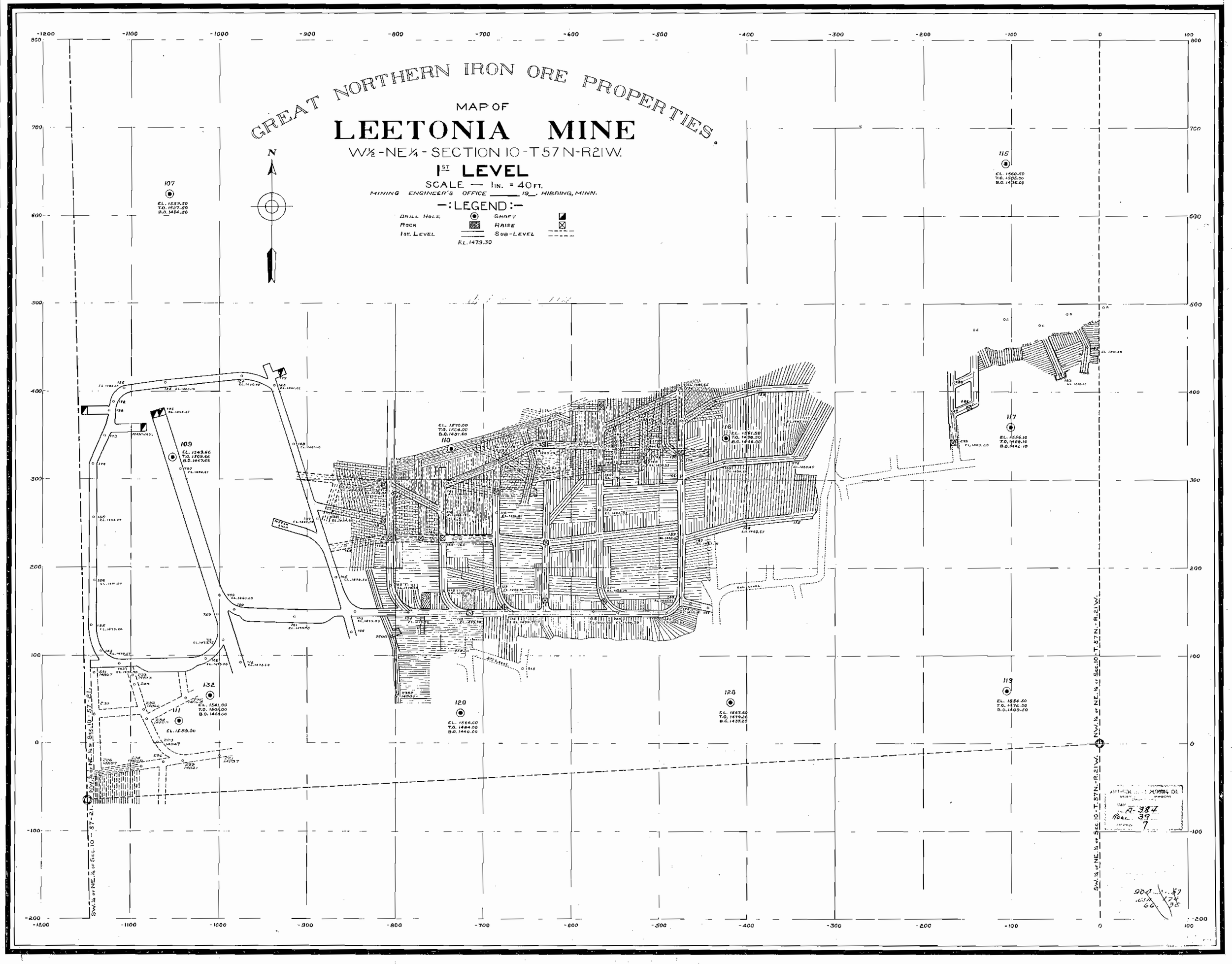

GREAT NORTHERN IRON ORE PROPERTIES
SLICE MAP
4TH LEVEL
LEETONIA MINE
W½ NE¼-SEC10-T57N R21W
SCALE-1IN=40 FT.
MINING ENGINEER'S OFFICE HIBBING, MINN.
LEGEND
SHAFT.
DRILL HOLE.
RAISE.
ROCK.
N
Limit Open Pit Mining
MINED FROM 5TH LEVEL
MINED FROM 5TH LEVEL
MINED FROM 5TH LEVEL
MINED FROM 5TH LEVEL
MINED FROM 5TH LEVEL
NW¼ of NE¼ 10-57-21
SW¼ of NE¼ 10-57-21
NW¼ of NE¼ 10-57-21
SW¼ of NE¼ 10-57-21
109
EL 1543.66
TO 1303.66
BO 1467.66
132
EL 1521.00
TO 1301.00
BO 1463.00
111
EL 1559.90
116
EL 1561.50
TO 1436.50
BO 1456.50
125
EL 1567.20
TO 1479.20
BO 1437.20
EL 1554.90
TO 1475.90
BO 1409.90
EL 1556.10
TO 1428.10
BO 1456.10
123
EL 1547.13
TO 1471.13
BO 1441.13
EL 1557.13
TO 1471.13
BO 1424.13
127
EL 1559.38
TO 1453.38
BO 1413.38
130
EL 1532.30
TO 1437.30
BO 1402.30
A-380
Roll 39
7

