# UTAH POWER & LIGHT COMPANY

# 1983 SUBSIDENCE REPORT

May 1984

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## APPENDICES


Des-Bee-Dove Mines, Subsidence Study by Engineering Enterprises, Inc.

Deer Creek Mine Subsidence Graphs, Printouts, Surface Monument Location Maps, U. S. Bureau of Mines

Wilberg Mine, Printouts and Surface Monument Location Maps, U. S. Bureau of Mines

## Introduction

Utah Power & Light Company's (UP&L) East Mountain Subsidence Monitoring Study is an ongoing project designed to detect, observe and report the effects of mining induced subsidence above the Deer Creek, Wilberg and Des-Bee-Dove Mines (see Figure 1). This is the third such annual report submitted and covers the period between August 1982 and August 1983.

The initial report submitted in 1982 details the monitoring methods used in this study; therefore, they are not discussed here in depth. Briefly, UP&L uses aerial photogrammetric survey methods augmented by conventional monumented on-the-ground surveys and an annual helicopter reconnaissance flight to monitor subsidence. The Bureau of Mines continues to survey for subsidence above areas of multiple seam longwall mining in the Deer Creek and Wilberg Mines.

## Location

Figure 2 shows all areas above UP&L's coal mines which have potential for mining induced subsidence and were studied in 1983 to detect subsidence. A helicopter reconnaissance flight on July 8, 1983 revealed no additional areas of fractures or visible surface disturbance. The only new area of subsidence was detected by a Bureau of Mines

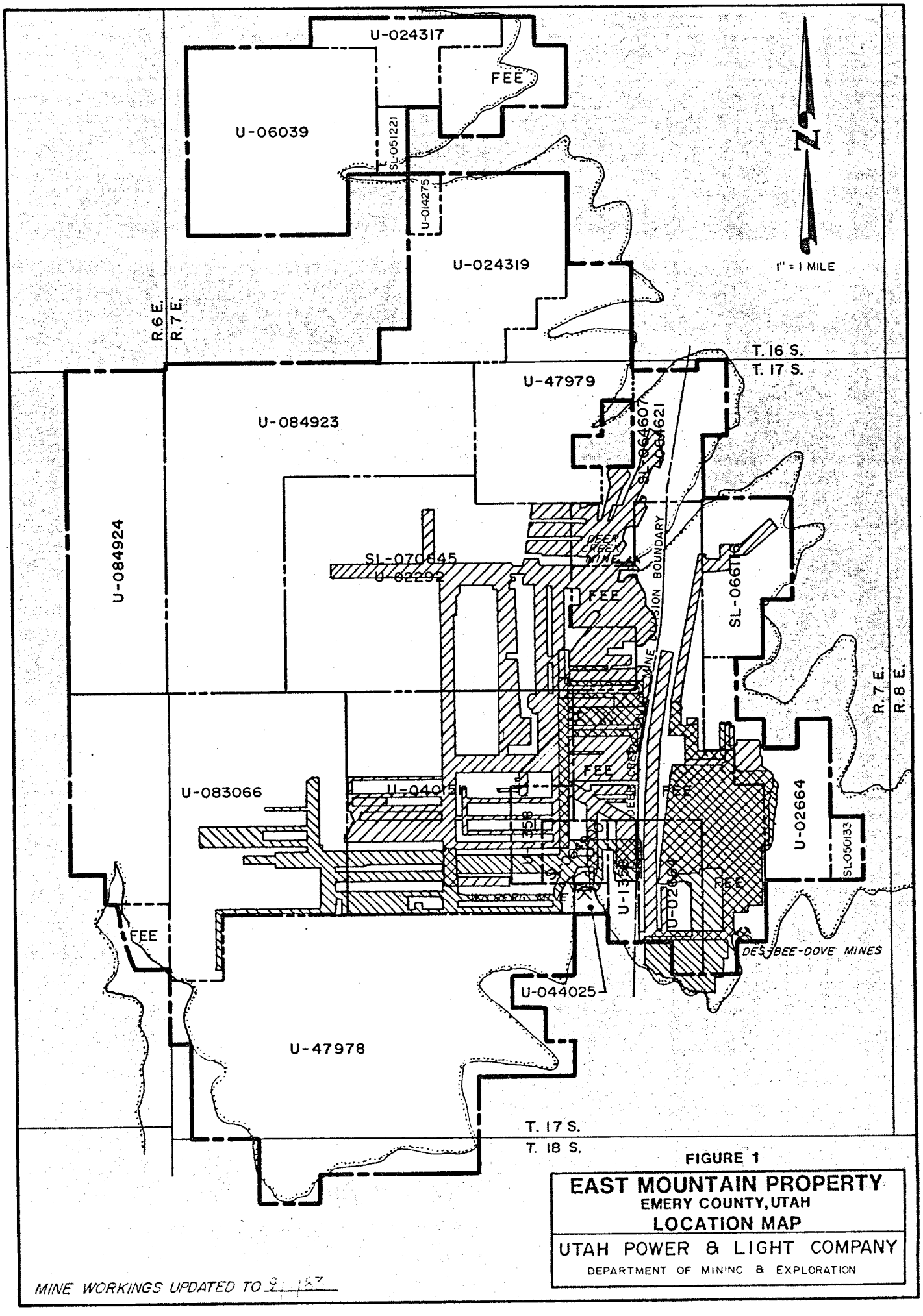
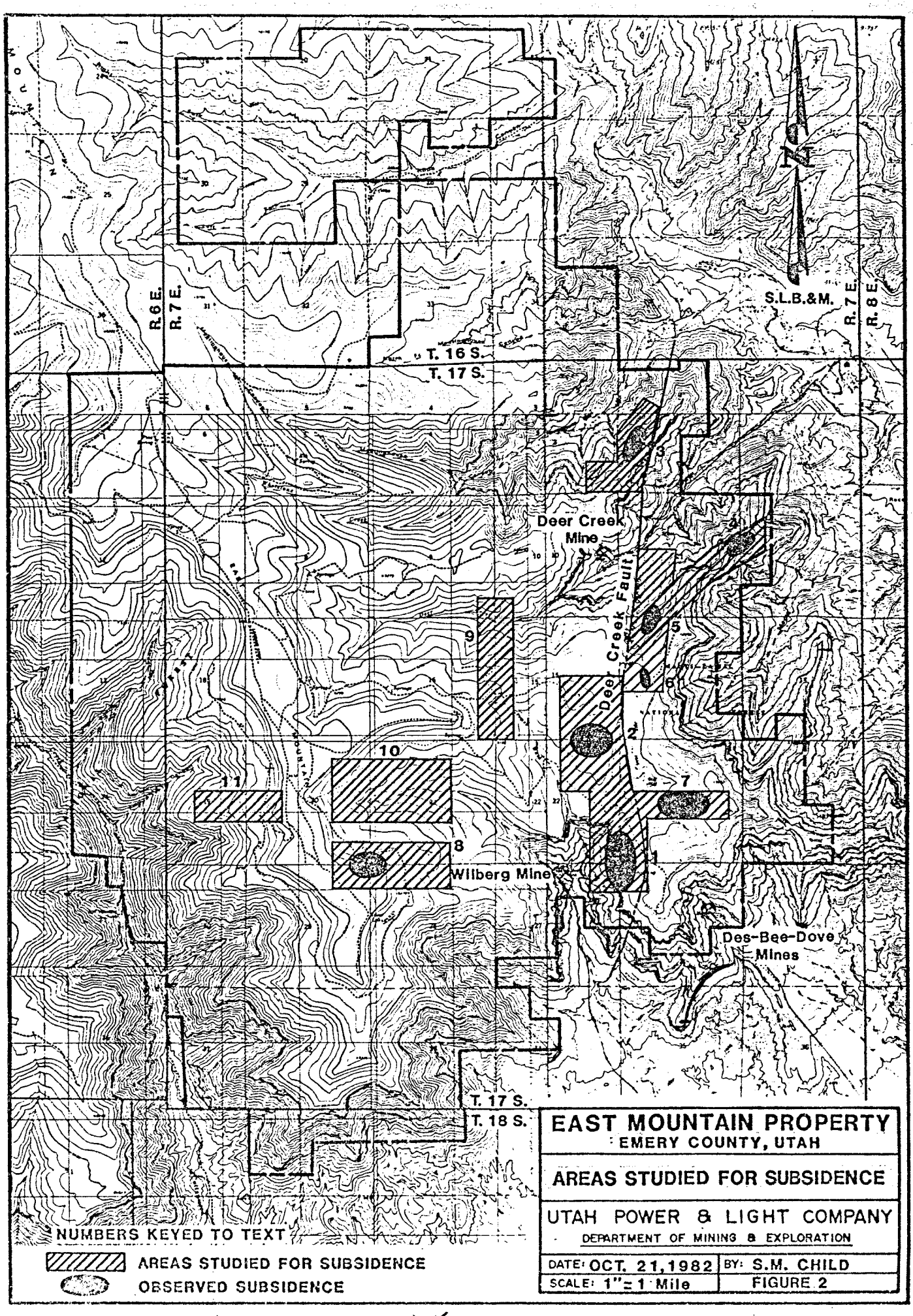



FIGURE 1

**EAST MOUNTAIN PROPERTY**
EMERY COUNTY, UTAH
**LOCATION MAP**

UTAH POWER & LIGHT COMPANY
DEPARTMENT OF MINING & EXPLORATION

*MINE WORKINGS UPDATED TO 9-1-87*




**EAST MOUNTAIN PROPERTY**
EMERY COUNTY, UTAH

**AREAS STUDIED FOR SUBSIDENCE**

UTAH POWER & LIGHT COMPANY
DEPARTMENT OF MINING & EXPLORATION

| | |
|---|---|
| DATE: OCT. 21, 1982 | BY: S.M. CHILD |
| SCALE: 1" = 1 Mile | FIGURE 2 |

on-the-ground survey of the monument network over the Wilberg 1st and 2nd West longwall panels. Although this area was photographed by aerial photography, the photos were not read for elevation because the Bureau of Mines mapping has adequately defined the subsidence.

Each of the areas shown is discussed in detail, by area, in the following paragraphs. Previous reports described the topographic and geologic setting of the subsidence areas, thus, mention of such will only be given when necessary in this report. If the reader has questions regarding this information, the 1981 and 1982 subsidence monitoring reports should be consulted.

As mentioned previously, various methods have been employed in detecting and measuring subsidence. In the following, unless otherwise noted, measurements were made by aerial photogrammetry.

In five areas of subsidence the angle of draw has been calculated and reported herein. However, in some of the areas of subsidence, the mine workings are surrounded by burned coal. The failure of the clinker beds in areas of burned coal promotes subsidence outside of the mined area making it nearly impossible to make a reliable angle of draw estimate. In other cases, the zone of subsidence covers a small area and is contained within the area of final mining. This suggests that the subsidence hasn't stabilized and a calculation of angle of draw would be meaningless.

Area 1

Deer Creek 9th East - Wilberg 1st Right

Subsidence in this area was first documented in the 1981 subsidence monitoring report submitted in December 1982. The relationship of the area of subsidence with the present Deer Creek and Wilberg Mine workings is shown in Figure 3, 4 and 5.

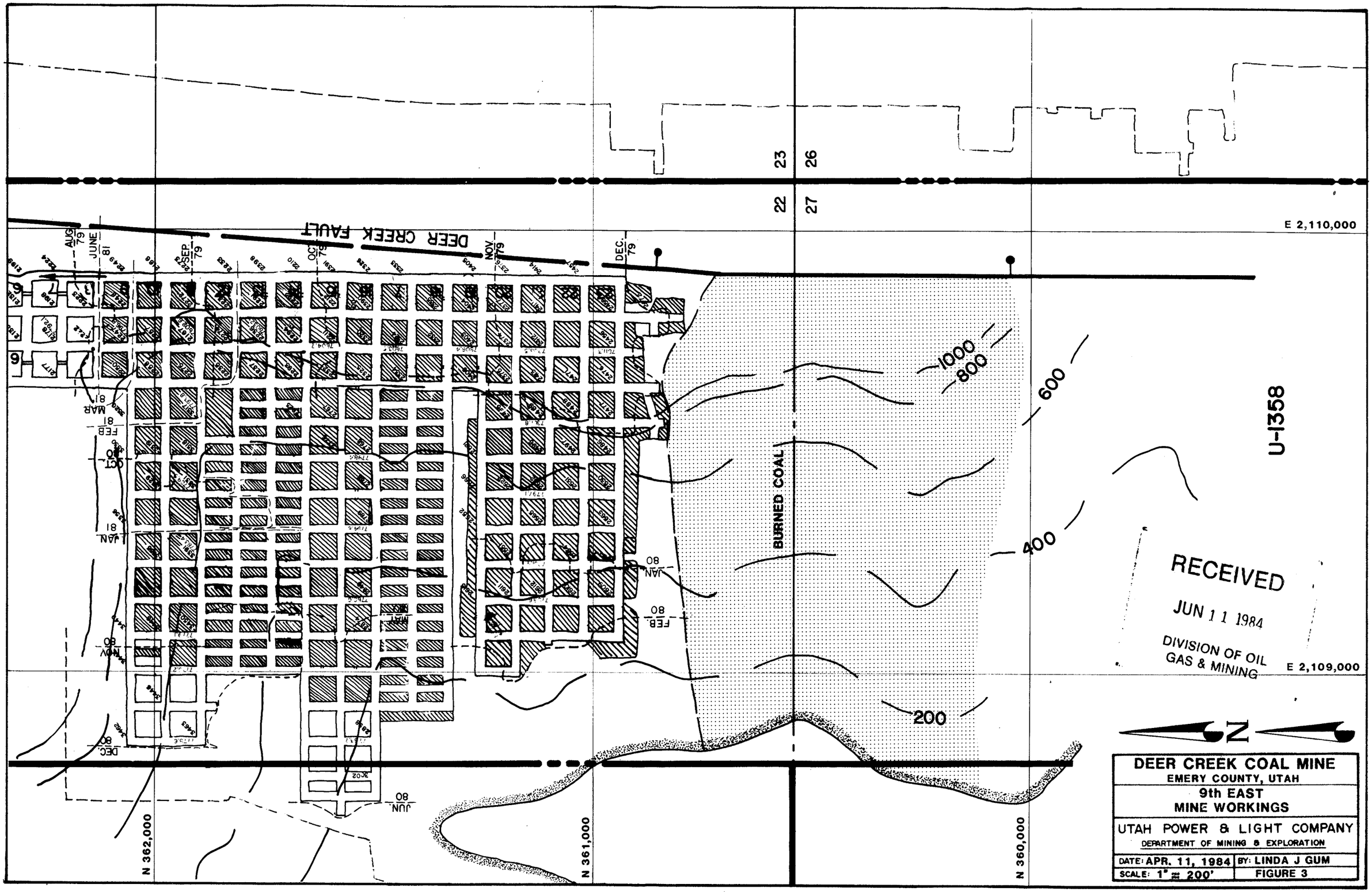
Subsidence monitoring during 1983 showed a continuation of subsidence even though the section has been abandoned since 1981. The maximum subsidence observed to date is 16 feet and occurs about 200 feet south of the southernmost mined-out area in 1st Right Wilberg over an area in which both the Hiawatha and Blind Canyon Seams are burned. This supports the theory that the clinker beds have been crushed allowing subsidence to occur well outside the area of mine workings.

In addition to the increased subsidence from 1982 to 1983, the 1983 subsidence map reflects an update of surface fractures which form the graben-like structure seen in this area.

The angle of draw of subsidence in this area appears to be influenced by the Deer Creek Fault plane. On the east side of the mine workings the subsidence abruptly stops in an easterly direction about 200 feet east of the mine workings which coincides with the Deer Creek Fault trace.

In this area the mine workings are covered with 1200 feet of overburden indicating a 9.5° angle of draw on subsidence.

No hydrologic impacts have been observed within this area of subsidence.


DEER CREEK FAULT
BURNED COAL
U-1358
1000
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600
400
200
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26
22
27
E 2,110,000
E 2,109,000
N 362,000
N 361,000
N 360,000
AUG 79
JUNE 81
SEP. 79
OCT. 79
NOV. 79
DEC. 79
MAR 81
FEB 81
JAN 81
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DEC. 80
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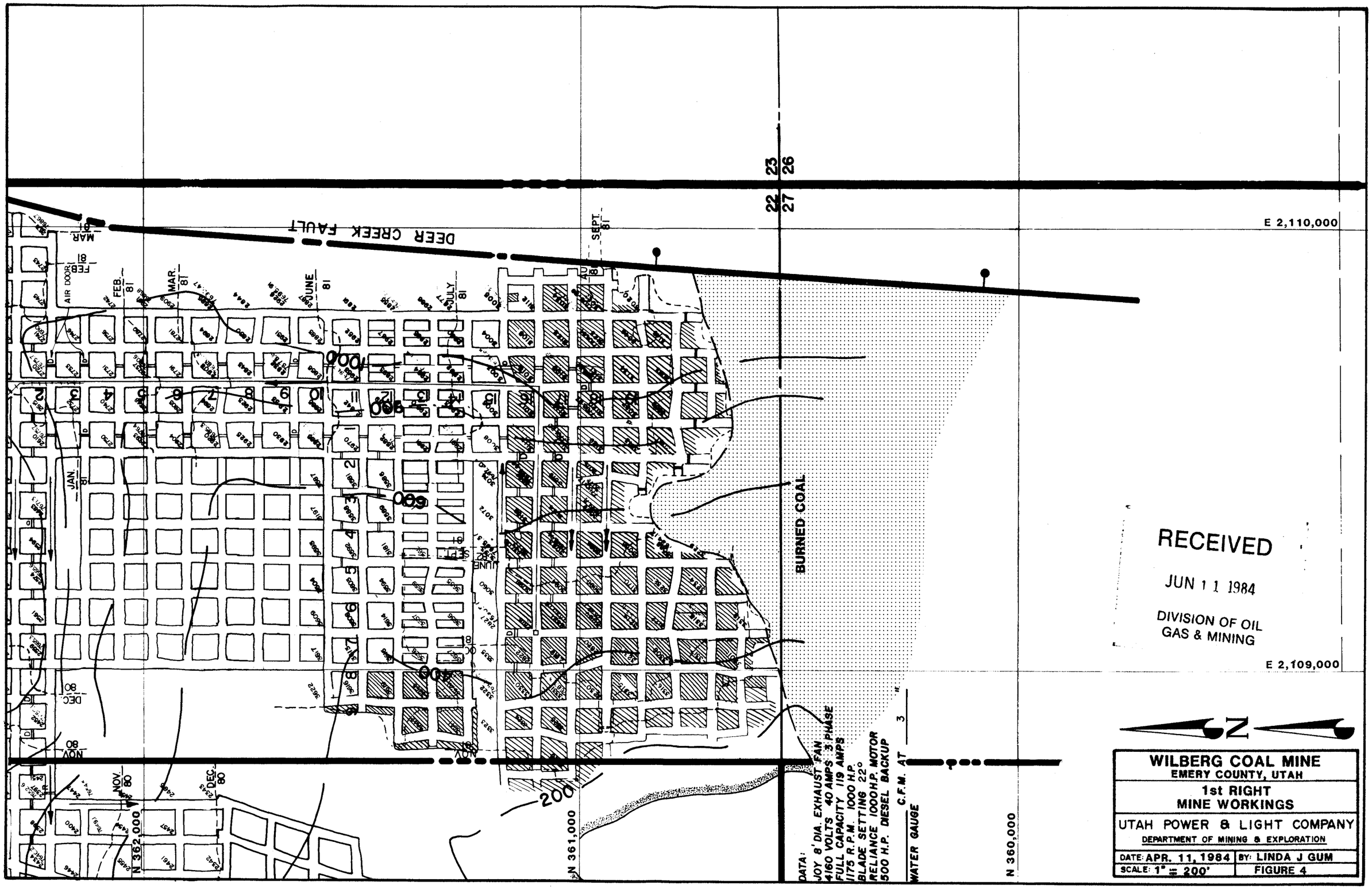
MAY 80
FEB 80
JAN 80
RECEIVED
JUN 11 1984
DIVISION OF OIL GAS & MINING
DEER CREEK COAL MINE
EMERY COUNTY, UTAH
9th EAST
MINE WORKINGS
UTAH POWER & LIGHT COMPANY
DEPARTMENT OF MINING & EXPLORATION
DATE: APR. 11, 1984
BY: LINDA J GUM
SCALE: 1" = 200'
FIGURE 3