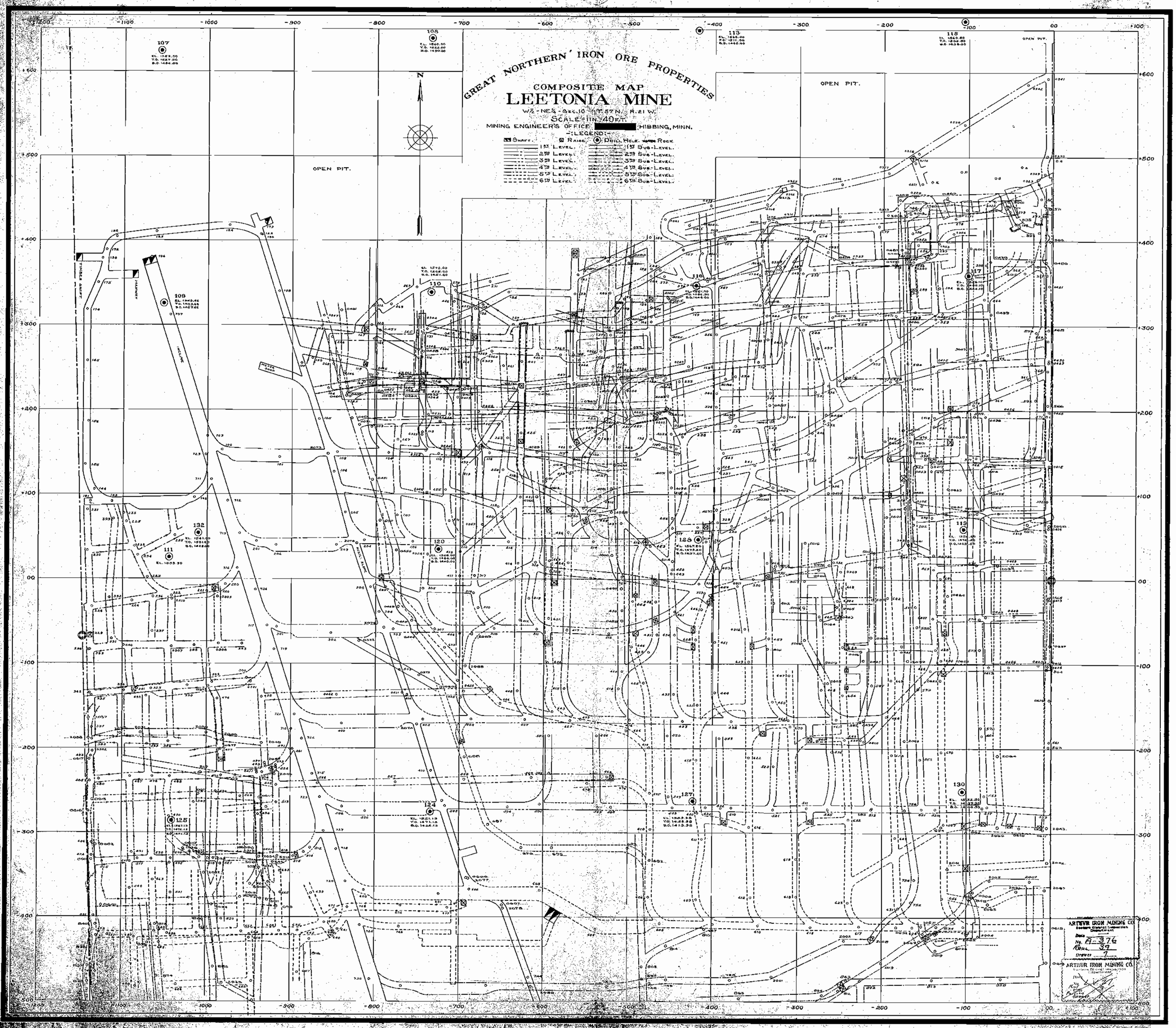

GREAT NORTHERN IRON ORE PROPERTIES
SLICE MAP
3RD LEVEL
LEETONIA MINE
W½ NE¼-SEC 10-T 57N-R21W
SCALE—1IN = 40 FT.
MINING ENGINEER'S OFFICE [redacted] HIBBING, MINN.
— LEGEND —
SHAFT.
DRILL HOLE.
RAISE.
ROCK.
N
South Limit Open Pit Mining
MINED FROM
4TH LEVEL
A-381
ROLL 39
7


ROPERTIES
NE
NESOTA
2ND LEVEL
C¼ COR-10-57-21
136
135
137
A-386
ROLL 39
7
-1200
-1100
-1000
-900
-800
-700
-600
-500
-1300
-1400
-1500

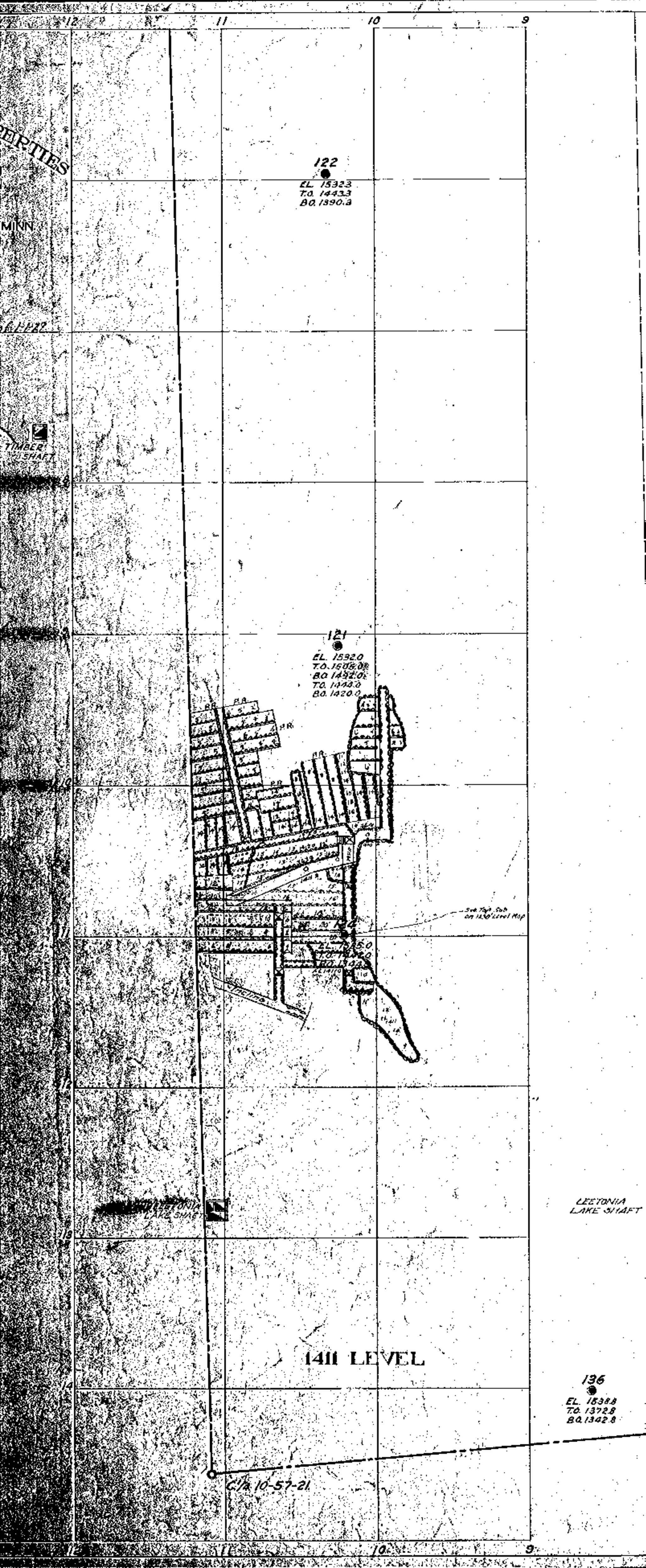

GREAT NORTHERN IRON ORE PROPERTIES.
MAP OF
LEETONIA MINE
W½-NE¼-SECTION 10-T57N-R21W.
2ND LEVEL
SCALE — 1 IN. = 40 FT.
MINING ENGINEER'S OFFICE _____ 19__. HIBBING, MINN.
—:LEGEND:—
DRILL HOLE
SHAFT
ROCK
RAISE
2ND. LEVEL
SUB-LEVEL
EL. 1469.52
N
107
EL. 1553.50
T.O. 1547.50
B.O. 1434.50
115
EL. 1560.50
T.O. 1545.50
B.O. 1436.00
109
EL. 1549.66
T.O. 1503.66
B.O. 1467.66
110
EL. 1570.60
T.O. 1504.00
B.O. 1451.60
116
EL. 1561.50
T.O. 1496.50
B.O. 1446.50
117
EL. 1556.10
T.O. 1488.10
B.O. 1442.10
132
EL. 1541.00
T.O. 1501.00
B.O. 1466.00
111
EL. 1559.30
119
EL. 1554.60
T.O. 1476.60
B.O. 1403.50
128
EL. 1567.20
T.O. 1479.20
B.O. 1437.20
Mined from 3rd.
NW¼ of NE¼ of Sec. 10 - T. 57 N. - R. 21 W.
SW¼ of NE¼ of Sec. 10 - T. 57 N. - R. 21 W.
ARTHUR IRON MINING CO.
Date
No. A-383
Roll 39
Series 7


GREAT NORTHERN IRON ORE PROPERT
SLICE MAP
SECONDARY ORE BODY
LEETONIA MINE
W½-NE¼-SEC.10-T.57N-R21W
SCALE-1in = 40 FT
MINING ENG'RS OFFICE HIBBING MINNESOTA
~ LEGEND ~
Shaft
Raise
Drill Hole
Rock
MINED FROM 1480' LEVEL
1ST LEVEL
C¼ COR-10-57-21
122
134
136
135
137
-1200
-1100
-1000
-900
-800
-700
-600
-500
-1300
-1400
-1500