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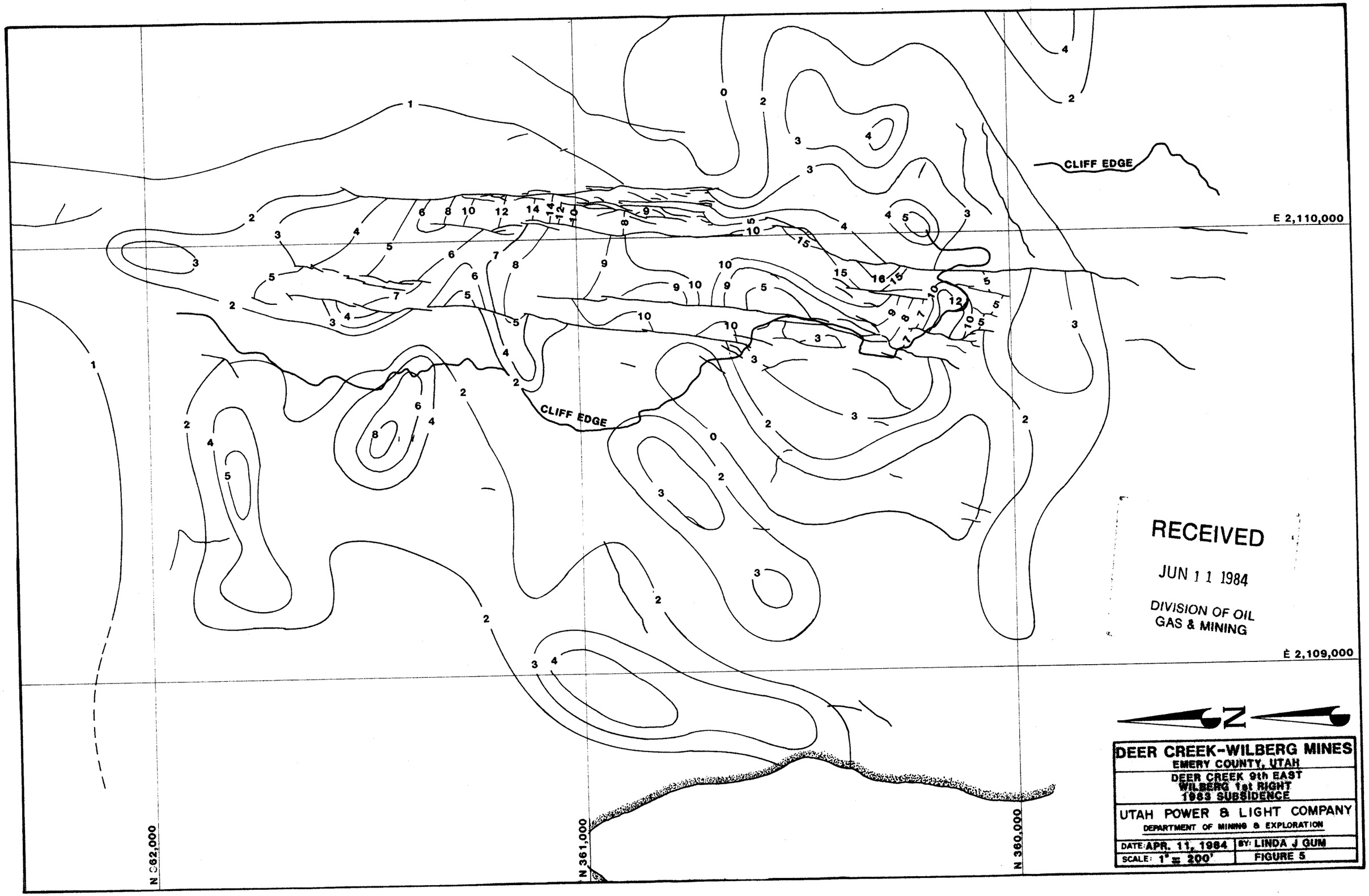
CLIFF EDGE
CLIFF EDGE
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RECEIVED
JUN 11 1984
DIVISION OF OIL
GAS & MINING
DEER CREEK-WILBERG MINES
EMERY COUNTY, UTAH
DEER CREEK 9th EAST
WILBERG 1st RIGHT
1983 SUBSIDENCE
UTAH POWER & LIGHT COMPANY
DEPARTMENT OF MINING & EXPLORATION
DATE: APR. 11, 1984
BY: LINDA J GUM
SCALE: 1" = 200'
FIGURE 5

Area 2

Deer Creek 4th, 5th 6th and 7th East Longwall Panels

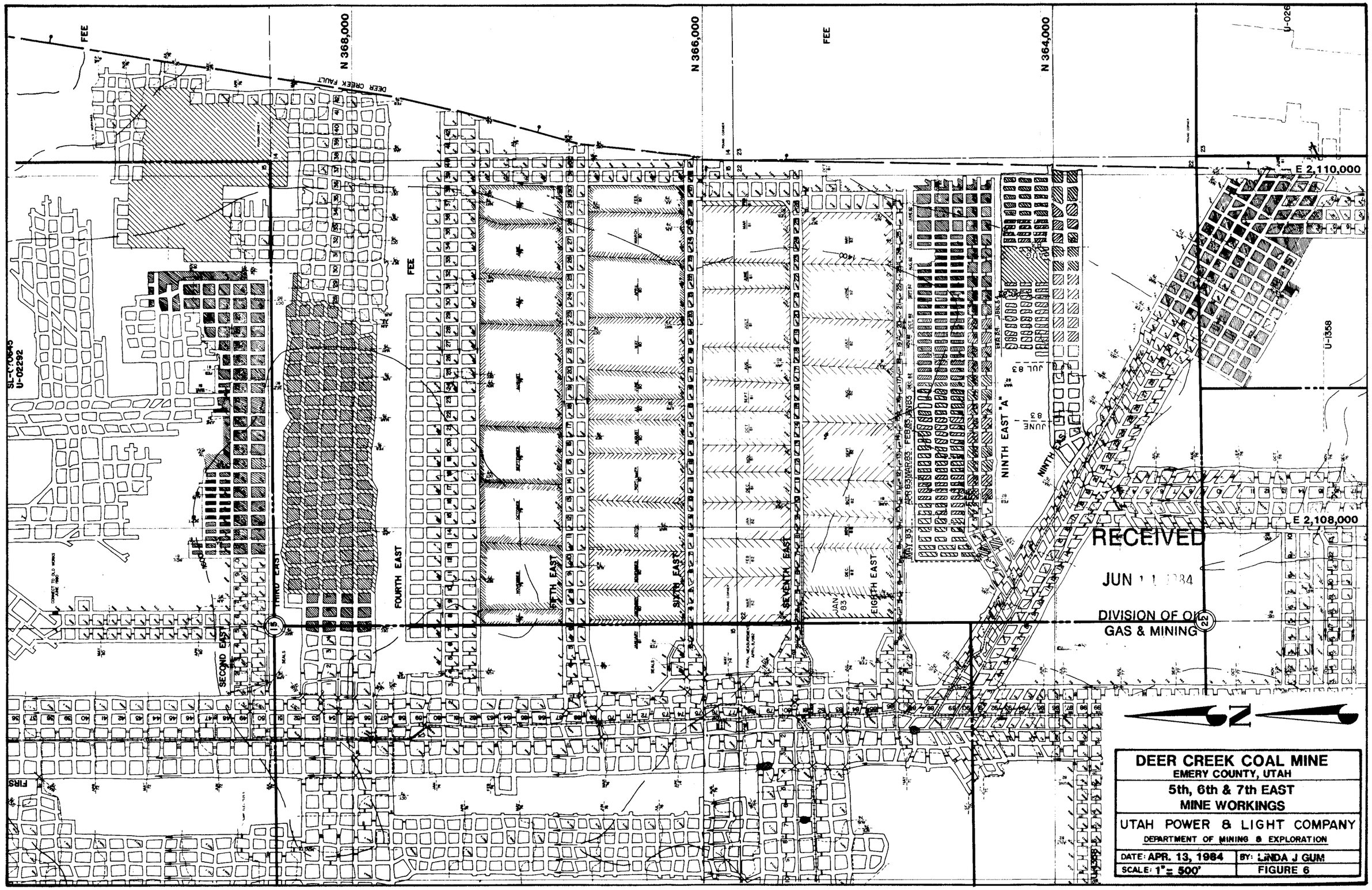
Wilberg 10th and 11th Right Longwall Panels

By August of 1983 longwall mining had been completed in the 4th through 7th East longwall panels in the Deer Creek Mine. In the Wilberg Mine the 10th Right longwall panel had been completed and over 1,000 feet of the 11th Right panel had been mined in the underlying seam (Figures 6 and 7).

Bureau of Mines subsidence monumentation and surveys revealed an increase in the area of subsidence. The maximum subsidence of five feet measured in 1982 remained the same. The area of the subsidence did increase, however, as the down-dropped zone elongated to both the north and south of the previously subsided area (Figure 8). Measurements indicate that the zone of greatest subsidence occurs over the Deer Creek 5th and 6th East longwall panels (which are to the south of the Wilberg 10th and 11th Right panels).

An examination of Figures 6, 7, and 8 reveals that on both the east and west sides of the mined areas the angle of draw ranges from vertical to 6.5°. It is interesting to point out that the subsidence measured in August 1983 appears to be following the location of the 11th Right longwall face Wilberg Mine (see coordinate N 368,000, E 2,108,350 Figure 6, 7 and 8).

No surface fractures or other visible effects have occurred over this area. No springs have been identified over this subsidence area but two springs, one-fourth to one-third mile to the west show no affects from the subsidence (see Hydrologic Monitoring Report, March 1984).

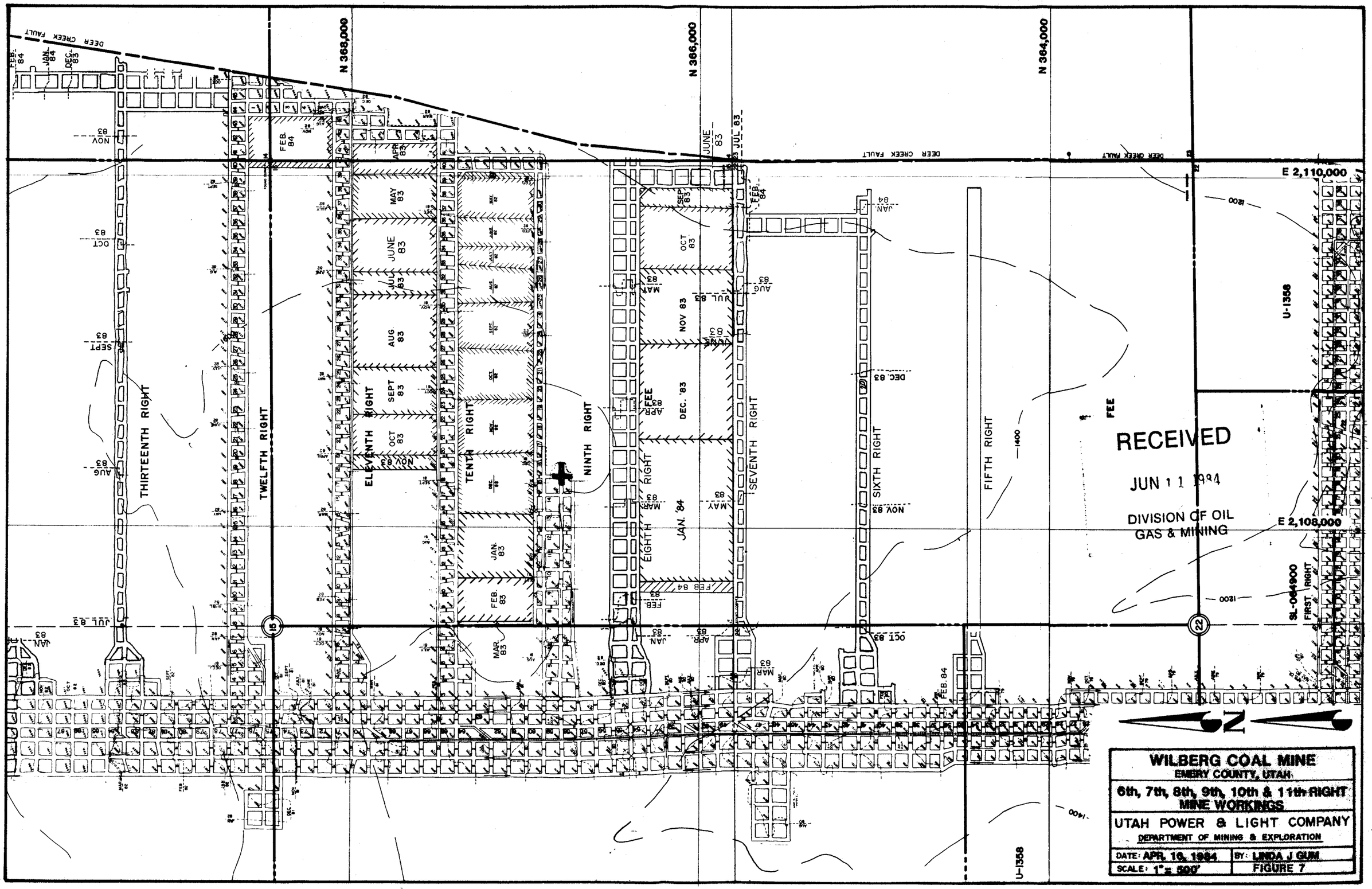


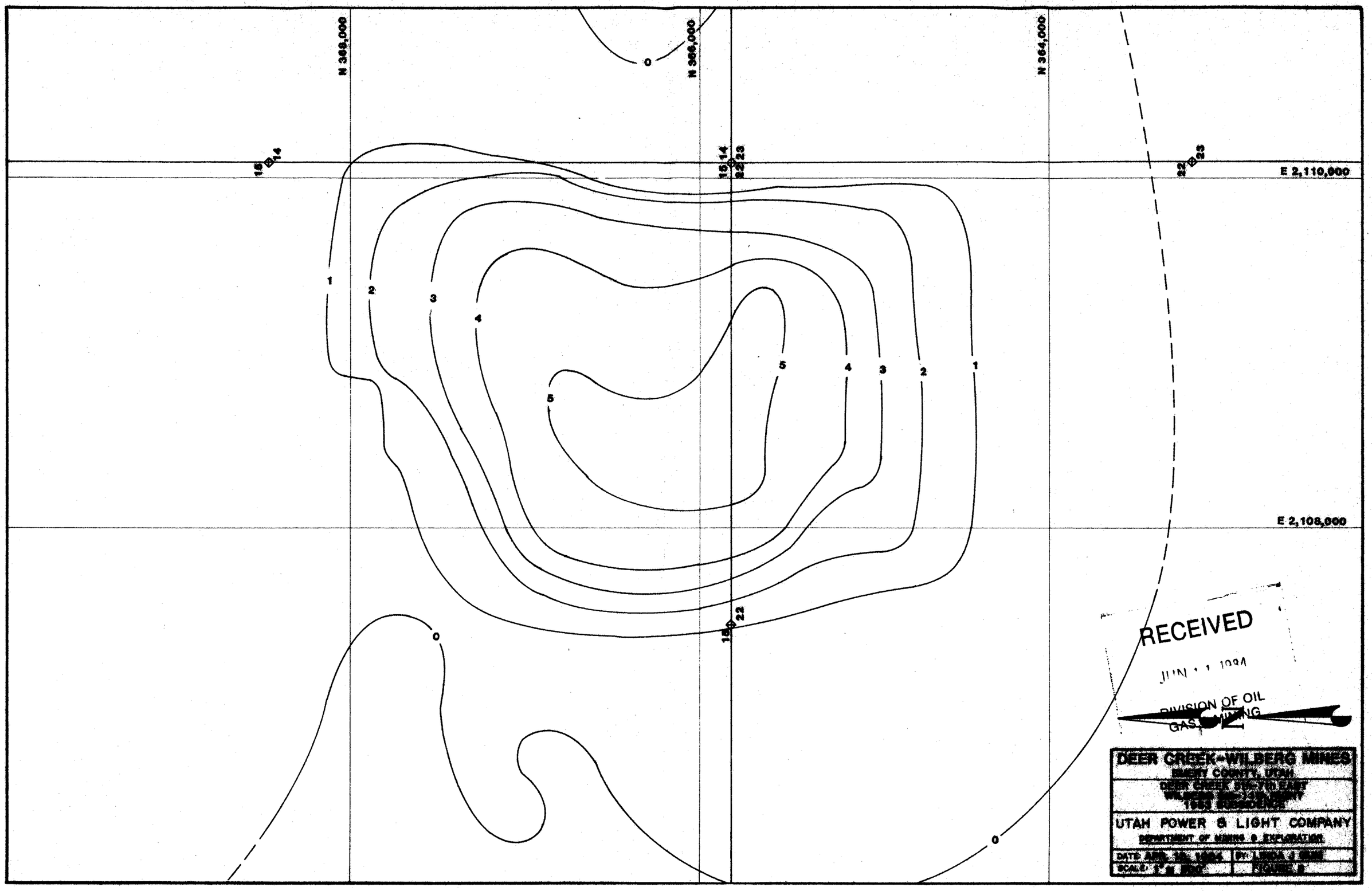

**DEER CREEK COAL MINE**
EMERY COUNTY, UTAH

**5th, 6th & 7th EAST**
**MINE WORKINGS**

UTAH POWER & LIGHT COMPANY
DEPARTMENT OF MINING & EXPLORATION

| | |
|---|---|
| DATE: APR. 13, 1984 | BY: LINDA J GUM |
| SCALE: 1" = 500' | FIGURE 6 |


DEER CREEK FAULT
N 368,000
N 366,000
N 364,000
E 2,110,000
E 2,108,000
THIRTEENTH RIGHT
TWELFTH RIGHT
ELEVENTH RIGHT
TENTH RIGHT
NINTH RIGHT
EIGHTH RIGHT
SEVENTH RIGHT
SIXTH RIGHT
FIFTH RIGHT
FIRST RIGHT
FEE
U-1358
SL-064900
RECEIVED
JUN 11 1984
DIVISION OF OIL
GAS & MINING
WILBERG COAL MINE
EMERY COUNTY, UTAH
6th, 7th, 8th, 9th, 10th & 11th RIGHT
MINE WORKINGS
UTAH POWER & LIGHT COMPANY
DEPARTMENT OF MINING & EXPLORATION
DATE: APR. 10, 1984
BY: LINDA J GUM
SCALE: 1" = 500'
FIGURE 7


N 368,000
N 366,000
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E 2,110,000
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1
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15 14
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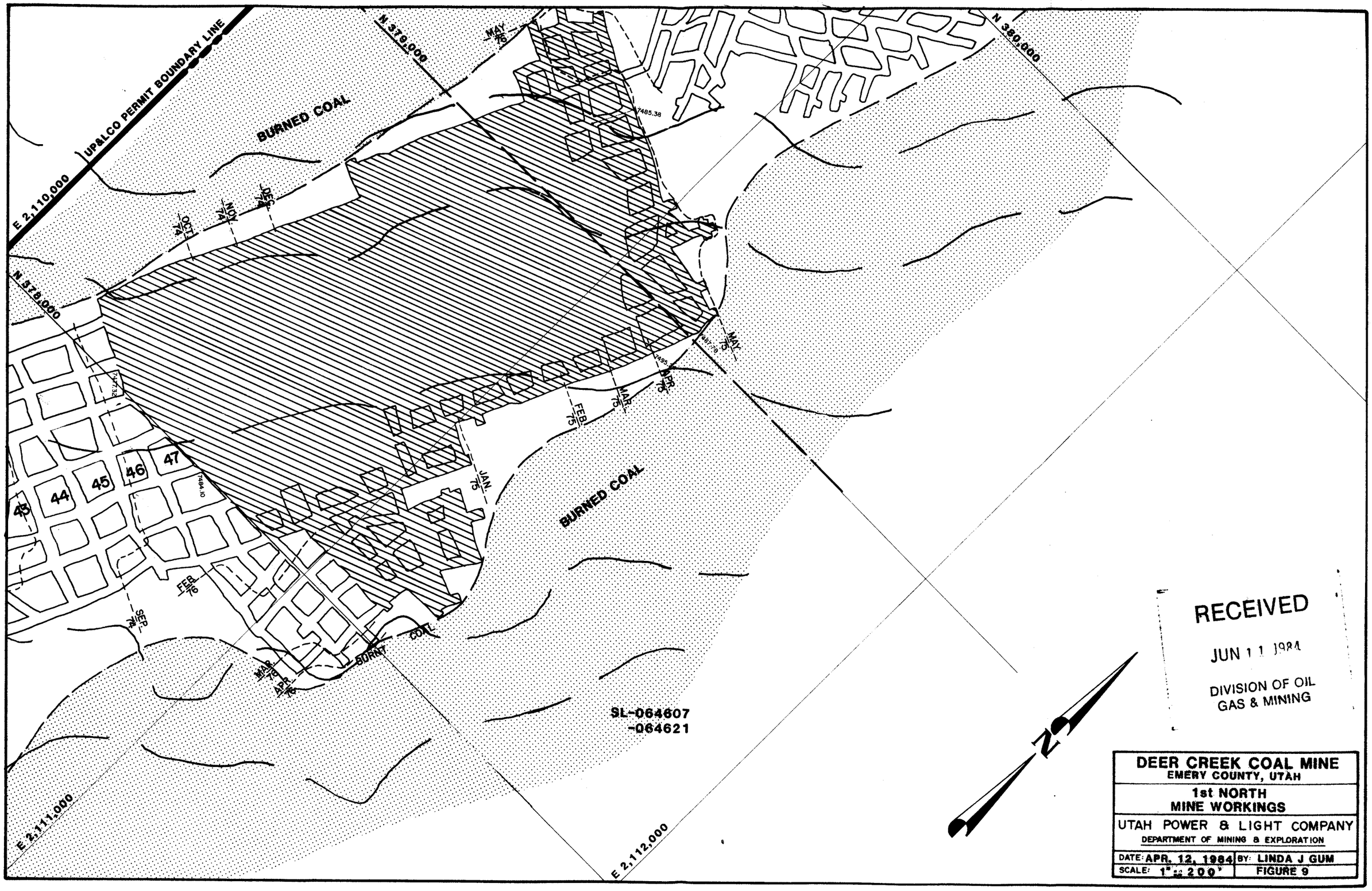
RECEIVED
JUN 1 1 1984
DIVISION OF OIL
GAS & MINING
DEER CREEK-WILBERG MINES
EMERY COUNTY, UTAH
UTAH POWER & LIGHT COMPANY
DEPARTMENT OF MINING & EXPLORATION

Area 3

Deer Creek 1st North

The 1st North section of the Deer Creek Mine was abandoned and sealed in 1978 after having been completely mined out. During the period from August 1982 to August 1983 the maximum subsidence over this section increased to 3 feet. As in the past, the subsidence is centered above the abandoned mine workings (Figure 9 and 10). No additional surface fracturing has been observed. The strata in this area are dry because they lack adequate hydrologic recharge. Therefore, the subsidence will not effect the hydrology.