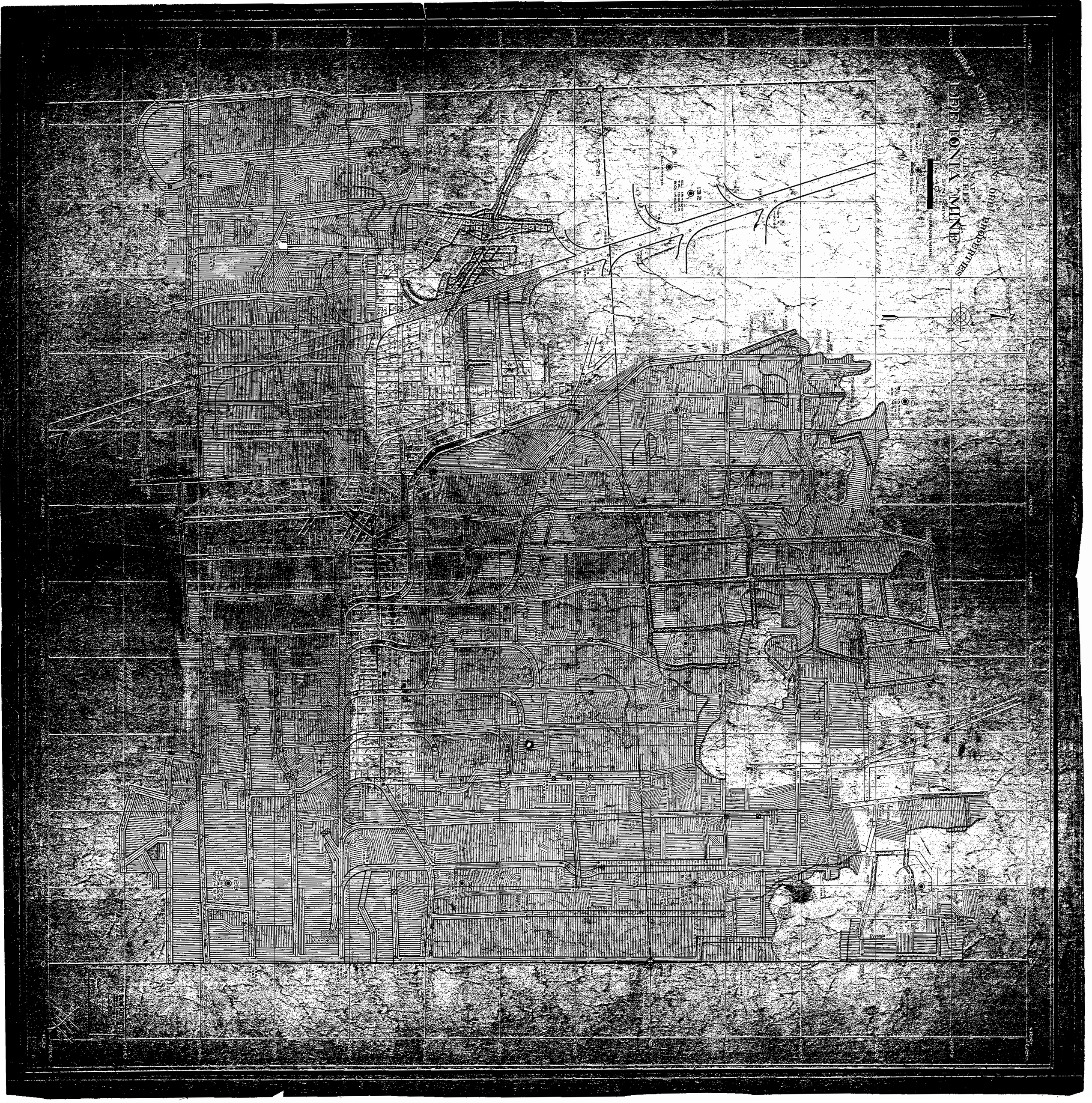

GREAT NORTHERN IRON ORE PROPERTIES.
MAP OF
LEETONIA MINE
W½-NE¼-SECTION 10-T57N-R21W.
1ST LEVEL
SCALE — 1 IN. = 40 FT.
MINING ENGINEER'S OFFICE _____ 19__. HIBBING, MINN.
-:LEGEND:-
DRILL HOLE
SHAFT
ROCK
RAISE
1ST. LEVEL
SUB-LEVEL
EL. 1479.30
N
107
EL. 1559.50
T.O. 1527.50
B.O. 1484.50
115
EL. 1560.50
T.O. 1505.00
B.O. 1456.00
109
EL. 1543.66
T.O. 1509.66
B.O. 1467.66
110
EL. 1570.00
T.O. 1524.00
B.O. 1451.60
116
EL. 1561.50
T.O. 1498.50
B.O. 1446.00
117
EL. 1556.10
T.O. 1489.10
B.O. 1442.10
132
EL. 1541.00
T.O. 1501.00
B.O. 1468.00
111
EL. 1539.50
120
EL. 1564.00
T.O. 1484.00
B.O. 1440.00
128
EL. 1567.20
T.O. 1479.20
B.O. 1437.20
119
EL. 1554.50
T.O. 1476.50
B.O. 1409.50
MAN-WAY.
SW.¼ or NE.¼ of Sec. 10 - T57-21
NW.¼ or NE.¼ of Sec. 10 - T.57N.-R.21W.
SW.¼ or NE.¼ of Sec. 10-T.57N.-R.21W.
A-384
ROLL 39
7