The mine workings are surrounded by burned coal making it difficult to accurately calculate an angle of draw.

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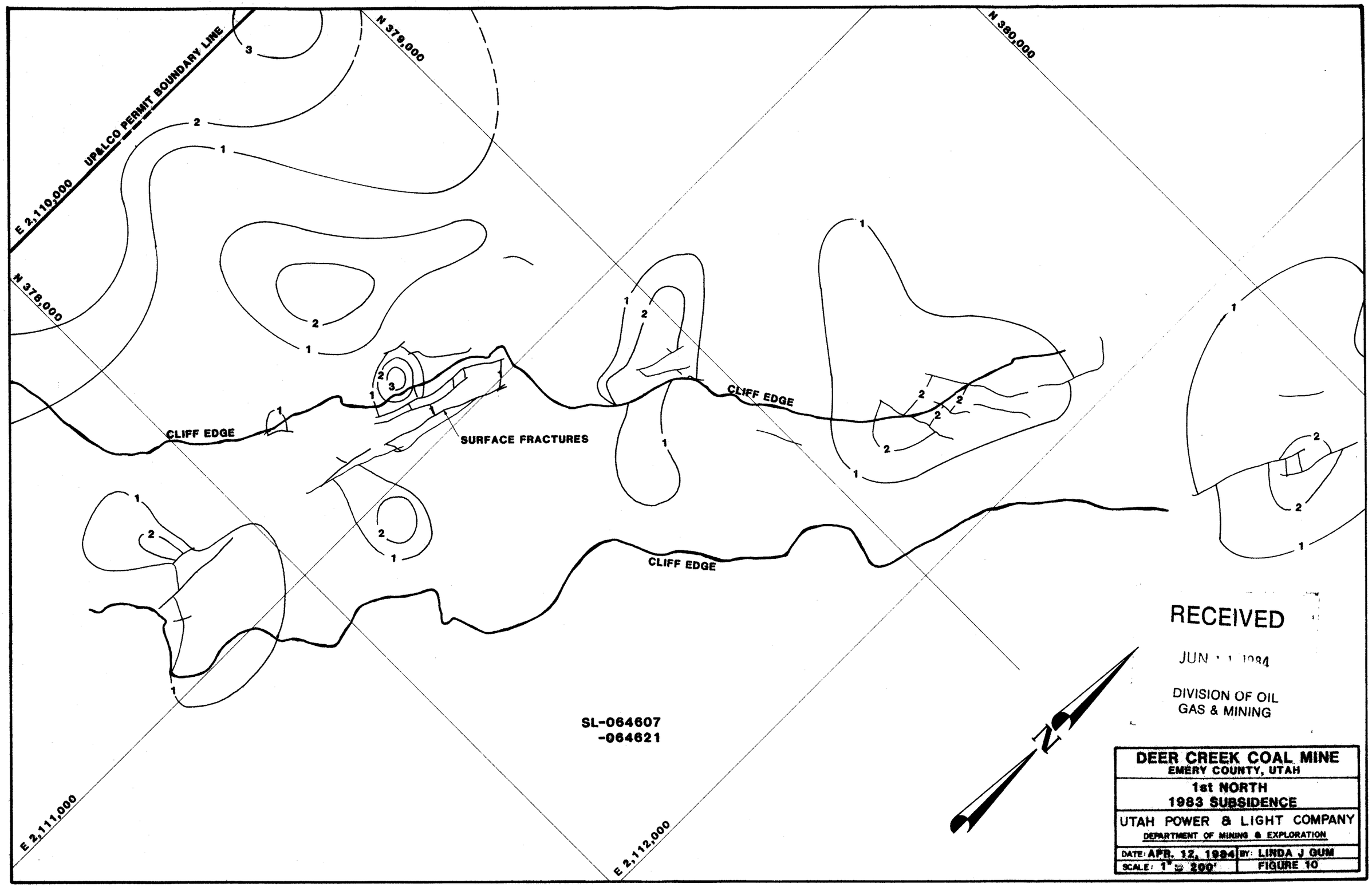
GAS & MINING

| | |
|---|---|
| **DEER CREEK COAL MINE**<br>EMERY COUNTY, UTAH | |
| **1st NORTH**<br>**MINE WORKINGS** | |
| UTAH POWER & LIGHT COMPANY<br>DEPARTMENT OF MINING & EXPLORATION | |
| DATE: APR. 12, 1984 | BY: LINDA J GUM |
| SCALE: 1" = 200' | FIGURE 9 |

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GAS & MINING

**DEER CREEK COAL MINE**
EMERY COUNTY, UTAH

**1st NORTH**
**1983 SUBSIDENCE**

UTAH POWER & LIGHT COMPANY
DEPARTMENT OF MINING & EXPLORATION

| | |
|---|---|
| DATE: APR. 12, 1984 | BY: LINDA J GUM |
| SCALE: 1" = 200' | FIGURE 10 |

Area 4

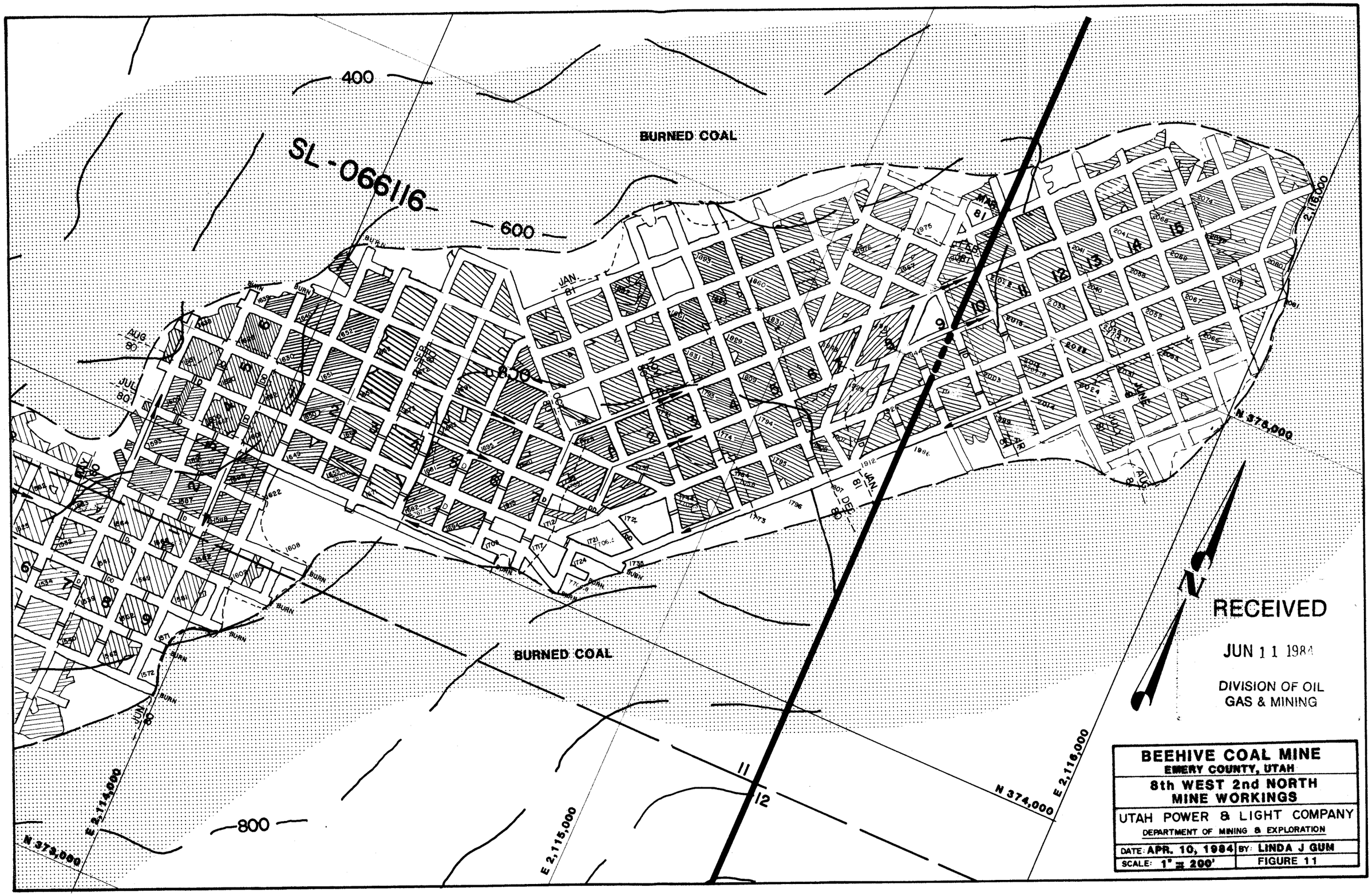
Beehive Mine 8th West Off 2nd North

Pillar extraction mining continued through the August 1982 to August 1983 monitoring period in the 8th West section of the Beehive Mine. The area of pillar extraction was surrounded by burned coal (Figure 11).

In August 1981, a maximum of 3 feet of subsidence was measured over these workings. During the period from August 1981 to August 1982 no additional drop was noted and it appeared that the area had stabilized, even though pillar extraction was continuing. However, as of August 1983, 2 additional feet of subsidence over the previous year was measured for a total maximum subsidence of 5 feet (Figure 12).

In general, the subsidence in this section is located directly over the abandoned workings except for an area to the south which has dropped up to three feet; probably due to crushing of clinker beds. In the northeastern portion of the area the subsidence is confined to a narrow belt well within the mined zone even though the workings are surrounded by burned coal. It is likely that the subsidence in this area has not yet stabilized and will continue to spread in the next few years to come. Because of this, it is not possible to calculate a reliable angle of draw.

The strata in this area lack adequate recharge and are dry.


SL-066116
BURNED COAL
BURNED COAL
400
600
800
BURN
AUG 80
JUL 80
JUN 80
JAN 81
MAR 81
APR 81
JUN 81
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AUG 81
SEP 81
DEC 81
N 375,000
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E 2,116,000
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E 2,114,000
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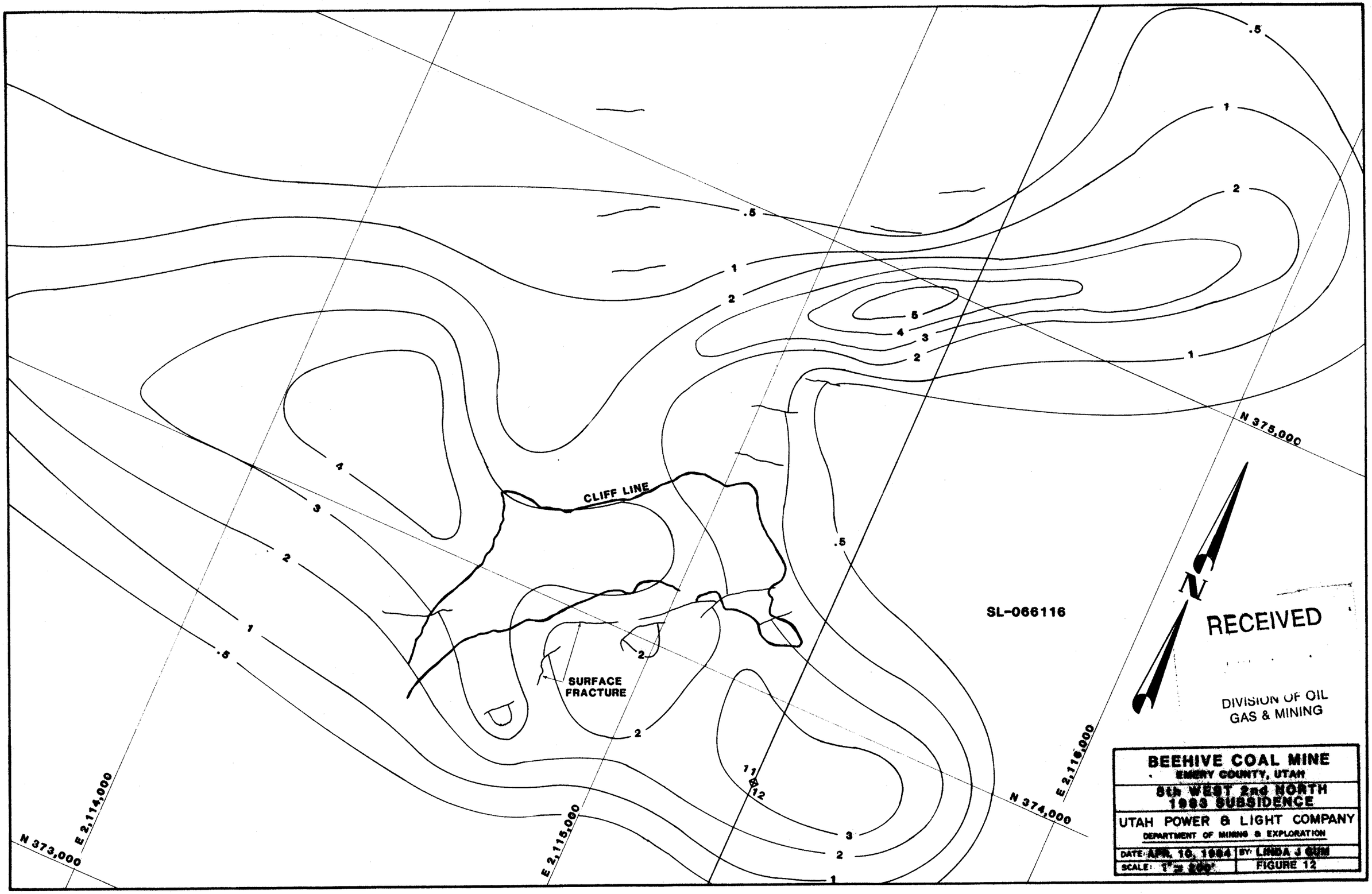
DIVISION OF OIL
GAS & MINING
BEEHIVE COAL MINE
EMERY COUNTY, UTAH
8th WEST 2nd NORTH
MINE WORKINGS
UTAH POWER & LIGHT COMPANY
DEPARTMENT OF MINING & EXPLORATION
DATE: APR. 10, 1984
BY: LINDA J GUM
SCALE: 1" = 200'
FIGURE 11


.5
1
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CLIFF LINE
SURFACE FRACTURE
11
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E 2,115,000
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RECEIVED
DIVISION OF OIL GAS & MINING
BEEHIVE COAL MINE
EMERY COUNTY, UTAH
5th WEST 2nd NORTH
1983 SUBSIDENCE
UTAH POWER & LIGHT COMPANY
DEPARTMENT OF MINING & EXPLORATION
DATE: APR. 10, 1984
BY: LINDA J GUM
SCALE: 1" = 200'
FIGURE 12

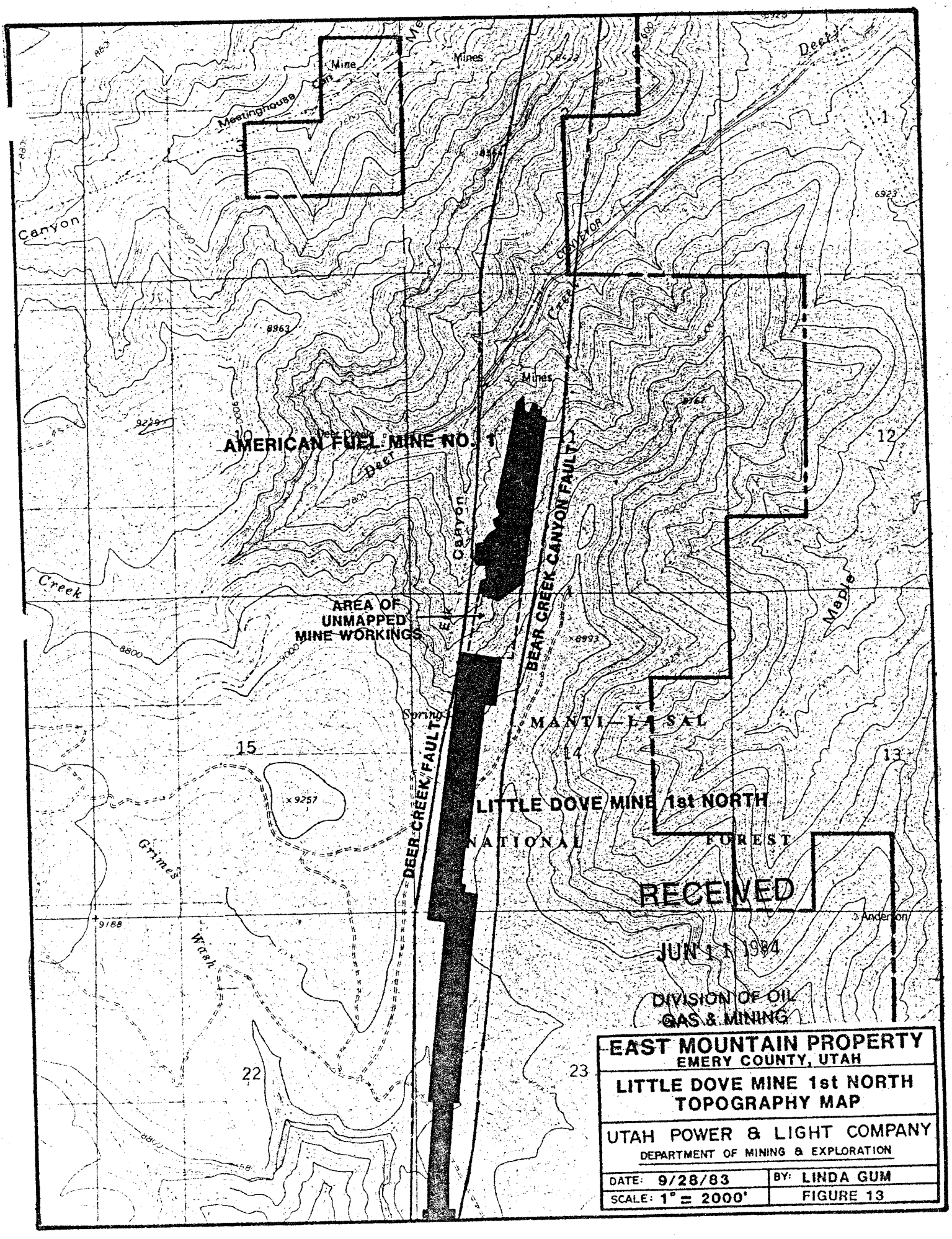
Areas 5 and 6

Little Dove 1st North - Old American Fuels Mine

The Little Dove Mine and old American Fuel Mine are both located in a graben formed by the Deer Creek and Bear Creek Canyon Faults (see Figure 13). In August of 1982 the 1st North section of the Little Dove Mine intersected the old American Fuel Mine workings about 1,000 feet south of where available maps had indicated that they extend. Mining conditions in that area of Little Dove revealed that strata were highly stressed. In some cases pillars were crushed before they could be extracted.

Maximum subsidence over the 1st North Little Dove workings reached 2 feet in 1983 over an area of partial pillar extraction (compare Figures 14 and 15).

Over the old American Fuel Mine workings subsidence continued in an area where surface fractures were discovered in 1982. These fractures trend in a northeast direction; the largest marks the surface trace of the Bear Creek Canyon Fault. Maximum subsidence over this section has reached .4 feet as of August 1983. On the east side of the area of subsidence the angle of draw has been calculated to be 7°. On the west side of 1st North workings, mining in the Deer Creek Mine has taken place making it difficult to ascertain the angle of draw. This subsidence has not affected the hydrology of the area in any way.

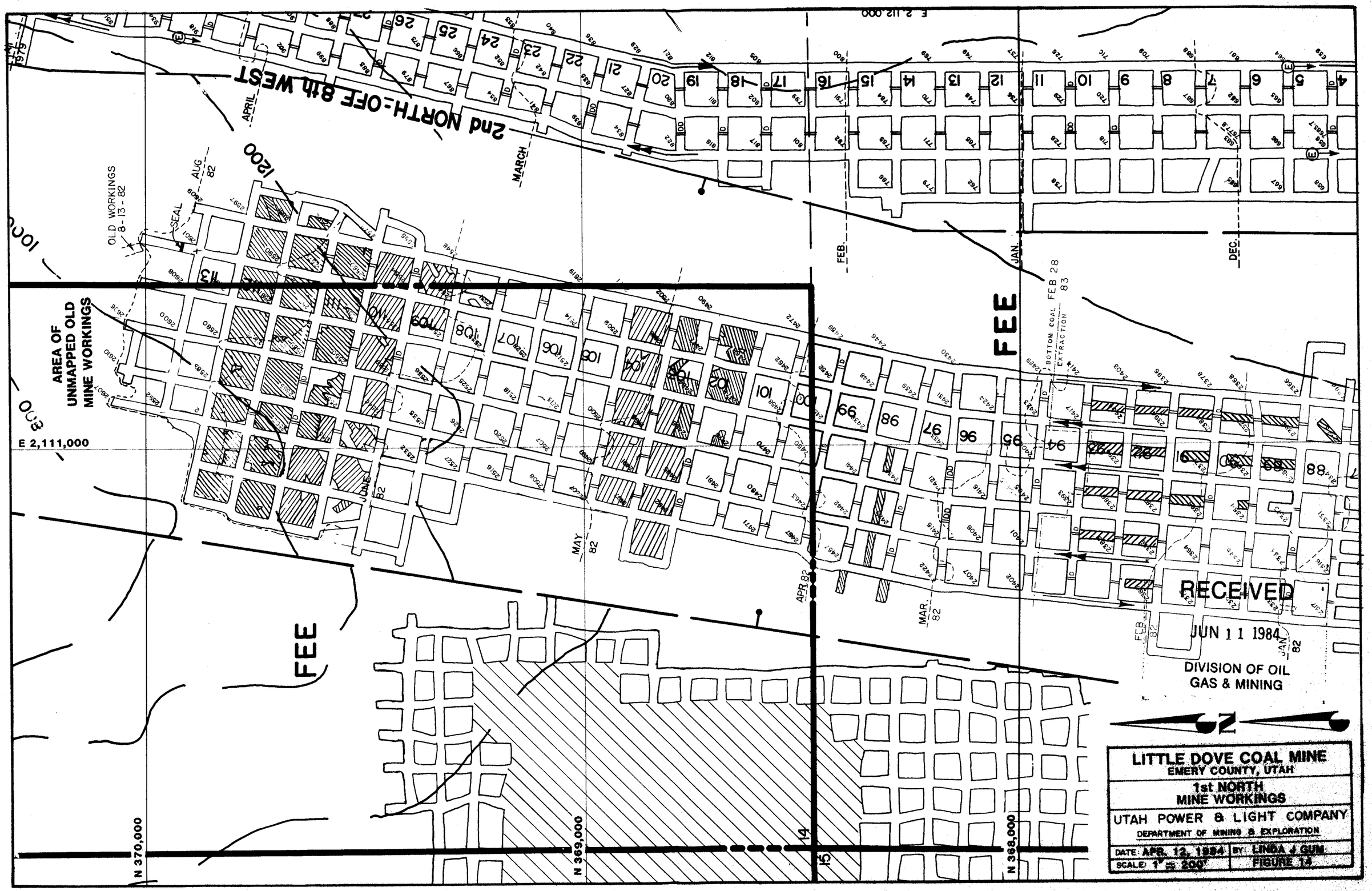



**EAST MOUNTAIN PROPERTY**
EMERY COUNTY, UTAH

**LITTLE DOVE MINE 1st NORTH TOPOGRAPHY MAP**

UTAH POWER & LIGHT COMPANY
DEPARTMENT OF MINING & EXPLORATION

| | |
|---|---|
| DATE: 9/28/83 | BY: LINDA GUM |
| SCALE: 1" = 2000' | FIGURE 13 |


2nd NORTH-OFF 8th WEST
APRIL
MARCH
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OLD WORKINGS
8-13-82
SEAL
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1200
AREA OF
UNMAPPED OLD
MINE WORKINGS
E 2,111,000
JUNE 82
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MAR. 82
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JAN. 82
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GAS & MINING
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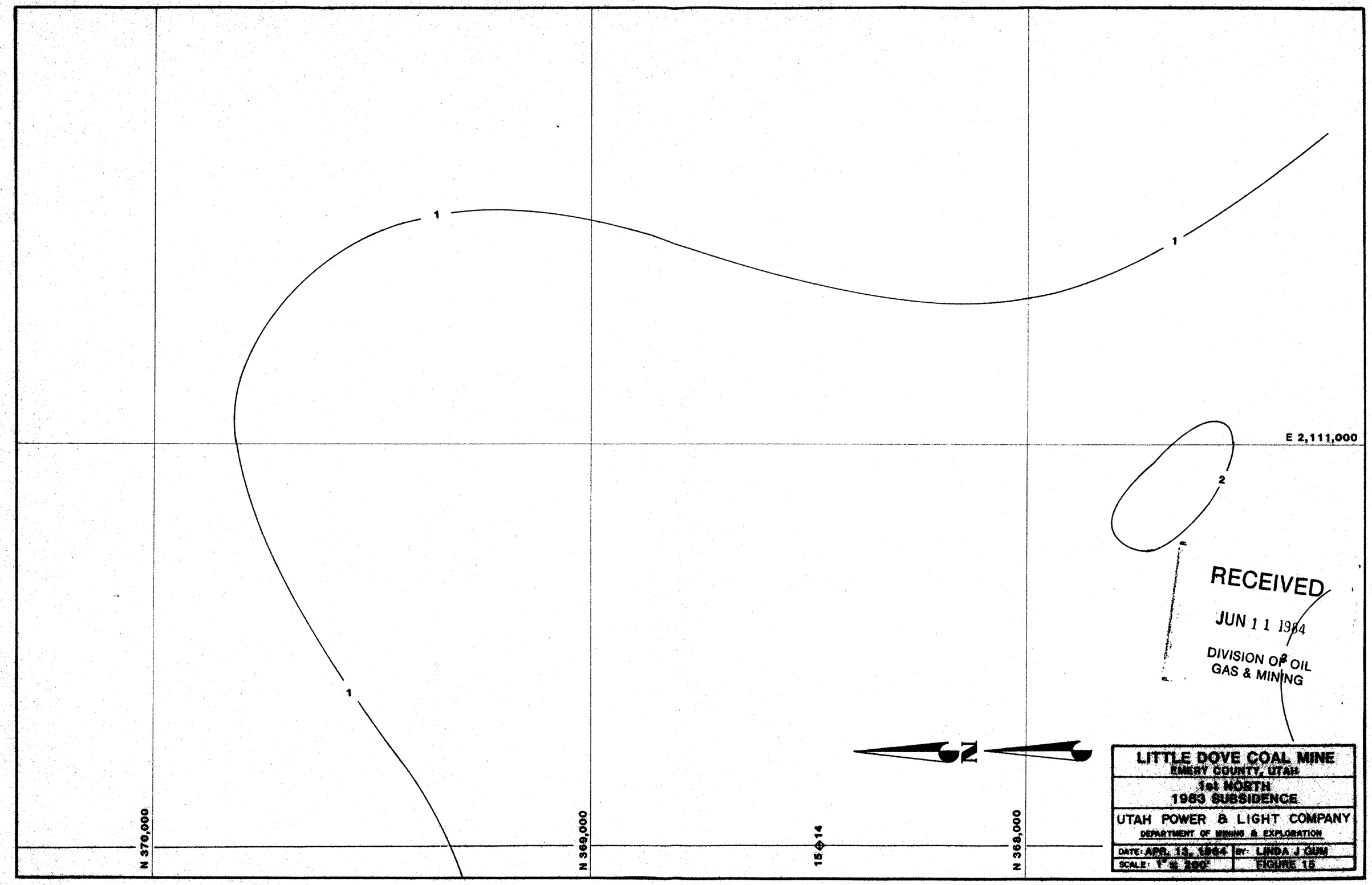
LITTLE DOVE COAL MINE
EMERY COUNTY, UTAH
1st NORTH
MINE WORKINGS
UTAH POWER & LIGHT COMPANY
DEPARTMENT OF MINING & EXPLORATION
DATE: APR. 12, 1984
BY: LINDA J. GUM
SCALE: 1" = 200'
FIGURE 14

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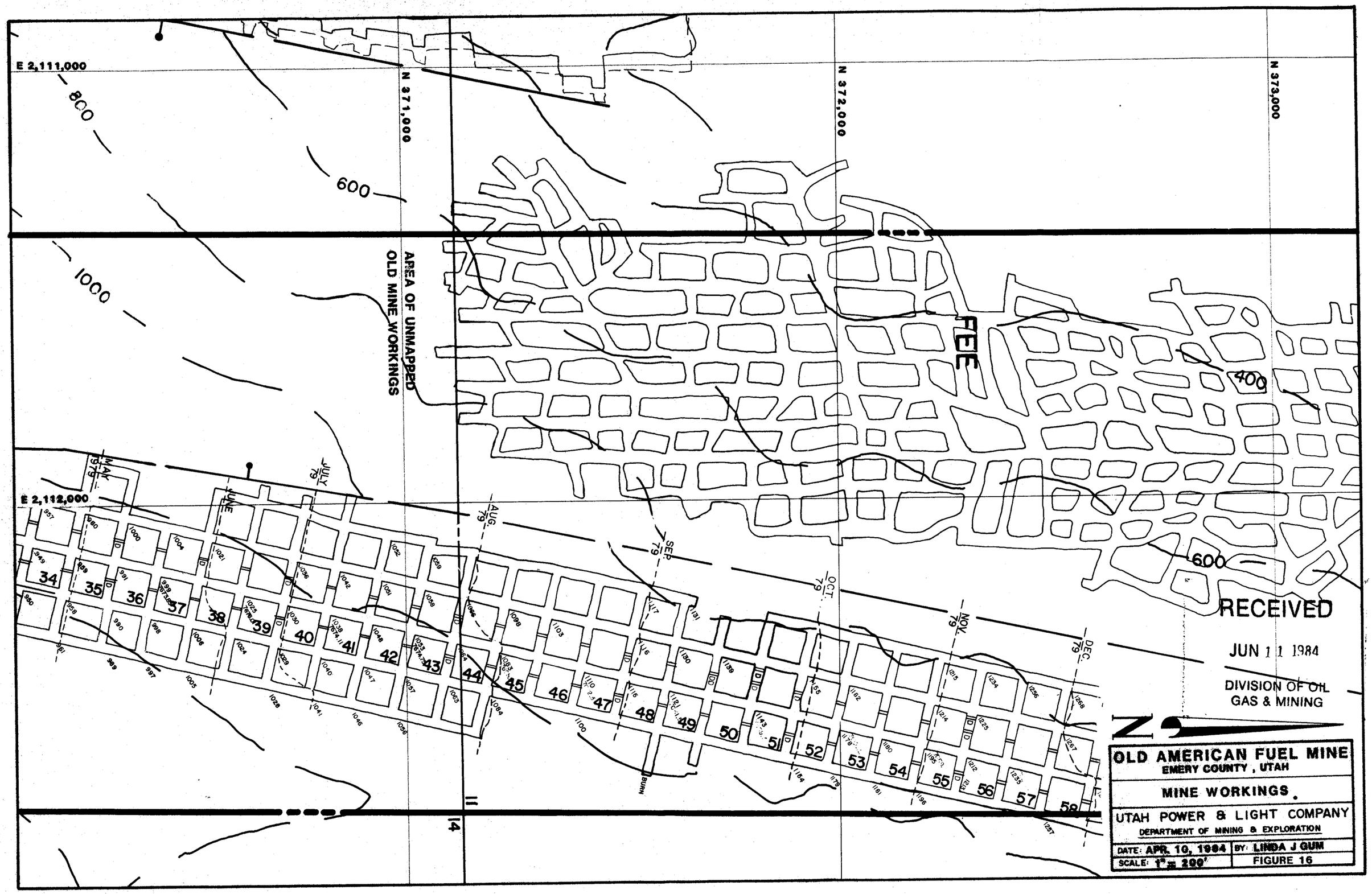
**LITTLE DOVE COAL MINE**
EMERY COUNTY, UTAH
1st NORTH
1983 SUBSIDENCE

UTAH POWER & LIGHT COMPANY
DEPARTMENT OF MINING & EXPLORATION

| | |
|---|---|
| DATE: APR. 13, 1984 | BY: LINDA J. GUM |
| SCALE: 1" = 200' | FIGURE 15 |


E 2,111,000
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N 371,000
N 372,000
N 373,000
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1000
400
AREA OF UNMAPPED
OLD MINE WORKINGS
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JULY 79
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DEC 79
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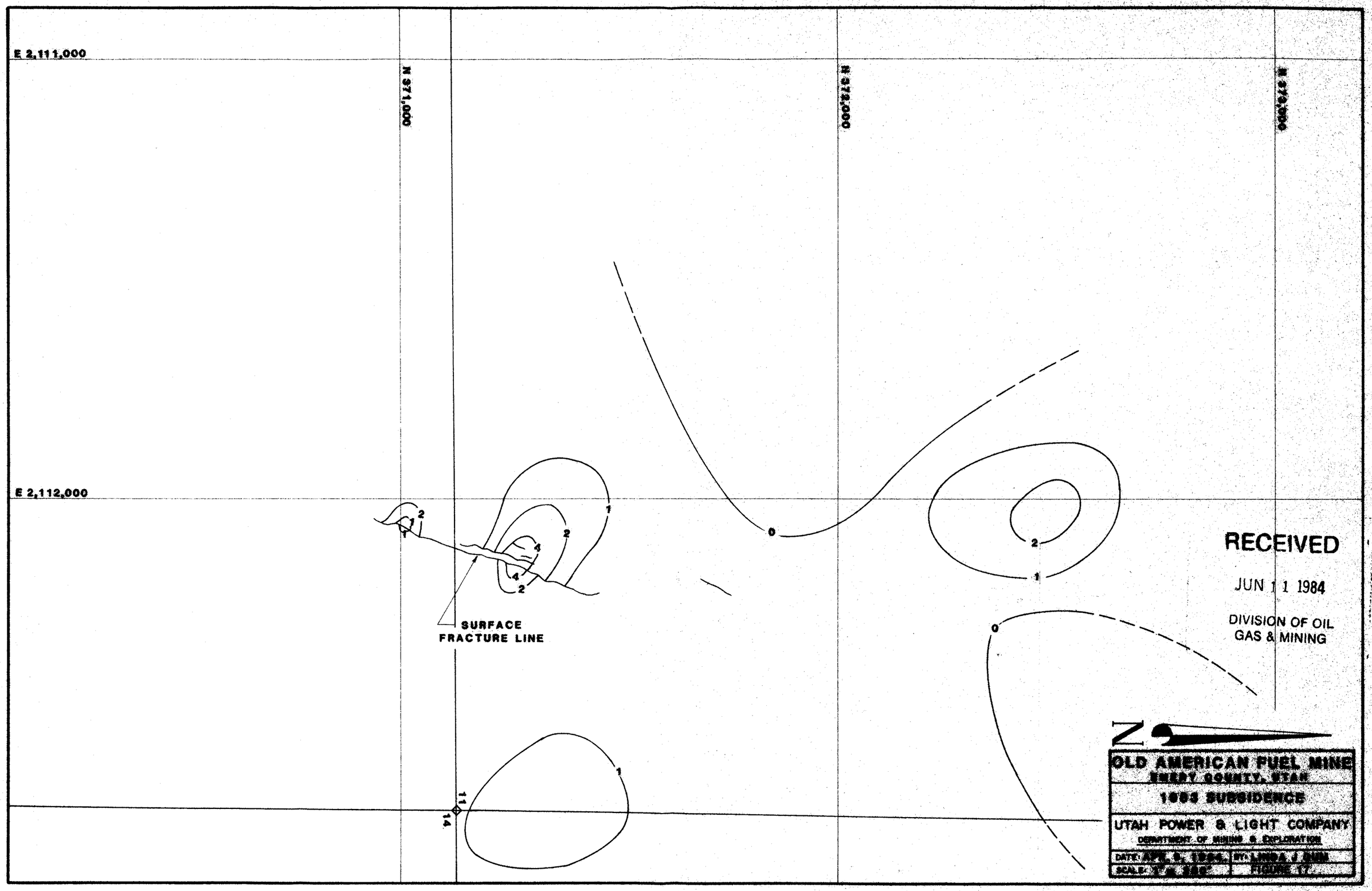
GAS & MINING
OLD AMERICAN FUEL MINE
EMERY COUNTY, UTAH
MINE WORKINGS.
UTAH POWER & LIGHT COMPANY
DEPARTMENT OF MINING & EXPLORATION
DATE: APR. 10, 1984
BY: LINDA J GUM
SCALE: 1" = 200'
FIGURE 16

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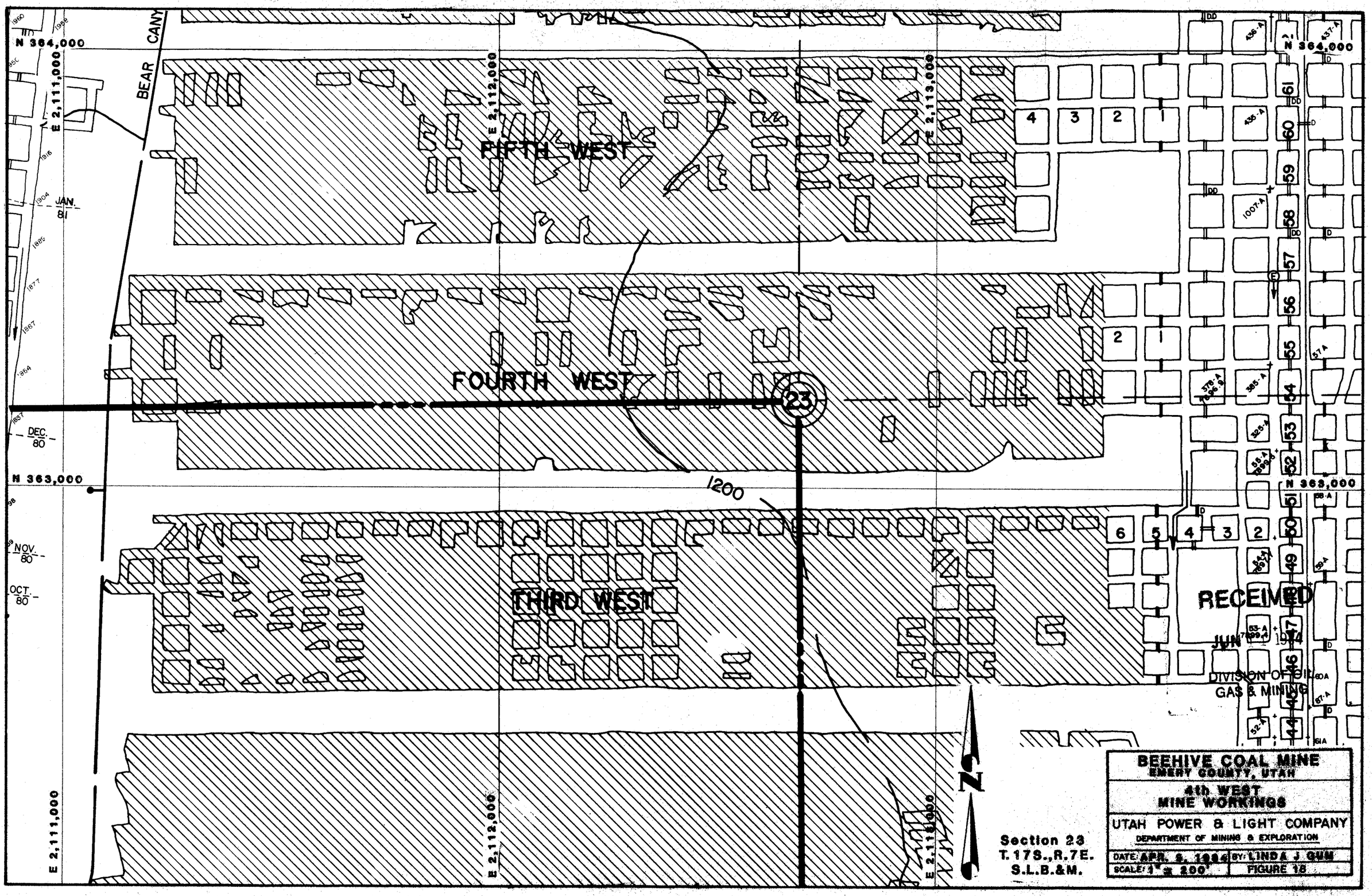
GAS & MINING