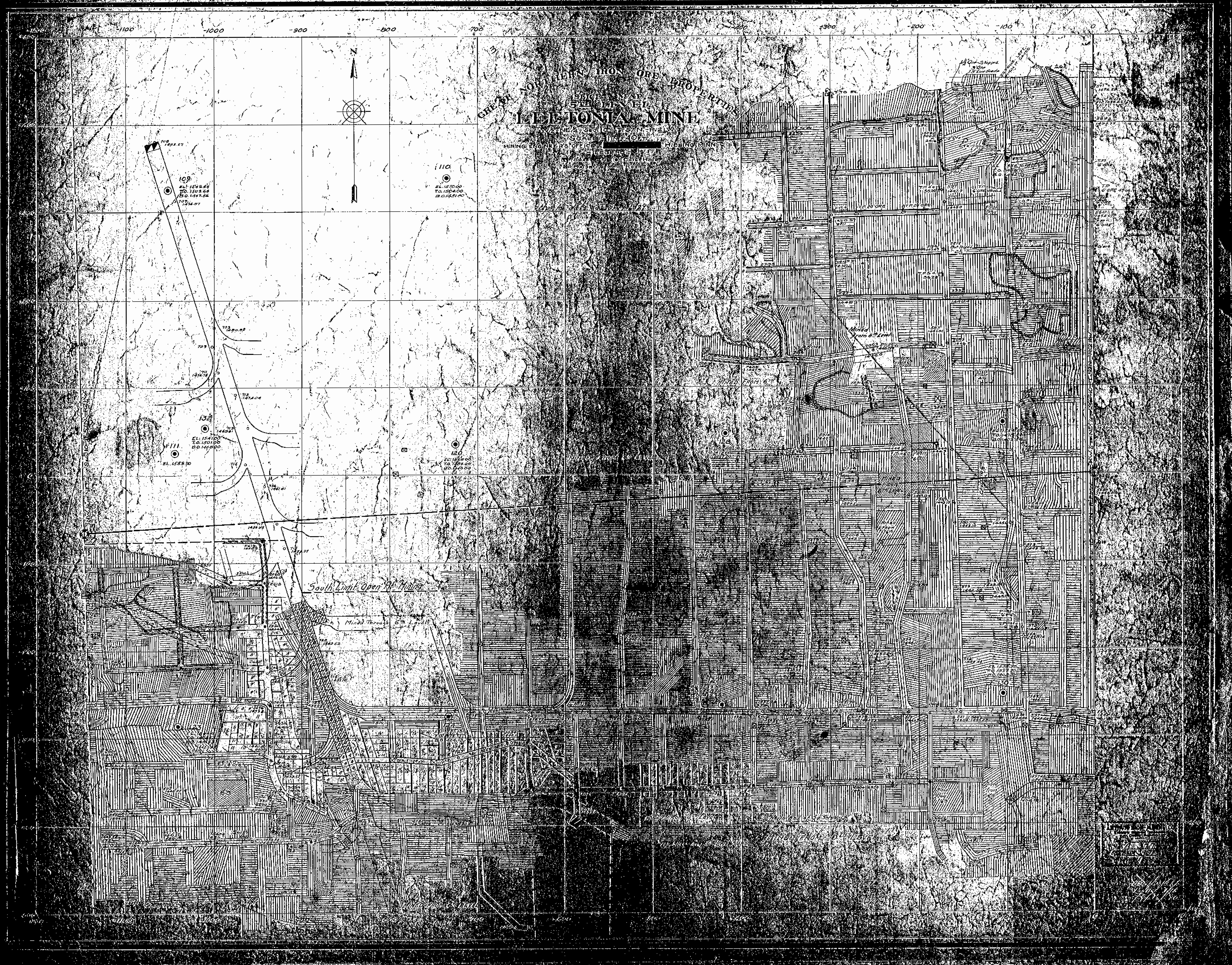

GREAT NORTHERN IRON ORE PROPERTIES
COMPOSITE MAP
LEETONIA MINE
W½-NE¼-SEC.10-T.57N.-R.21W.
SCALE-1IN.=40FT.
MINING ENGINEER'S OFFICE: [redacted] HIBBING, MINN.
LEGEND:
SHAFT.
RAISE.
DRILL HOLE.
ROCK
1ST LEVEL.
2ND LEVEL.
3RD LEVEL.
4TH LEVEL.
5TH LEVEL.
6TH LEVEL.
1ST SUB-LEVEL.
2ND SUB-LEVEL.
3RD SUB-LEVEL.
4TH SUB-LEVEL.
5TH SUB-LEVEL.
6TH SUB-LEVEL.
OPEN PIT.
OPEN PIT.
THIRD SHAFT
SHAFT
INCLINE
ARTHUR IRON MINING CO.
No. A-376
Roll 39
Drawer 7
ARTHUR IRON MINING CO.