N 364,000
N 363,000
E 2,111,000
E 2,112,000
E 2,113,000
BEAR CANYON
FIFTH WEST
FOURTH WEST
THIRD WEST
1200
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JAN. 81
DEC. 80
NOV. 80
OCT. 80
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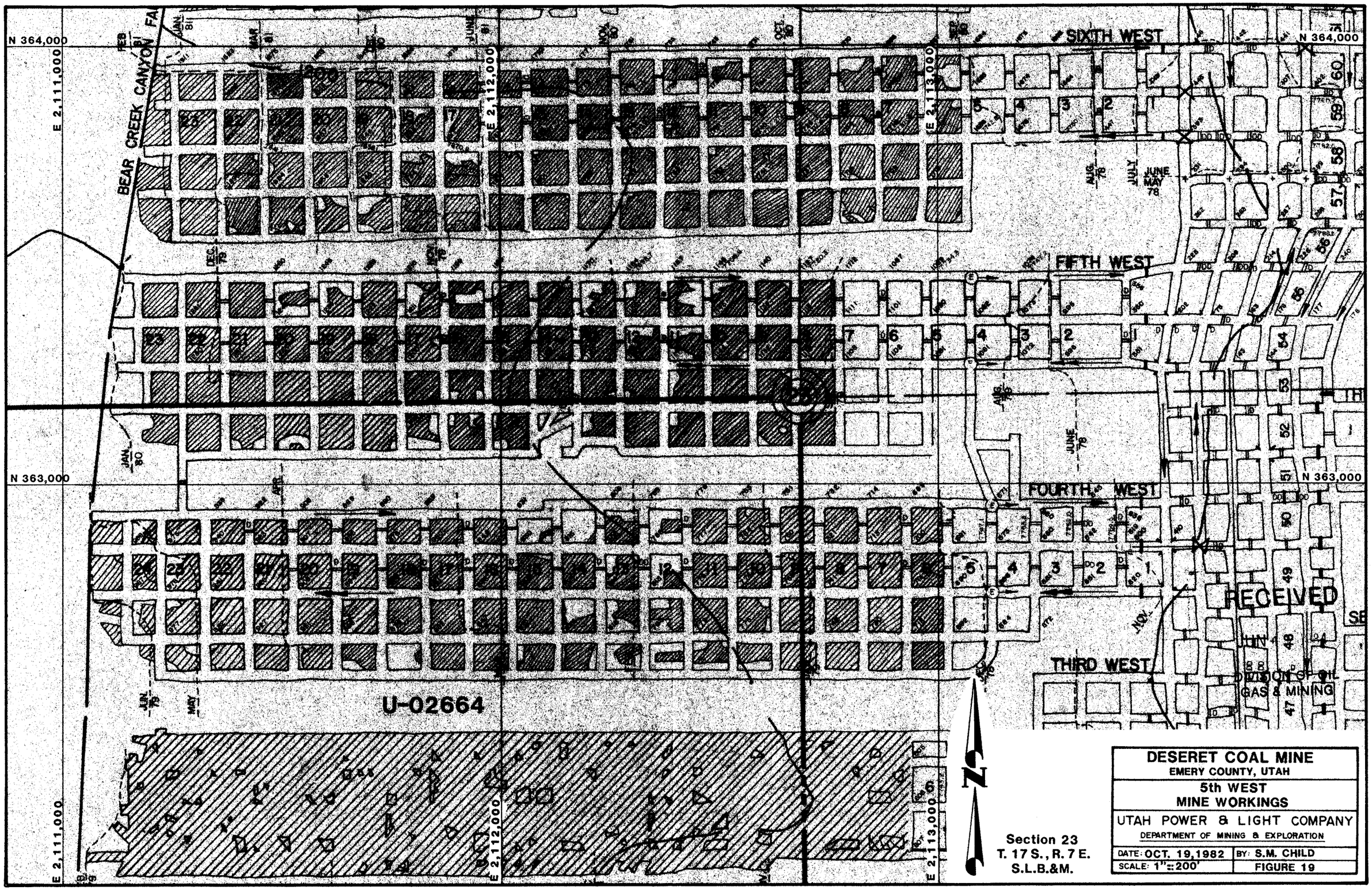
DIVISION OF OIL GAS & MINING
N
Section 23
T. 17S., R. 7E.
S.L.B.&M.
BEEHIVE COAL MINE
EMERY COUNTY, UTAH
4th WEST
MINE WORKINGS
UTAH POWER & LIGHT COMPANY
DEPARTMENT OF MINING & EXPLORATION
DATE: APR. 2, 1984
BY: LINDA J GUM
SCALE: 1" = 200'
FIGURE 18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N 363,000
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SIXTH WEST
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FOURTH WEST
THIRD WEST
BEAR CREEK CANYON
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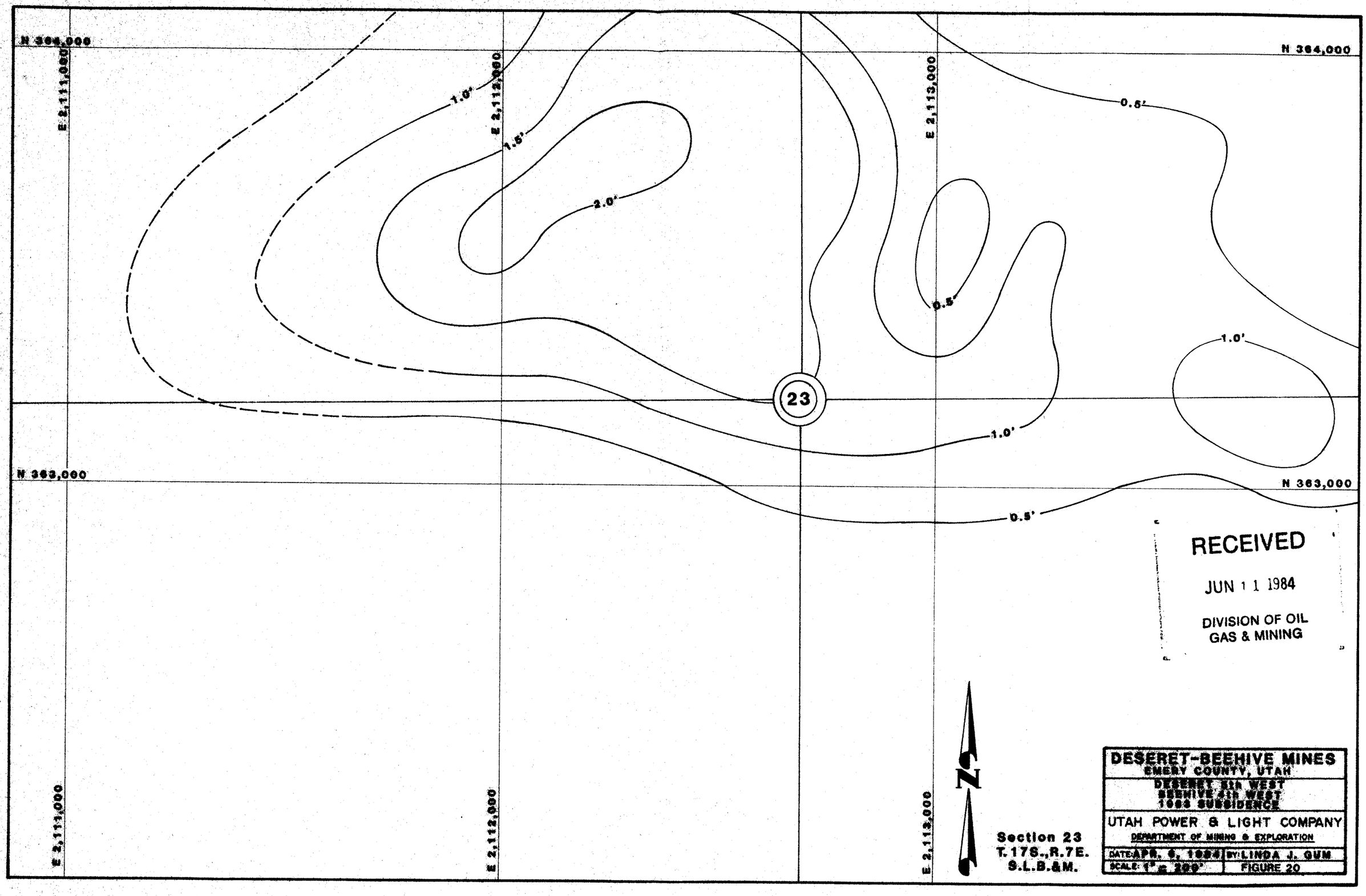
Section 23
T. 17 S., R. 7 E.
S.L.B.&M.
DESERET COAL MINE
EMERY COUNTY, UTAH
5th WEST
MINE WORKINGS
UTAH POWER & LIGHT COMPANY
DEPARTMENT OF MINING & EXPLORATION
DATE: OCT. 19,1982
BY: S.M. CHILD
SCALE: 1"=200'
FIGURE 19

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DIVISION OF OIL
GAS & MINING

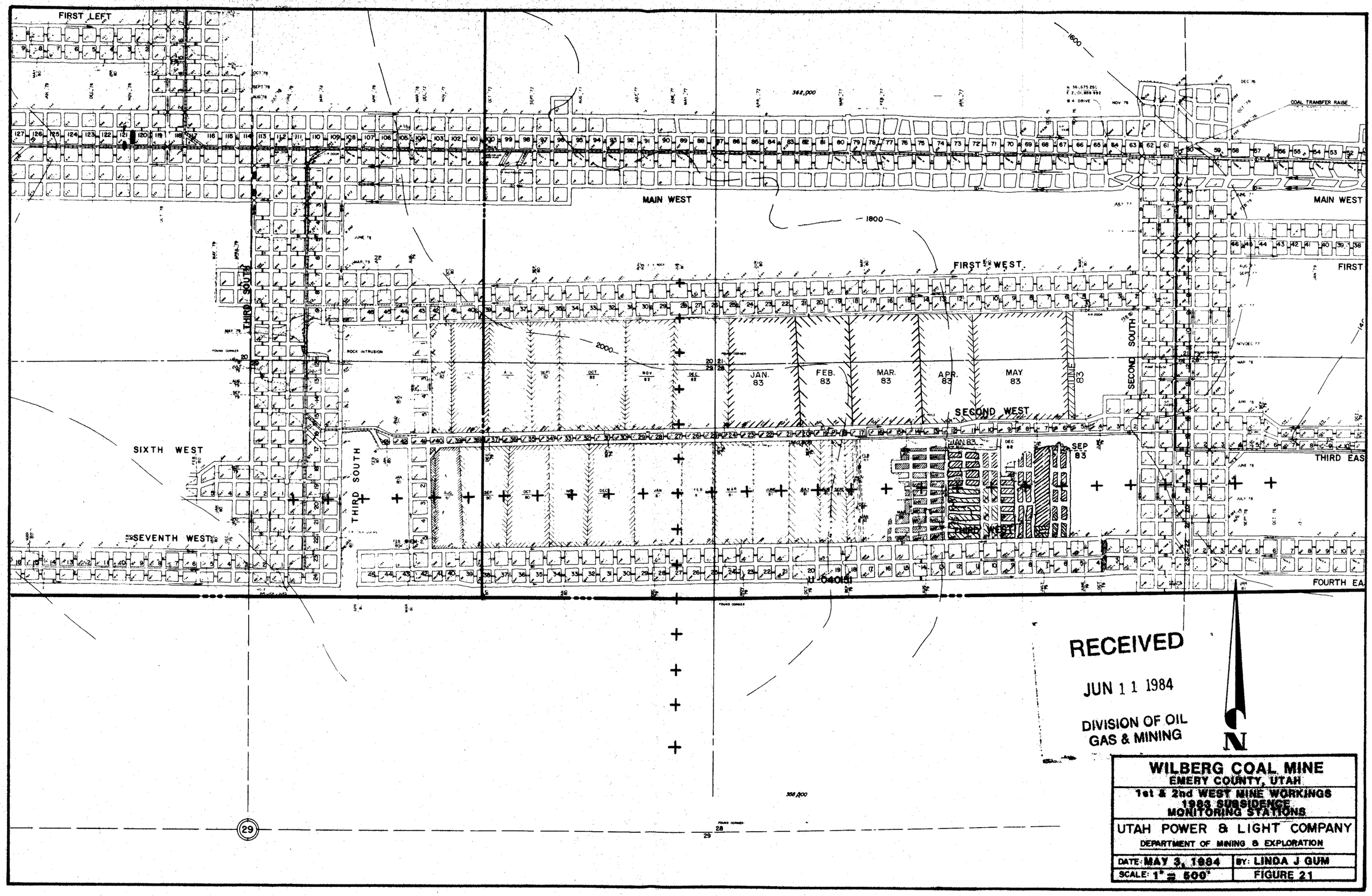
Area 8

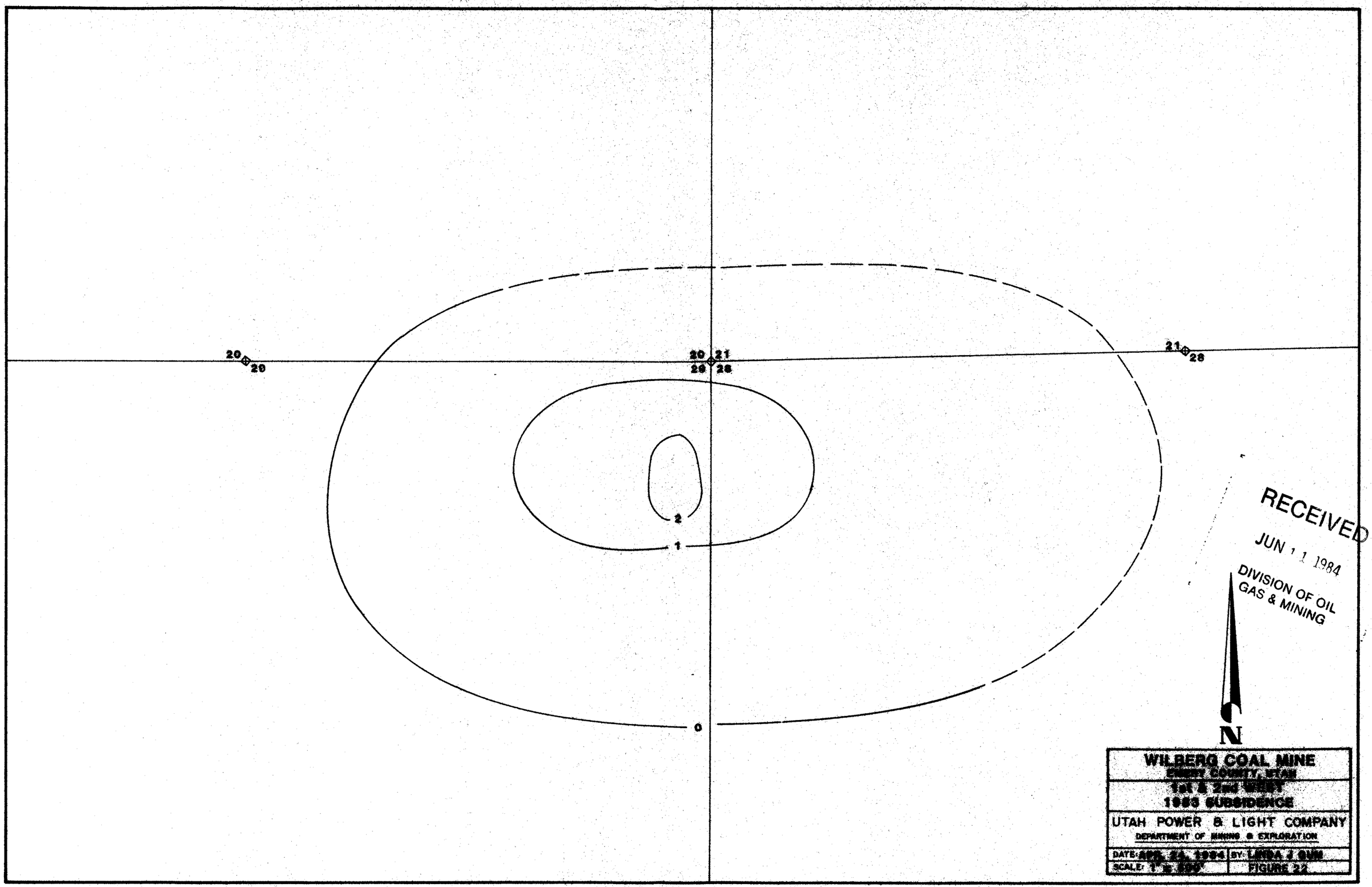
Wilberg - 1st and 2nd West Longwall Panels

The Bureau of Mines monitoring of a system of surface monuments revealed subsidence over the Wilberg 1st and 2nd West longwall panels during the monitoring period (Figure 21). Mining in these two panels was completed by early June 1983. The panels are overlain by 1,700 to 2,000 feet of overburden with topography ranging from fairly steep pine covered slopes to the flat sagebrush covered mountain top.

Maximum subsidence measured was 2.5 feet (Figure 22). No surface fractures or other visible disturbance have been found. On the south side of the area the subsidence diminishes to less than 0.5 feet within 100 feet south of the longwall panels. With 2100 feet of overburden, this equates to an angle of draw of 3°.

Four springs located just north of this area show no effect from the subsidence.


FIRST LEFT
MAIN WEST
MAIN WEST
FIRST WEST
FIRST
SECOND WEST
SECOND SOUTH
THIRD SOUTH
THIRD SOUTH
SIXTH WEST
SEVENTH WEST
THIRD WEST
THIRD EAS
FOURTH EA
COAL TRANSFER RAISE
ROCK INTRUSION
JAN. 83
FEB. 83
MAR. 83
APR. 83
MAY 83
JUNE 83
SEP 83
1800
2000
362,000
358,000
U-040051
29
N
RECEIVED
JUN 11 1984
DIVISION OF OIL
GAS & MINING
WILBERG COAL MINE
EMERY COUNTY, UTAH
1st & 2nd WEST MINE WORKINGS
1983 SUBSIDENCE
MONITORING STATIONS
UTAH POWER & LIGHT COMPANY
DEPARTMENT OF MINING & EXPLORATION
DATE: MAY 3, 1984
BY: LINDA J GUM
SCALE: 1" = 500'
FIGURE 21

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## Other Studied Areas

No surface disturbance or subsidence was observed over any other areas studied for subsidence on East Mountain during the period from August 1982 to August 1983 (Areas 9, 10 and 11; Figure 2).

## Summary

As of August 1983, UP&L has identified eight areas of mining induced subsidence on the East Mountain property. Terrain in the subsidence areas ranges from relatively flat mountain tops with thick overburden of up to 2,100 feet; to steep slopes and cliffs with overburden of less than 200 feet. The most noticeable subsidence occurs in these steep cliff areas where mining next to burned coal appears to have caused crushing of the clinker beds. Most of the fractures observed over mined areas of East Mountain have occurred under these conditions; the exceptions being fractures which are reactivated surface traces of the Bear Creek Canyon or Deer Creek Faults.