2951

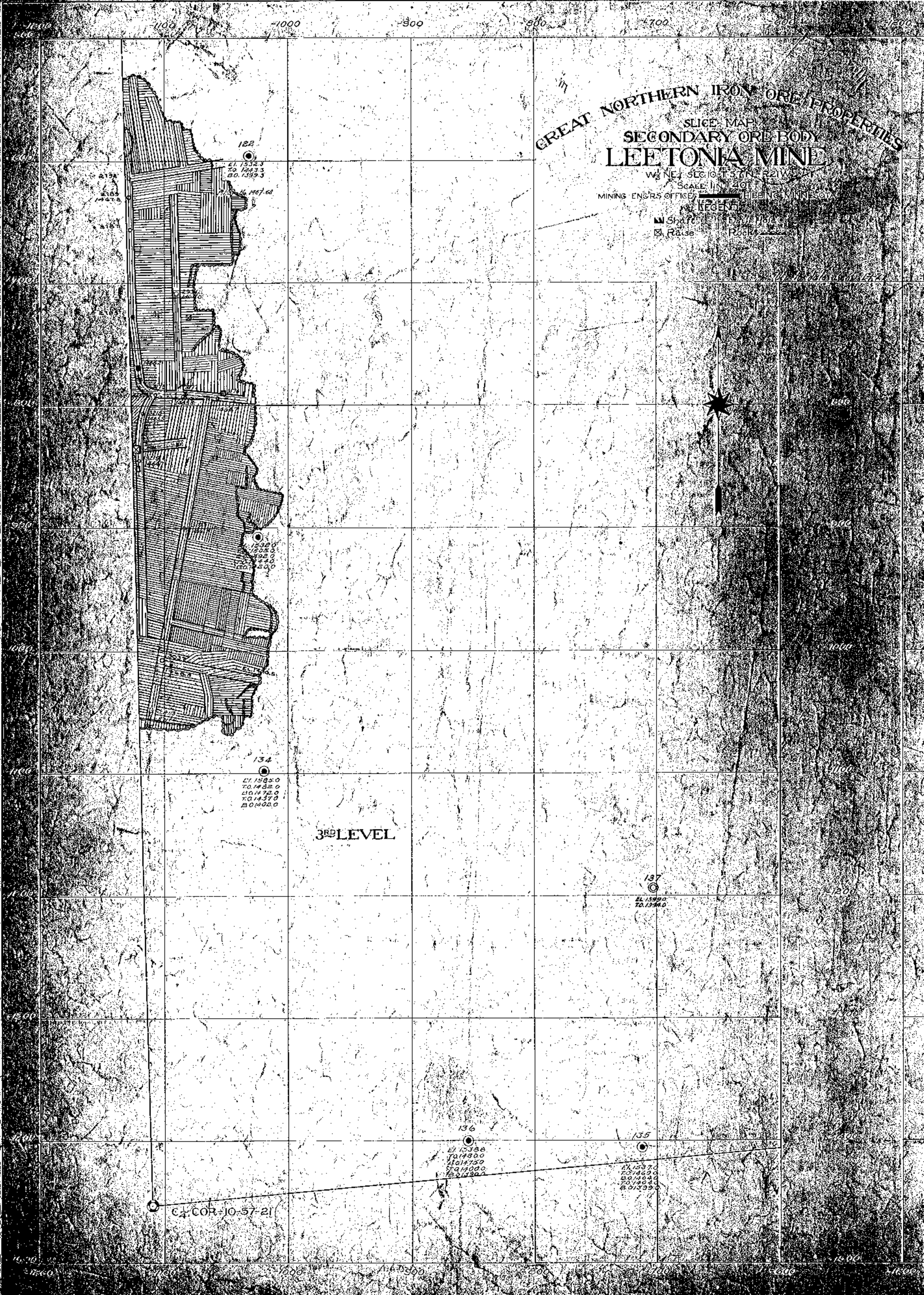

12
11
10
9
PERTIES
MINN.
122
EL. 1532.3
T.O. 1443.3
B.O. 1390.3
TIMBER SHAFT
121
EL. 1532.0
T.O. 1505.0
B.O. 1492.0
T.O. 1444.0
B.O. 1420.0
See Top Sub on 1430' Level Map
LEETONIA LAKE SHAFT
LEETONIA LAKE SHAFT
1411 LEVEL
136
EL. 1538.8
T.O. 1372.8
B.O. 1342.8
C1/2 10-57-21

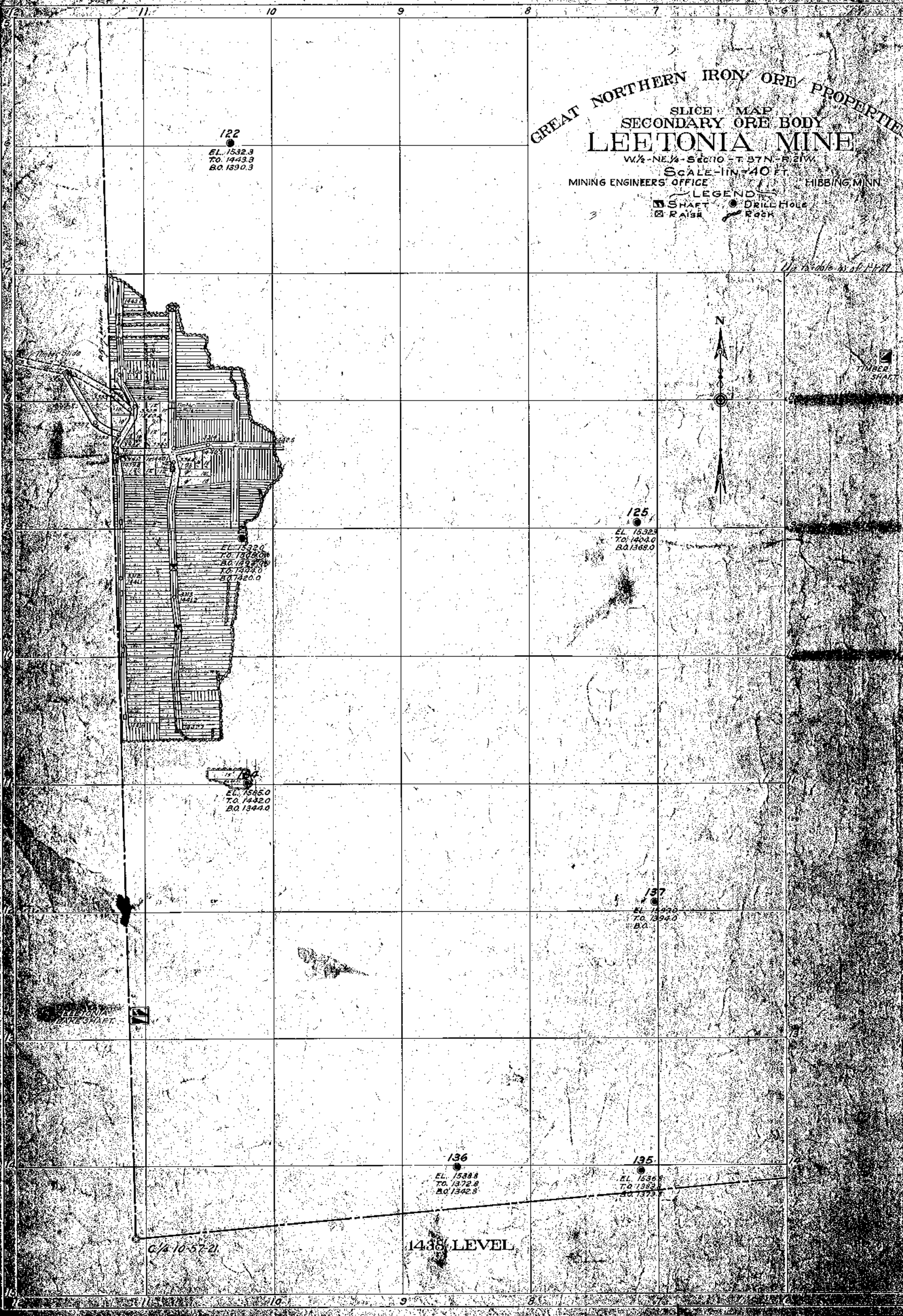
11
10
9
122
EL. 1532.5
T.O. 1443.5
B.O. 1390.5
121
EL. 1532.0
T.O. 1505.0
B.O. 1492.0
T.O. 1414.0
B.O. 1420.0
134
EL. 1585.0
T.O. 1442.0
B.O. 1344.0
The ore South of this Sub is too Shallow to mine
1400 LEVEL
ARTHUR IRON MINING CO.
Date
No. A-312
Reel 34
Drawer 7
ARTHUR IRON
C/L 10-52-21
11
10