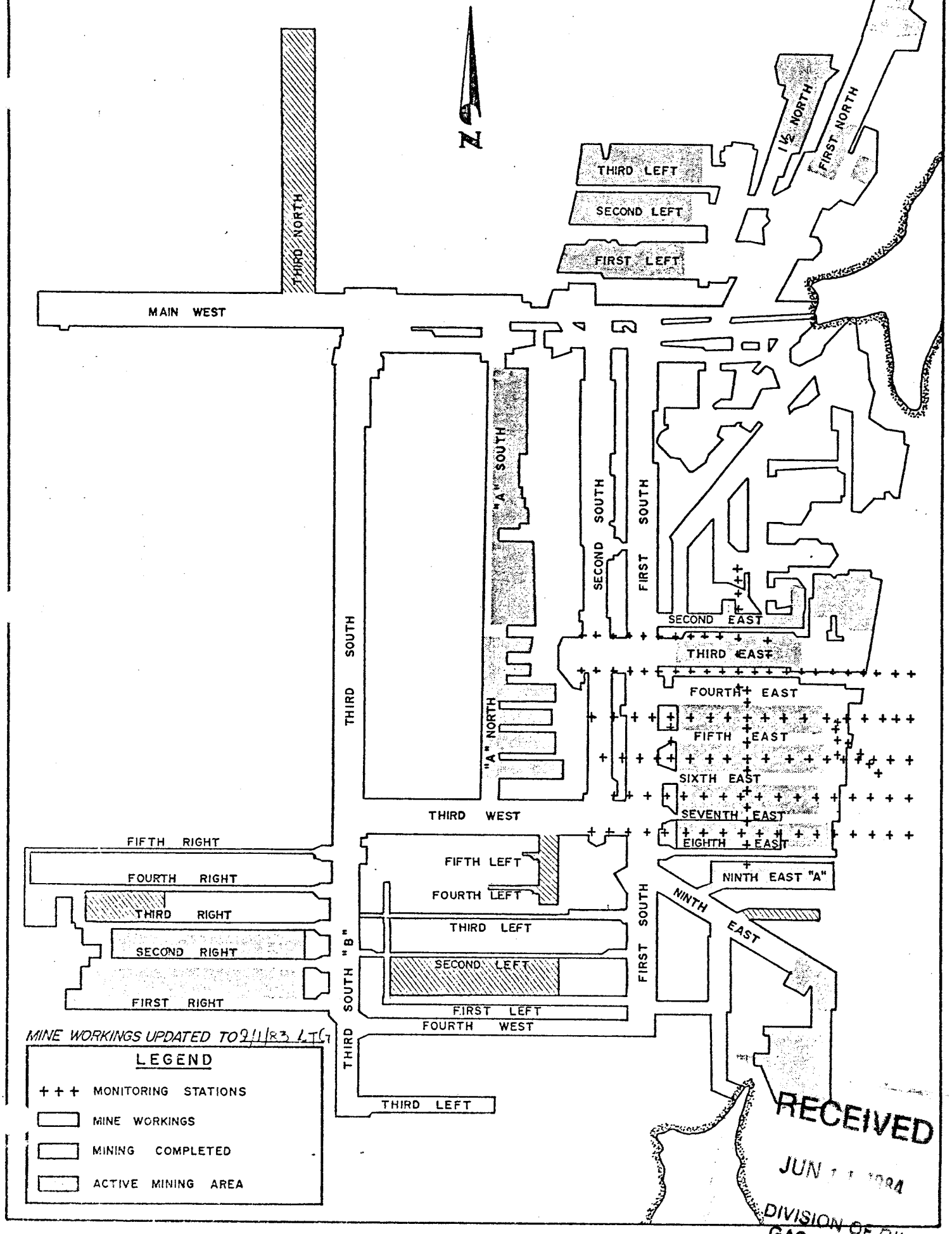
In areas of thicker overburden, longwall and room-and-pillar mining methods have allowed the multiple seam mining of large quantities of coal without apparent impact on the environment. Such areas as the Beehive 4th West - Deseret 5th West sections and the Deer Creek 4th through 7th East - Wilberg 10th and 11th Right longwall panels have demonstrated that subsidence can occur over a broad area with no visual or hydrologic effects. In excess of 80% of the East Mountain property has conditions similar to these areas. It is, therefore, felt that the mining methods being utilized are well suited to the geologic conditions, allowing subsidence to occur without impacting the hydrology or present land use of the area.

# APPENDIX

# DEER CREEK MINE

# DEER CREEK COAL MINE

SCALE: 1" = 2000'

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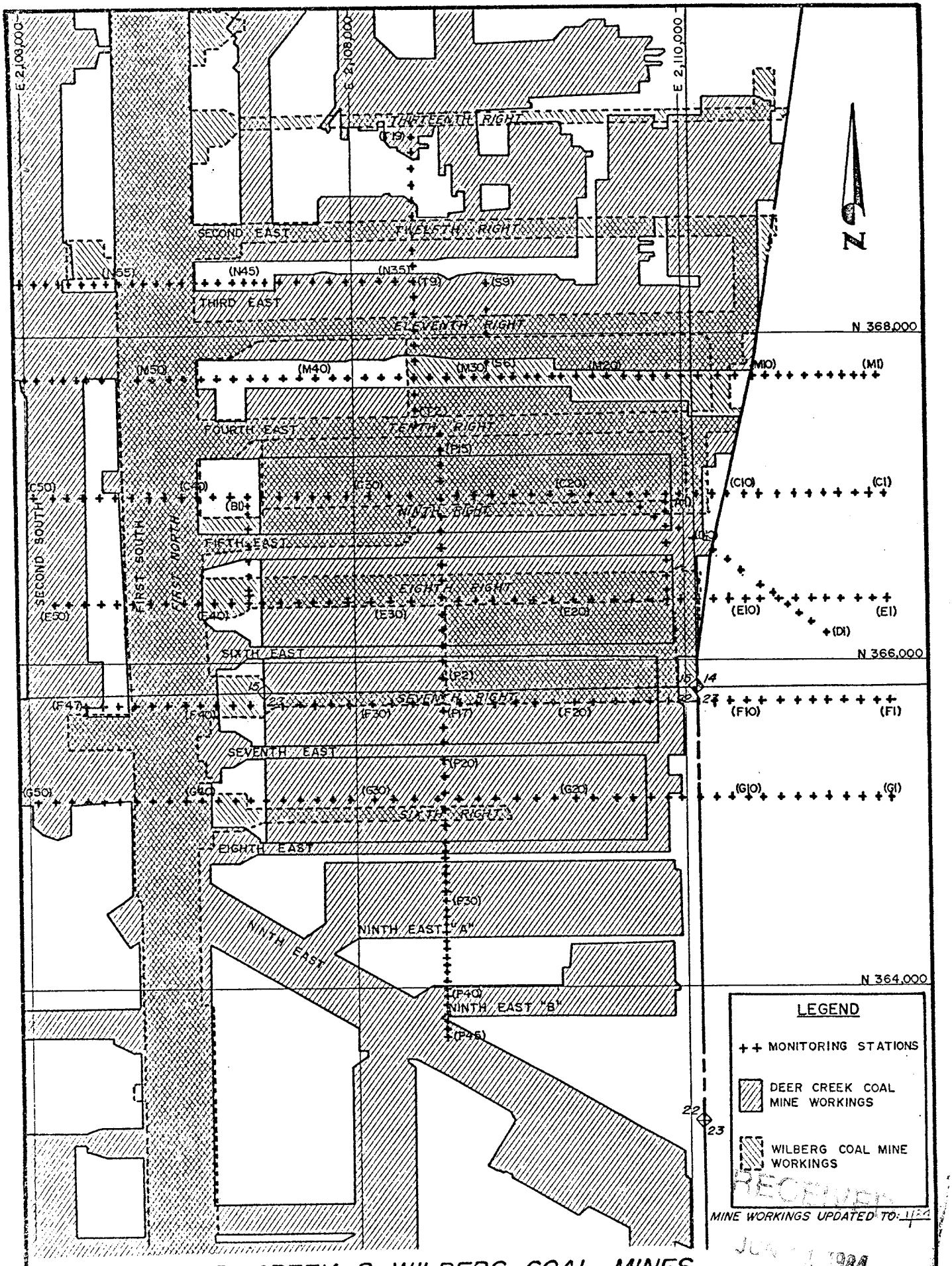


# DEER CREEK & WILBERG COAL MINES

SCALE: 1" = 800'

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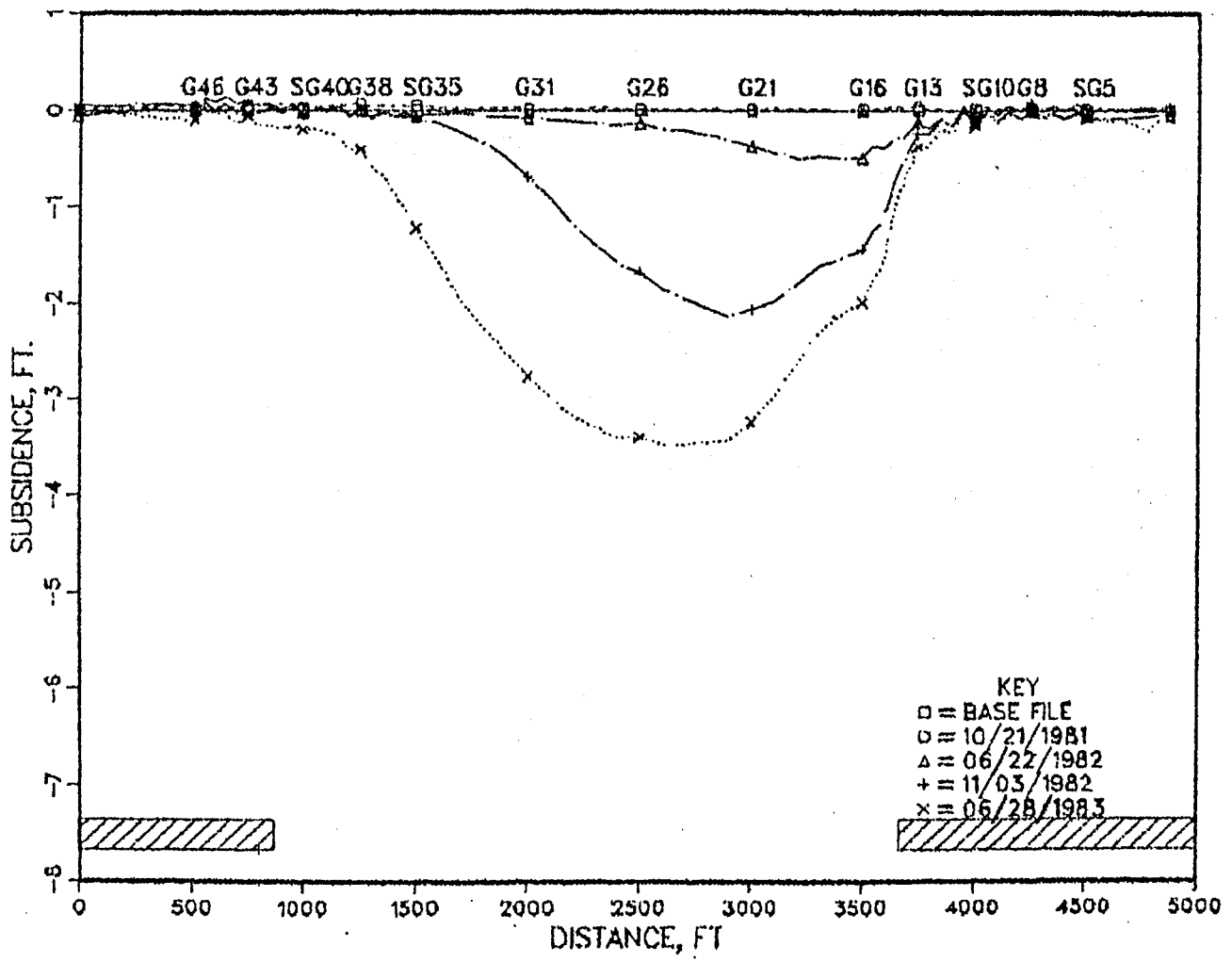
# DEER CREEK MINE

## PROGRESSIVE PLOT OF G-LINE

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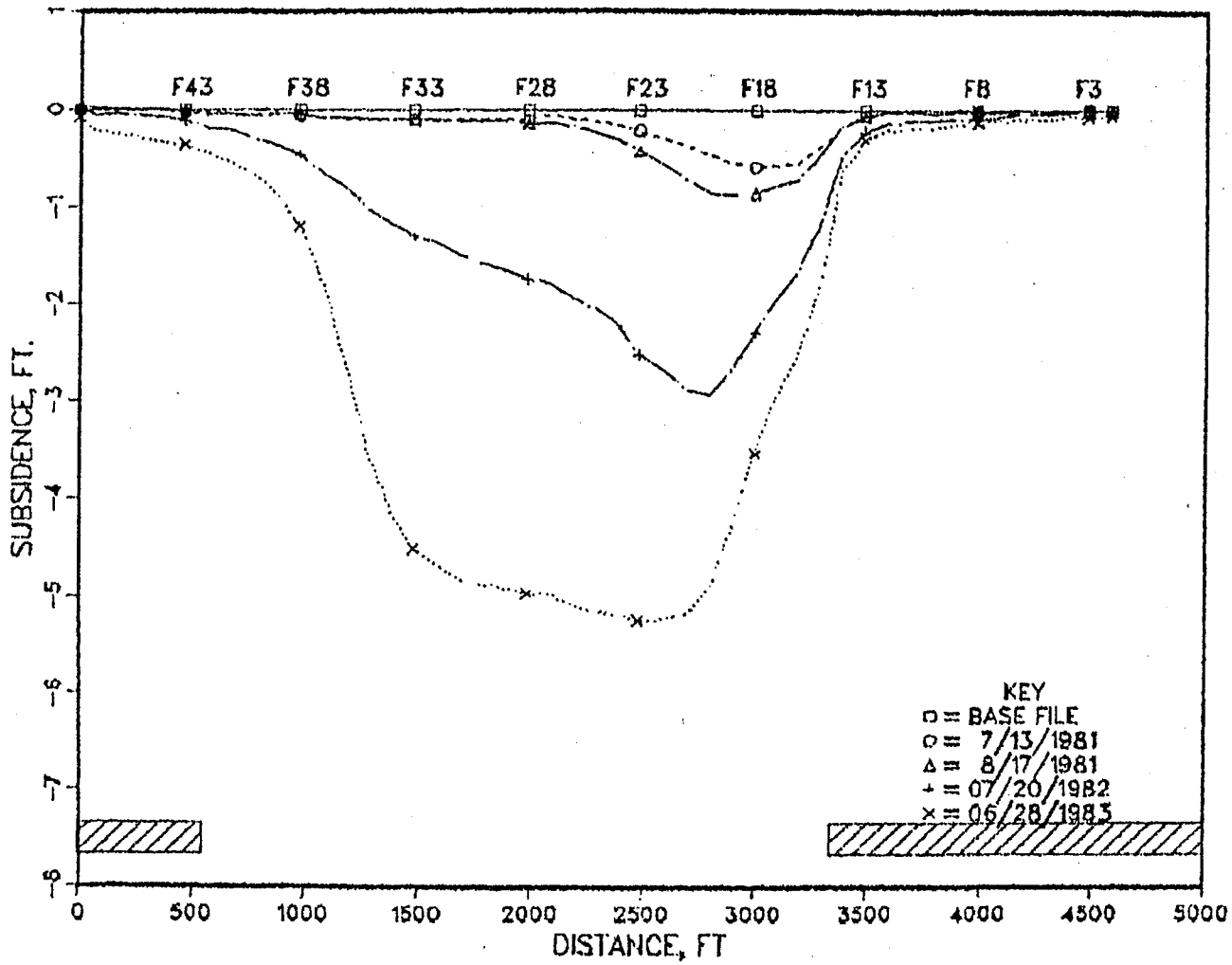
# DEER CREEK MINE

## PROGRESSIVE PLOT OF F-LINE

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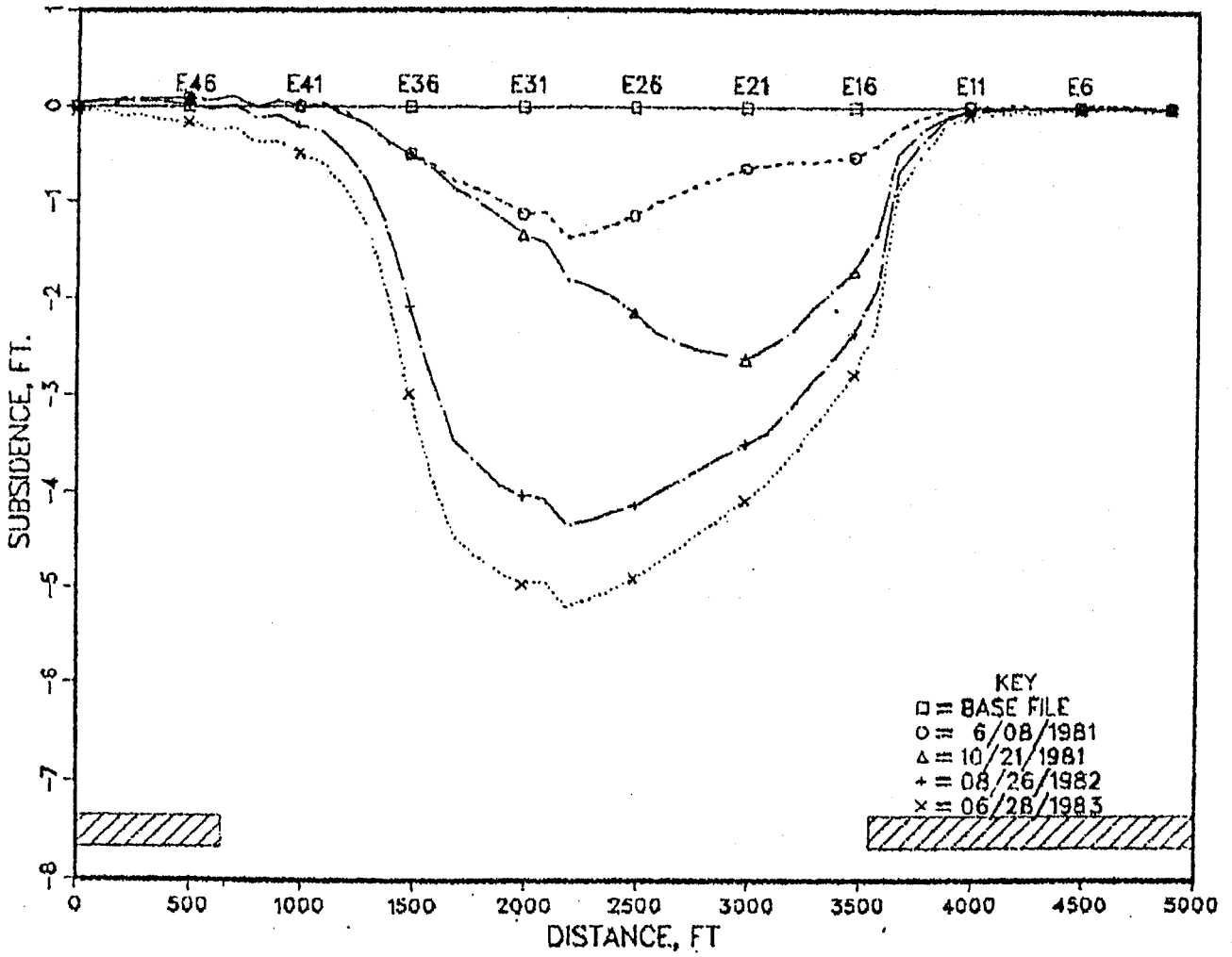
DIVISION OF OIL
GAS & MINING

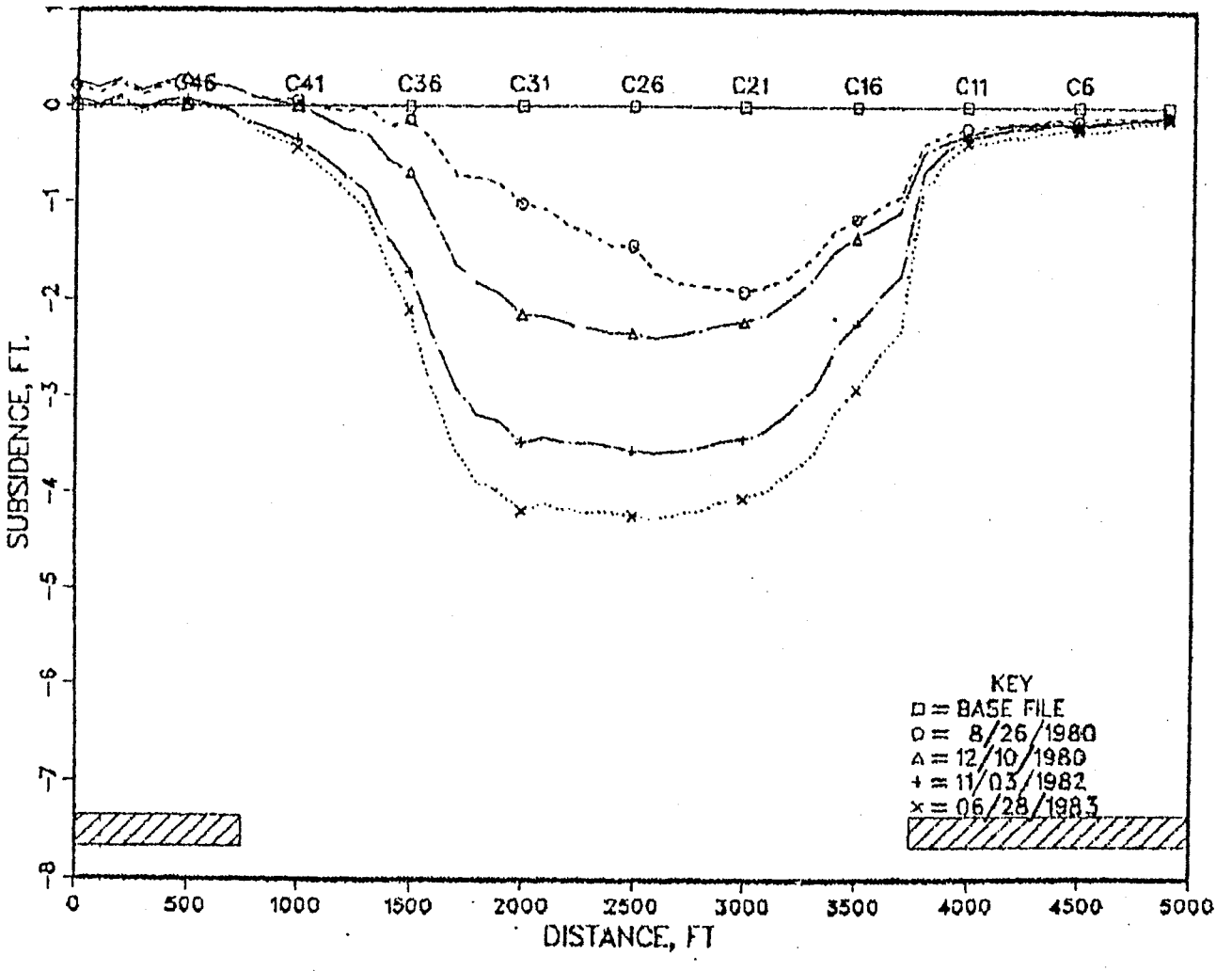
# DEER CREEK MINE

## PROGRESSIVE PLOT OF E-LINE



# DEER CREEK MINE

## PROGRESSIVE PLOT OF C-LINE



DEER CREEK SUBSIDENCE PROJECT LISTING OF ELEVATION

| STATION NAME | BASE DATE BASE FILE | DIFFERENCES BY DATES : 12/10/1980 J + T : L | 6/08/1981 J + T : L | 7/13/1981 J + T : L | 8/19/1981 USBM : L | 8/17/1981 J + T : L | 9/14/1981 J + T : L | 10/21/1981 J + T : L |
|---|---|---|---|---|---|---|---|---|
| DC1 | 8994.68 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| DC2 | 8955.53 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| BM1 | 9025.91 | 0.00 | 0.00 | 0.00 | . . . . | 0.00 | 0.00 | -0.00 |
| BM2 | 9159.51 | 0.45 | 0.64 | 0.71 | 0.78 | 0.87 | 1.13 | 1.49 |
| BM3 | 9188.67 | 2.30 | . . . . | . . . . | 2.72 | . . . . | . . . . | . . . . |
| BM4 | 9104.14 | 0.00 | 0.00 | 0.00 | . . . . | 0.00 | 0.00 | . . . . |
| BM5 | 9096.70 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| BM6 | 8943.36 | . . . . | . . . . | 0.05 | . . . . | 0.07 | 0.09 | 0.04 |
| BM7 | 9106.90 | . . . . | 0.00 | 0.00 | . . . . | 0.00 | 0.00 | . . . . |
| BM8 | 8980.15 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| BM9 | 8961.81 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| BM10 | 9067.32 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| NCP0 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| NCP1 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| NCP2 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| NCP3 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| NCP4 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| NCP5 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| NCP6 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| NCP7 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| NCP8 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| NCP9 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| C1 | 8998.65 | 0.10 | 0.09 | . . . . | . . . . | . . . . | . . . . | . . . . |
| C2 | 8988.15 | 0.13 | 0.10 | . . . . | . . . . | . . . . | . . . . | . . . . |
| C3 | 8978.20 | 0.15 | 0.13 | . . . . | . . . . | . . . . | . . . . | . . . . |
| C4 | 8971.85 | 0.15 | 0.12 | . . . . | . . . . | . . . . | . . . . | . . . . |
| C5 | 8970.99 | 0.18 | 0.17 | . . . . | 0.17 | . . . . | . . . . | . . . . |
| C6 | 8976.02 | 0.16 | 0.14 | . . . . | 0.14 | . . . . | . . . . | . . . . |
| C7 | 8984.61 | 0.19 | 0.18 | . . . . | 0.18 | . . . . | . . . . | . . . . |
| C8 | 8990.13 | 0.18 | 0.19 | . . . . | 0.19 | . . . . | . . . . | . . . . |
| C9 | 8993.46 | 0.23 | 0.22 | . . . . | 0.23 | . . . . | . . . . | . . . . |
| C10 | 8997.67 | 0.30 | 0.25 | . . . . | 0.29 | . . . . | . . . . | . . . . |
| C11 | 9001.98 | 0.36 | 0.33 | . . . . | 0.37 | . . . . | . . . . | . . . . |
| C12 | 9008.04 | 0.48 | 0.49 | . . . . | 0.55 | . . . . | . . . . | . . . . |
| C13 | 9017.60 | 1.07 | 1.16 | . . . . | 1.27 | . . . . | . . . . | . . . . |
| C14 | 9030.62 | 1.22 | 1.28 | . . . . | 1.44 | . . . . | . . . . | . . . . |
| C15 | 9054.08 | 1.35 | 1.47 | . . . . | 1.58 | . . . . | . . . . | . . . . |
| C16 | 9076.04 | 1.50 | 1.64 | . . . . | 1.77 | . . . . | . . . . | . . . . |
| C17 | 9096.46 | 1.78 | 1.96 | . . . . | 2.10 | . . . . | . . . . | . . . . |
| C18 | 9120.88 | 1.98 | 2.16 | . . . . | 2.32 | . . . . | . . . . | . . . . |

DEER CREEK SUBSIDENCE PROJECT LISTING OF ELEVATION

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|---|---|---|---|---|---|---|---|---|
| C19 | 9137.26 | 2.14 | 2.33 | . . . . | 2.48 | . . . . | . . . . | . . . . |
| C20 | 9152.74 | 2.22 | 2.42 | . . . . | 2.57 | . . . . | . . . . | . . . . |
| C21 | 9166.18 | 2.25 | 2.48 | . . . . | 2.58 | . . . . | . . . . | . . . . |
| C22 | 9173.53 | 2.32 | 2.55 | . . . . | 2.63 | . . . . | . . . . | . . . . |
| C23 | 9175.25 | 2.36 | 2.59 | . . . . | 2.67 | . . . . | . . . . | . . . . |
| C24 | 9170.81 | 2.39 | 2.64 | . . . . | 2.68 | . . . . | . . . . | . . . . |
| C25 | 9170.54 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| C26 | 9181.64 | 2.33 | 2.56 | . . . . | 2.64 | . . . . | . . . . | . . . . |
| C27 | 9188.24 | 2.29 | 2.56 | . . . . | 2.56 | . . . . | . . . . | . . . . |
| C28 | 9187.66 | 2.24 | 2.54 | . . . . | 2.53 | . . . . | . . . . | . . . . |
| C29 | 9189.62 | 2.15 | 2.47 | . . . . | 2.46 | . . . . | . . . . | . . . . |
| C30 | 9190.13 | 2.14 | 2.49 | . . . . | 2.46 | . . . . | . . . . | . . . . |
| C31 | 9193.08 | 1.92 | 2.28 | . . . . | 2.24 | . . . . | . . . . | . . . . |
| C32 | 9188.37 | 1.81 | 2.19 | . . . . | 2.14 | . . . . | . . . . | . . . . |
| C33 | 9187.61 | 1.63 | 2.01 | . . . . | 1.93 | . . . . | . . . . | . . . . |
| C34 | 9183.94 | 1.12 | 1.48 | . . . . | 1.42 | . . . . | . . . . | . . . . |
| C35 | 9179.18 | 0.69 | 1.01 | . . . . | 0.94 | . . . . | . . . . | . . . . |
| C36 | 9178.90 | 0.57 | 0.88 | . . . . | 0.77 | . . . . | . . . . | . . . . |
| C37 | 9178.13 | 0.28 | 0.53 | . . . . | 0.42 | . . . . | . . . . | . . . . |
| C38 | 9175.22 | 0.24 | 0.44 | . . . . | 0.33 | . . . . | . . . . | . . . . |
| C39 | 9170.81 | 0.12 | 0.31 | . . . . | 0.19 | . . . . | . . . . | . . . . |
| C40 | 9162.20 | 0.01 | 0.18 | . . . . | 0.06 | . . . . | . . . . | . . . . |
| C41 | 9148.84 | -0.04 | 0.13 | . . . . | 0.01 | . . . . | . . . . | . . . . |
| C42 | 9135.52 | -0.09 | 0.06 | . . . . | -0.05 | . . . . | . . . . | . . . . |
| C43 | 9125.00 | -0.20 | -0.04 | . . . . | -0.13 | . . . . | . . . . | . . . . |
| C44 | 9117.09 | -0.23 | -0.07 | . . . . | -0.20 | . . . . | . . . . | . . . . |
| C45 | 9105.25 | -0.29 | -0.12 | . . . . | -0.25 | . . . . | . . . . | . . . . |
| C46 | 9084.48 | -0.25 | -0.11 | . . . . | -0.19 | . . . . | . . . . | . . . . |
| C47 | 9065.21 | -0.15 | 0.02 | . . . . | -0.09 | . . . . | . . . . | . . . . |
| C48 | 9046.81 | -0.29 | -0.13 | . . . . | -0.22 | . . . . | . . . . | . . . . |
| C49 | 9028.02 | -0.19 | -0.01 | . . . . | -0.12 | . . . . | . . . . | . . . . |
| C50 | 9004.20 | -0.27 | -0.10 | . . . . | -0.20 | . . . . | . . . . | . . . . |
| P16 | 9203.57 | 1.21 | 1.37 | . . . . | 1.30 | . . . . | . . . . | . . . . |
| P15 | 9197.23 | 1.44 | 1.62 | . . . . | 1.56 | . . . . | . . . . | . . . . |
| P14 | 9194.67 | 1.66 | 1.87 | . . . . | 1.82 | . . . . | . . . . | . . . . |
| P13 | 9191.28 | 1.99 | 2.22 | . . . . | 2.20 | . . . . | . . . . | . . . . |
| P12 | 9183.72 | 2.57 | 2.85 | . . . . | 2.93 | . . . . | . . . . | . . . . |
| P11 | 9180.58 | 2.63 | 2.93 | . . . . | 3.03 | . . . . | . . . . | . . . . |
| P10 | 9176.25 | 2.57 | 2.88 | . . . . | 3.00 | . . . . | . . . . | . . . . |
| P9 | 9171.03 | 2.45 | 2.76 | . . . . | 2.91 | . . . . | . . . . | . . . . |

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|---|---|---|---|---|---|---|---|---|
| P8 | 9165.59 | 2.06 | 2.37 | 2.53 | 2.55 | 2.67 | 2.84 | 2.95 |
| P7 | 9160.70 | 1.64 | 1.90 | 2.09 | 2.13 | 2.24 | 2.41 | 2.57 |
| P6 | 9159.07 | 1.02 | 1.21 | 1.37 | 1.38 | 1.50 | 1.66 | 1.86 |
| P5 | 9160.44 | 0.52 | 0.62 | 0.77 | 0.76 | 0.88 | 1.01 | 1.20 |
| P4 | 9157.80 | 0.34 | 0.41 | 0.54 | 0.50 | 0.61 | 0.72 | 0.86 |
| P3 | 9154.42 | 0.26 | 0.31 | 0.46 | 0.40 | 0.53 | 0.60 | 0.71 |
| P2 | 9151.12 | 0.14 | 0.19 | 0.27 | 0.22 | 0.32 | 0.42 | 0.51 |
| P1 | 9143.31 | -0.02 | 0.03 | 0.13 | 0.05 | 0.17 | 0.22 | 0.27 |
| P17 | 9129.72 | . . . . | . . . . | -0.01 | -0.08 | 0.03 | 0.09 | 0.11 |
| P18 | 9114.29 | . . . . | . . . . | 0.00 | -0.03 | 0.06 | 0.12 | 0.13 |
| P19 | 9100.43 | . . . . | . . . . | -0.01 | -0.05 | 0.02 | 0.06 | 0.05 |
| P20 | 9089.13 | . . . . | . . . . | 0.00 | -0.04 | 0.02 | 0.05 | 0.02 |
| P21 | 9074.91 | . . . . | . . . . | -0.00 | -0.04 | 0.01 | 0.03 | -0.01 |
| P22 | 9061.37 | . . . . | . . . . | -0.00 | -0.03 | 0.01 | 0.02 | -0.02 |
| P23 | 9048.42 | . . . . | . . . . | -0.00 | -0.03 | 0.01 | 0.03 | -0.03 |
| P24 | 9042.63 | . . . . | . . . . | -0.00 | -0.01 | 0.01 | 0.04 | -0.02 |
| P25 | 9038.54 | . . . . | . . . . | -0.00 | -0.03 | -0.00 | 0.01 | -0.04 |
| SP25 | 9039.18 | . . . . | . . . . | . . . . | -0.09 | . . . . | . . . . | . . . . |
| P26 | 9036.75 | . . . . | . . . . | -0.01 | -0.04 | -0.00 | 0.00 | -0.05 |
| SP26 | 9036.84 | . . . . | . . . . | . . . . | -0.08 | . . . . | . . . . | . . . . |
| P27 | 9035.61 | . . . . | . . . . | -0.00 | -0.02 | 0.02 | 0.03 | -0.04 |
| SP27 | 9033.56 | . . . . | . . . . | . . . . | -0.07 | . . . . | . . . . | . . . . |
| P28 | 9027.03 | . . . . | . . . . | -0.00 | -0.03 | 0.01 | 0.04 | -0.04 |
| SP28 | 9020.71 | . . . . | . . . . | . . . . | -0.06 | . . . . | . . . . | . . . . |
| SP29 | 9014.04 | . . . . | . . . . | . . . . | -0.02 | . . . . | . . . . | . . . . |
| SP30 | 9007.47 | . . . . | . . . . | . . . . | -0.01 | . . . . | . . . . | . . . . |
| SP31 | 9000.30 | . . . . | . . . . | . . . . | -0.00 | . . . . | . . . . | . . . . |
| SP32 | 8991.51 | . . . . | . . . . | . . . . | 0.01 | . . . . | . . . . | . . . . |
| SP33 | 8979.06 | . . . . | . . . . | . . . . | 0.02 | . . . . | . . . . | . . . . |
| SP34 | 8966.51 | . . . . | . . . . | . . . . | 0.04 | . . . . | . . . . | . . . . |
| SP35 | 8954.85 | . . . . | . . . . | . . . . | 0.02 | . . . . | . . . . | . . . . |
| SP36 | 8945.07 | . . . . | . . . . | . . . . | 0.09 | . . . . | . . . . | . . . . |
| SP37 | 8937.55 | . . . . | . . . . | . . . . | 0.10 | . . . . | . . . . | . . . . |
| SP38 | 8932.96 | . . . . | . . . . | . . . . | 0.08 | . . . . | . . . . | . . . . |
| SP39 | 8929.45 | . . . . | . . . . | . . . . | 0.07 | . . . . | . . . . | . . . . |
| SP40 | 8926.20 | . . . . | . . . . | . . . . | 0.07 | . . . . | . . . . | . . . . |
| SP41 | 8923.56 | . . . . | . . . . | . . . . | 0.07 | . . . . | . . . . | . . . . |
| SP42 | 8922.57 | . . . . | . . . . | . . . . | 0.07 | . . . . | . . . . | . . . . |
| SP43 | 8922.02 | . . . . | . . . . | . . . . | 0.05 | . . . . | . . . . | . . . . |
| SP44 | 8921.65 | . . . . | . . . . | . . . . | 0.07 | . . . . | . . . . | . . . . |

DEER CREEK SUBSIDENCE PROJECT LISTING OF ELEVATION

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|---|---|---|---|---|---|---|---|---|
| SP45 | 8921.35 | . . . . | . . . . | . . . . | 0.06 | . . . . | . . . . | . . . . |
| D1 | 8960.18 | -0.11 | 0.06 | . . . . | 0.08 | . . . . | . . . . | . . . . |
| D2 | 8953.04 | -0.06 | 0.11 | . . . . | 0.13 | . . . . | . . . . | . . . . |
| D3 | 8949.27 | -0.05 | 0.12 | . . . . | 0.13 | . . . . | . . . . | . . . . |
| D4 | 8949.94 | -0.04 | 0.13 | . . . . | 0.18 | . . . . | . . . . | . . . . |
| D5 | 8957.29 | -0.03 | 0.15 | . . . . | 0.18 | . . . . | . . . . | . . . . |
| D6 | 8967.44 | -0.02 | 0.16 | . . . . | 0.20 | . . . . | . . . . | . . . . |
| D7 | 8975.26 | -0.03 | 0.14 | . . . . | 0.19 | . . . . | . . . . | . . . . |
| D8 | 8983.90 | -0.00 | 0.19 | . . . . | 0.24 | . . . . | . . . . | . . . . |
| D9 | 8990.92 | 0.14 | 0.36 | . . . . | 0.42 | . . . . | . . . . | . . . . |
| D10 | 8999.20 | 0.29 | 0.51 | . . . . | 0.59 | . . . . | . . . . | . . . . |
| D11 | 9007.03 | 0.65 | 0.92 | . . . . | 1.06 | . . . . | . . . . | . . . . |
| D12 | 9016.69 | 1.07 | 1.33 | . . . . | 1.52 | . . . . | . . . . | . . . . |
| D13 | 9029.19 | 1.20 | 1.45 | . . . . | 1.62 | . . . . | . . . . | . . . . |
| A1 | 9015.87 | 0.54 | . . . . | . . . . | 0.89 | . . . . | . . . . | . . . . |
| A2 | 9014.25 | 0.60 | 0.83 | . . . . | 0.98 | . . . . | . . . . | . . . . |
| A3 | 9009.87 | 0.64 | 0.91 | . . . . | 1.11 | . . . . | . . . . | . . . . |
| A4 | 9004.22 | 0.55 | 0.81 | . . . . | 1.07 | . . . . | . . . . | . . . . |
| A5 | 9001.00 | 0.16 | 0.35 | . . . . | 0.47 | . . . . | . . . . | . . . . |
| A6 | 8998.65 | 0.10 | 0.33 | . . . . | 0.49 | . . . . | . . . . | . . . . |
| A7 | 8993.71 | 0.06 | 0.28 | . . . . | 0.76 | . . . . | . . . . | . . . . |
| A8 | 8991.47 | -0.10 | 0.15 | . . . . | 0.62 | . . . . | . . . . | . . . . |
| B1 | 9173.78 | 0.16 | 0.38 | . . . . | 0.27 | . . . . | . . . . | . . . . |
| B2 | 9170.78 | 0.16 | 0.39 | . . . . | 0.28 | . . . . | . . . . | . . . . |
| B3 | 9158.29 | 0.21 | 0.43 | . . . . | 0.35 | . . . . | . . . . | . . . . |
| B4 | 9141.32 | 0.11 | 0.29 | . . . . | 0.26 | . . . . | . . . . | . . . . |
| B5 | 9124.50 | 0.12 | 0.31 | . . . . | 0.27 | . . . . | . . . . | . . . . |
| B6 | 9111.43 | -0.00 | 0.16 | . . . . | 0.13 | . . . . | . . . . | . . . . |
| B7 | 9095.66 | 0.03 | 0.22 | . . . . | 0.17 | . . . . | . . . . | . . . . |
| E1 | 9008.16 | -0.09 | -0.02 | -0.01 | . . . . | -0.00 | 0.00 | -0.00 |
| E2 | 8997.85 | -0.09 | -0.01 | -0.02 | . . . . | -0.01 | -0.01 | -0.01 |
| E3 | 8987.42 | -0.11 | -0.03 | -0.02 | . . . . | -0.01 | 0.00 | -0.01 |
| E4 | 8977.75 | -0.11 | -0.03 | -0.03 | . . . . | -0.02 | -0.02 | -0.02 |
| E5 | 8968.10 | -0.12 | -0.02 | -0.02 | . . . . | -0.02 | 0.00 | -0.01 |
| E6 | 8959.71 | -0.16 | -0.02 | -0.03 | . . . . | -0.02 | 0.00 | -0.01 |
| E7 | 8954.73 | -0.12 | -0.01 | -0.03 | . . . . | -0.02 | 0.01 | 0.01 |
| E8 | 8957.98 | -0.13 | -0.03 | -0.03 | . . . . | -0.03 | 0.00 | 0.00 |
| E9 | 8959.92 | -0.16 | -0.01 | -0.03 | . . . . | -0.02 | 0.00 | 0.01 |
| E10 | 8960.97 | -0.11 | -0.02 | -0.03 | . . . . | -0.00 | 0.03 | 0.03 |
| E11 | 8967.90 | -0.10 | 0.02 | 0.03 | . . . . | 0.06 | 0.09 | 0.09 |