GREAT NORTHERN IRON ORE PROPERTIES
SURVEY MAP
6TH LEVEL
LEETONIA MINE
HIBBING MINN.


GREAT NORTHERN IRON ORE PROPERTIES
5th LEVEL
LEETONIA MINE
MINING ENGINEER'S OFFICE
HIBBING, MINN.
LEGEND
N
-1100
-1000
-900
-800
-700
-400
-300
-200
-100
0
109
EL. 1549.66
T.O. 1509.66
B.O. 1467.66
110
EL. 1570.00
T.O. 1504.00
B.O. 1451.60
132
EL. 1541.00
T.O. 1501.00
B.O. 1468.00
111
EL. 1559.90
120
128
123
130
South Limit Open Pit Mining
Mined Through 6th Level
Mined From 6th Level
Mined From 6th

PROPERTIES
122
EL 15323
TO 14933
BO 13993
121
EL 15320
TO 13050
TO 13920
TO 14140
BO 14200
134
EL 15850
TO 14820
BO 14720
TO 14570
BO 14080
4TH LEVEL
137
EL 15390
TO 13540
136
EL 15388
TO 14800
BO 14750
TO 14000
BO 13900
135
EL 15370
TO 14690
BO 14610
TO 14040
BO 13990
C¼ COR 10-57-21
ARTHUR IRON MINING CO.
No. A-385
ROLL 39
Drawer 7
ARTHUR IRON MINING CO.


GREAT NORTHERN IRON ORE PROPERTIES
SLICE MAP
SECONDARY ORE BODY
LEETONIA MINE
W½ NE¼ SEC. 10 T. 57 N. R. 21 W.
SCALE 1 IN. = 40 FT.
MINING ENG'RS OFFICE HIBBING, MINNESOTA
LEGEND
Shaft
Raise
Drill Hole
Rock
3RD LEVEL
C¼ COR. 10-57-21


GREAT NORTHERN IRON ORE PROPERTIES
SLICE MAP
SECONDARY ORE BODY
LEETONIA MINE
W½-NE¼-Sec 10-T 57 N.-R 21 W.
SCALE-1 IN.=40 FT.
MINING ENGINEERS' OFFICE
HIBBING, MINN.
LEGEND
SHAFT
DRILL HOLE
RAISE
ROCK
N
TIMBER SHAFT
Timber Slide
Timber Hole
122
EL. 1532.3
T.O. 1443.3
B.O. 1390.3
125
EL. 1532.3
T.O. 1404.0
B.O. 1368.0
EL. 1532.0
T.O. 1388.0
B.O. 1492.0
T.O. 1404.0
B.O. 1420.0
EL. 1585.0
T.O. 1442.0
B.O. 1344.0
137
EL. 1490
T.O. 1394.0
B.O.
LEETONIA TAKE SHAFT
136
EL. 1538.8
T.O. 1372.8
B.O. 1342.8
135
EL. 1536.8
T.O. 1389.8
B.O. 1373.8
C¼ 10-57-21
1438 LEVEL