DEER CREEK SUBSIDENCE PROJECT LISTING OF ELEVATION

| STATION NAME | BASE DATE BASE FILE | DIFFERENCES BY DATES : 12/10/1980 J + T : L | 6/08/1981 J + T : L | 7/13/1981 J + T : L | 8/19/1981 USBM : L | 8/17/1981 J + T : L | 9/14/1981 J + T : L | 10/21/1981 J + T : L |
|---|---|---|---|---|---|---|---|---|
| E12 | 8983.37 | -0.10 | 0.10 | 0.16 | . . . . | 0.21 | 0.24 | 0.25 |
| E13 | 8993.84 | -0.02 | 0.22 | 0.34 | . . . . | 0.43 | 0.48 | 0.48 |
| E14 | 9007.06 | -0.01 | 0.39 | 0.82 | . . . . | 1.13 | 1.26 | 1.32 |
| E15 | 9029.96 | -0.02 | 0.52 | 0.98 | . . . . | 1.43 | 1.61 | 1.70 |
| E16 | 9055.05 | -0.01 | 0.54 | 1.06 | . . . . | 1.59 | 1.79 | 1.89 |
| E17 | 9076.10 | 0.02 | 0.57 | 1.12 | . . . . | 1.73 | 1.98 | 2.11 |
| E18 | 9094.27 | 0.07 | 0.57 | 1.12 | . . . . | 1.88 | 2.20 | 2.35 |
| E19 | 9104.22 | 0.13 | 0.61 | 1.06 | . . . . | 1.91 | 2.31 | 2.49 |
| E20 | 9105.05 | 0.23 | 0.64 | 0.99 | . . . . | 1.89 | 2.38 | 2.61 |
| E21 | 9118.34 | 0.29 | 0.72 | 0.95 | . . . . | 1.70 | 2.28 | 2.56 |
| E22 | 9129.72 | 0.39 | 0.80 | 0.95 | . . . . | 1.56 | 2.18 | 2.52 |
| E23 | 9140.18 | 0.48 | 0.90 | 0.99 | . . . . | 1.44 | 2.03 | 2.44 |
| E24 | 9147.95 | 0.60 | 1.00 | 1.06 | . . . . | 1.41 | 1.90 | 2.33 |
| E25 | 9154.02 | 0.74 | 1.13 | 1.15 | . . . . | 1.43 | 1.81 | 2.13 |
| E26 | 9157.11 | 0.82 | 1.23 | 1.23 | . . . . | 1.44 | 1.71 | 1.96 |
| E27 | 9159.69 | 0.95 | 1.32 | 1.38 | . . . . | 1.51 | 1.69 | 1.86 |
| E28 | 9161.39 | 0.98 | 1.36 | 1.41 | . . . . | 1.52 | 1.66 | 1.77 |
| E29 | 9159.70 | 0.71 | 1.10 | 1.15 | . . . . | 1.25 | 1.34 | 1.42 |
| E30 | 9155.41 | 0.72 | 1.11 | 1.15 | . . . . | 1.21 | 1.28 | 1.33 |
| E31 | 9148.90 | 0.54 | 0.97 | 1.01 | . . . . | 1.07 | 1.12 | 1.16 |
| E32 | 9141.48 | 0.42 | 0.85 | 0.87 | . . . . | 0.92 | 0.95 | 0.97 |
| E33 | 9134.71 | 0.31 | 0.77 | 0.79 | . . . . | 0.81 | 0.82 | 0.84 |
| E34 | 9125.08 | 0.17 | 0.60 | 0.61 | . . . . | 0.64 | 0.64 | 0.65 |
| E35 | 9116.50 | 0.08 | 0.49 | 0.49 | . . . . | 0.50 | 0.48 | 0.50 |
| E36 | 9112.04 | 0.01 | 0.38 | 0.38 | . . . . | 0.39 | 0.37 | 0.37 |
| E37 | 9105.12 | -0.08 | 0.19 | 0.24 | . . . . | 0.23 | 0.20 | 0.19 |
| E38 | 9090.76 | -0.16 | 0.06 | 0.13 | . . . . | 0.13 | 0.11 | 0.09 |
| E39 | 9075.68 | -0.21 | -0.03 | 0.04 | . . . . | 0.03 | -0.00 | -0.02 |
| E40 | 9065.14 | -0.19 | -0.01 | 0.06 | . . . . | 0.05 | 0.02 | -0.00 |
| E41 | 9051.25 | -0.23 | -0.07 | 0.00 | . . . . | -0.00 | -0.03 | -0.05 |
| E42 | 9040.70 | -0.16 | -0.00 | 0.05 | . . . . | 0.04 | -0.00 | 0.00 |
| E43 | 9034.43 | -0.26 | -0.11 | -0.06 | . . . . | -0.07 | -0.10 | -0.10 |
| E44 | 9031.28 | -0.19 | -0.06 | -0.01 | . . . . | -0.03 | -0.06 | -0.07 |
| E45 | 9025.88 | -0.22 | -0.10 | -0.05 | . . . . | -0.06 | -0.08 | -0.09 |
| E46 | 9006.92 | -0.21 | -0.08 | -0.04 | . . . . | -0.06 | -0.08 | -0.09 |
| E47 | 8988.15 | -0.22 | -0.07 | -0.05 | . . . . | -0.06 | -0.09 | -0.09 |
| E48 | 8971.80 | -0.21 | -0.06 | -0.05 | . . . . | -0.06 | -0.09 | -0.08 |
| E49 | 8951.26 | -0.15 | 0.00 | 0.00 | . . . . | -0.02 | -0.05 | -0.05 |
| E50 | 8942.68 | -0.14 | 0.00 | 0.00 | . . . . | -0.00 | -0.03 | -0.03 |
| F1 | 9023.07 | -0.04 | -0.03 | 0.00 | . . . . | 0.01 | 0.01 | 0.05 |

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|---|---|---|---|---|---|---|---|---|
| F2 | 9008.49 | -0.03 | -0.01 | 0.01 | . . . . | 0.01 | 0.01 | 0.05 |
| F3 | 8995.51 | -0.03 | -0.01 | 0.00 | . . . . | 0.01 | 0.02 | 0.05 |
| F4 | 8982.79 | -0.02 | -0.00 | 0.01 | . . . . | 0.02 | 0.03 | 0.06 |
| F5 | 8970.51 | -0.03 | -0.01 | 0.00 | . . . . | 0.01 | 0.03 | 0.04 |
| F6 | 8956.47 | -0.00 | 0.01 | 0.02 | . . . . | 0.02 | 0.04 | 0.06 |
| F7 | 8945.05 | -0.00 | 0.01 | 0.02 | . . . . | 0.02 | 0.04 | 0.06 |
| F8 | 8931.96 | 0.01 | 0.01 | 0.03 | . . . . | 0.02 | 0.05 | 0.06 |
| F9 | 8924.71 | 0.01 | 0.00 | 0.04 | . . . . | 0.03 | 0.07 | 0.09 |
| F10 | 8926.09 | -0.03 | 0.00 | 0.02 | . . . . | 0.01 | 0.04 | 0.05 |
| F11 | 8941.36 | -0.03 | -0.02 | 0.02 | . . . . | 0.02 | 0.07 | 0.07 |
| F12 | 8955.26 | -0.02 | 0.01 | 0.06 | . . . . | 0.07 | 0.12 | 0.13 |
| F13 | 8966.19 | -0.02 | 0.09 | 0.16 | . . . . | 0.17 | 0.24 | 0.25 |
| F14 | 8978.04 | -0.03 | 0.18 | 0.37 | . . . . | 0.46 | 0.55 | 0.59 |
| F15 | 9000.47 | -0.03 | 0.21 | 0.53 | . . . . | 0.71 | 0.82 | 0.88 |
| F16 | 9026.33 | -0.05 | 0.22 | 0.56 | . . . . | 0.78 | 0.91 | 0.97 |
| F17 | 9061.13 | -0.08 | 0.21 | 0.57 | . . . . | 0.85 | 1.01 | 1.09 |
| F18 | 9081.04 | -0.08 | 0.18 | 0.53 | . . . . | 0.87 | 1.07 | 1.17 |
| F19 | 9093.32 | -0.07 | 0.14 | 0.45 | . . . . | 0.85 | 1.12 | 1.27 |
| F20 | 9099.94 | -0.08 | 0.12 | 0.36 | . . . . | 0.72 | 1.04 | 1.24 |
| F21 | 9107.45 | -0.07 | 0.09 | 0.27 | . . . . | 0.55 | 0.86 | 1.11 |
| F22 | 9114.79 | -0.07 | 0.07 | 0.21 | . . . . | 0.41 | 0.66 | 0.94 |
| F23 | 9120.92 | -0.06 | 0.05 | 0.16 | . . . . | 0.30 | 0.49 | 0.73 |
| F24 | 9124.11 | -0.05 | 0.04 | 0.12 | . . . . | 0.21 | 0.36 | 0.56 |
| F25 | 9125.36 | -0.05 | 0.01 | 0.09 | . . . . | 0.16 | 0.30 | 0.46 |
| F26 | 9128.82 | -0.05 | -0.03 | 0.05 | . . . . | 0.14 | 0.26 | 0.38 |
| F27 | 9137.33 | -0.05 | 0.00 | 0.10 | . . . . | 0.14 | 0.19 | 0.22 |
| F28 | 9143.67 | -0.04 | -0.00 | 0.09 | . . . . | 0.11 | 0.13 | 0.14 |
| F29 | 9142.21 | -0.04 | 0.00 | 0.09 | . . . . | 0.10 | 0.12 | 0.10 |
| F30 | 9133.76 | -0.02 | 0.01 | 0.10 | . . . . | 0.11 | 0.12 | 0.11 |
| F31 | 9121.28 | -0.01 | 0.02 | 0.11 | . . . . | 0.10 | 0.09 | 0.07 |
| F32 | 9108.36 | -0.01 | 0.02 | 0.10 | . . . . | 0.09 | 0.09 | 0.06 |
| F33 | 9093.02 | -0.01 | 0.04 | 0.10 | . . . . | 0.09 | 0.07 | 0.05 |
| F34 | 9083.37 | -0.00 | 0.04 | 0.09 | . . . . | 0.09 | 0.08 | 0.04 |
| F35 | 9075.64 | 0.00 | 0.03 | 0.09 | . . . . | 0.07 | 0.07 | 0.03 |
| F36 | 9070.91 | 0.00 | 0.05 | 0.08 | . . . . | 0.08 | 0.07 | 0.03 |
| F37 | 9057.40 | -0.01 | 0.03 | 0.05 | . . . . | 0.04 | 0.04 | 0.01 |
| F38 | 9039.82 | -0.00 | 0.03 | 0.05 | . . . . | 0.04 | 0.02 | 0.00 |
| F39 | 9027.80 | -0.01 | 0.05 | 0.06 | . . . . | 0.05 | 0.04 | 0.02 |
| F40 | 9008.94 | -0.01 | 0.05 | 0.05 | . . . . | 0.03 | 0.02 | -0.00 |
| F41 | 8989.27 | -0.01 | 0.07 | 0.05 | . . . . | 0.03 | 0.02 | 0.01 |

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|---|---|---|---|---|---|---|---|---|
| F42 | 8973.19 | -0.02 | 0.06 | 0.03 | . . . . | 0.01 | -0.01 | -0.01 |
| F43 | 8952.18 | -0.02 | 0.06 | 0.01 | . . . . | -0.01 | -0.03 | -0.03 |
| F44 | 8931.29 | -0.02 | 0.05 | 0.01 | . . . . | -0.01 | -0.03 | -0.03 |
| F45 | 8911.66 | -0.03 | 0.06 | -0.00 | . . . . | -0.02 | -0.03 | -0.03 |
| F46 | 8893.75 | -0.02 | 0.04 | -0.01 | . . . . | -0.02 | -0.03 | -0.04 |
| F47 | 8889.64 | -0.03 | -0.01 | -0.01 | . . . . | -0.03 | -0.04 | -0.04 |
| G1 | 9017.27 | . . . . | . . . . | -0.00 | 0.02 | -0.00 | 0.00 | -0.00 |
| G2 | 9010.00 | . . . . | . . . . | -0.00 | 0.03 | -0.00 | -0.00 | -0.01 |
| G3 | 8996.96 | . . . . | . . . . | 0.00 | 0.03 | 0.01 | 0.01 | -0.00 |
| G4 | 8986.77 | . . . . | . . . . | -0.01 | 0.04 | 0.00 | -0.00 | -0.02 |
| G5 | 8979.31 | . . . . | . . . . | -0.00 | 0.05 | 0.00 | 0.00 | -0.01 |
| SG5 | 8974.82 | . . . . | . . . . | -0.04 | -0.00 | . . . . | . . . . | . . . . |
| G6 | 8968.83 | . . . . | . . . . | 0.00 | 0.04 | 0.00 | -0.00 | -0.02 |
| SG6 | 8964.78 | . . . . | . . . . | . . . . | -0.00 | . . . . | . . . . | . . . . |
| G7 | 8957.86 | . . . . | . . . . | -0.01 | 0.05 | 0.00 | -0.00 | -0.02 |
| SG7 | 8951.87 | . . . . | . . . . | . . . . | -0.01 | . . . . | . . . . | . . . . |
| G8 | 8940.86 | . . . . | . . . . | -0.01 | 0.06 | -0.00 | -0.00 | -0.03 |
| SG8 | 8931.87 | . . . . | . . . . | . . . . | -0.00 | . . . . | . . . . | . . . . |
| G9 | 8920.29 | . . . . | . . . . | -0.00 | 0.07 | 0.01 | 0.01 | -0.02 |
| SG9 | 8911.38 | . . . . | . . . . | . . . . | -0.00 | . . . . | . . . . | . . . . |
| G10 | 8904.15 | . . . . | . . . . | -0.01 | 0.08 | 0.01 | 0.02 | -0.02 |
| SG10 | 8900.79 | . . . . | . . . . | . . . . | -0.01 | . . . . | . . . . | . . . . |
| G11 | 8897.67 | . . . . | . . . . | 0.00 | 0.10 | 0.05 | 0.06 | 0.01 |
| SG11 | 8906.63 | . . . . | . . . . | . . . . | -0.01 | . . . . | . . . . | . . . . |
| G12 | 8916.99 | . . . . | . . . . | -0.01 | 0.07 | 0.01 | 0.03 | -0.02 |
| SG12 | 8929.77 | . . . . | . . . . | -0.07 | -0.00 | . . . . | . . . . | . . . . |
| G13 | 8939.73 | . . . . | . . . . | -0.01 | 0.05 | 0.02 | 0.02 | -0.03 |
| SG13 | 8949.34 | . . . . | . . . . | -0.06 | -0.00 | . . . . | . . . . | . . . . |
| G14 | 8956.60 | . . . . | . . . . | -0.00 | 0.04 | 0.01 | 0.03 | -0.02 |
| SG14 | 8970.00 | . . . . | . . . . | . . . . | -0.01 | . . . . | . . . . | . . . . |
| G15 | 8986.45 | . . . . | . . . . | -0.00 | 0.05 | 0.02 | 0.04 | -0.02 |
| G16 | 9020.60 | . . . . | . . . . | -0.00 | 0.07 | 0.04 | 0.06 | 0.00 |
| G17 | 9049.24 | . . . . | . . . . | -0.01 | 0.03 | 0.03 | 0.03 | -0.01 |
| G18 | 9068.76 | . . . . | . . . . | 0.00 | 0.02 | 0.02 | 0.04 | -0.01 |
| G19 | 9080.04 | . . . . | . . . . | -0.01 | -0.00 | 0.01 | 0.02 | -0.02 |
| G20 | 9086.97 | . . . . | . . . . | -0.01 | 0.00 | 0.01 | 0.02 | -0.02 |
| G21 | 9090.12 | . . . . | . . . . | 0.00 | 0.01 | 0.01 | 0.03 | -0.00 |
| G22 | 9085.88 | . . . . | . . . . | -0.00 | 0.00 | 0.01 | 0.04 | -0.01 |
| G23 | 9082.52 | . . . . | . . . . | -0.01 | 0.00 | 0.01 | 0.03 | -0.02 |
| G24 | 9079.10 | . . . . | . . . . | 0.00 | 0.01 | 0.02 | 0.04 | -0.01 |

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|---|---|---|---|---|---|---|---|---|
| G25 | 9072.97 | . . . . | . . . . | -0.01 | 0.00 | 0.01 | 0.03 | -0.02 |
| G26 | 9066.68 | . . . . | . . . . | -0.00 | 0.00 | 0.01 | 0.02 | -0.02 |
| G27 | 9058.06 | . . . . | . . . . | -0.01 | -0.02 | -0.00 | 0.02 | -0.03 |
| G28 | 9050.08 | . . . . | . . . . | -0.00 | 0.00 | 0.01 | 0.02 | -0.02 |
| G29 | 9042.11 | . . . . | . . . . | -0.01 | 0.00 | -0.00 | 0.01 | -0.02 |
| G30 | 9033.43 | . . . . | . . . . | -0.01 | 0.01 | 0.00 | 0.02 | -0.02 |
| G31 | 9025.21 | . . . . | . . . . | 0.00 | -0.01 | -0.02 | -0.02 | -0.03 |
| G32 | 9018.40 | . . . . | . . . . | -0.01 | 0.00 | -0.01 | 0.00 | -0.03 |
| G33 | 9006.13 | . . . . | . . . . | -0.01 | 0.02 | -0.01 | 0.00 | -0.01 |
| G34 | 8995.21 | . . . . | . . . . | 0.00 | 0.02 | -0.01 | -0.00 | -0.04 |
| G35 | 8981.85 | . . . . | . . . . | -0.00 | 0.01 | -0.03 | -0.03 | -0.05 |
| SG35 | 8974.89 | . . . . | . . . . | . . . . | -0.00 | . . . . | . . . . | . . . . |
| G36 | 8964.21 | . . . . | . . . . | -0.01 | 0.02 | -0.03 | -0.03 | -0.05 |
| SG36 | 8956.26 | . . . . | . . . . | . . . . | -0.00 | . . . . | . . . . | . . . . |
| G37 | 8945.34 | . . . . | . . . . | -0.00 | 0.03 | -0.02 | -0.03 | -0.04 |
| SG37 | 8937.39 | . . . . | . . . . | . . . . | -0.00 | . . . . | . . . . | . . . . |
| G38 | 8930.39 | . . . . | . . . . | -0.01 | 0.02 | -0.03 | -0.04 | -0.06 |
| SG38 | 8923.44 | . . . . | . . . . | . . . . | -0.00 | . . . . | . . . . | . . . . |
| G39 | 8916.86 | . . . . | . . . . | -0.01 | 0.05 | -0.01 | -0.01 | -0.04 |
| SG39 | 8913.78 | . . . . | . . . . | . . . . | -0.01 | . . . . | . . . . | . . . . |
| G40 | 8908.02 | . . . . | . . . . | -0.01 | 0.06 | -0.01 | -0.01 | -0.04 |
| SG40 | 8902.15 | . . . . | . . . . | . . . . | 0.00 | . . . . | . . . . | . . . . |
| G41 | 8892.67 | . . . . | . . . . | -0.01 | 0.04 | -0.02 | -0.03 | -0.06 |
| SG41 | 8886.58 | . . . . | . . . . | . . . . | 0.00 | . . . . | . . . . | . . . . |
| G42 | 8877.43 | . . . . | . . . . | -0.01 | 0.04 | -0.02 | -0.03 | -0.07 |
| SG42 | 8872.97 | . . . . | . . . . | . . . . | 0.00 | . . . . | . . . . | . . . . |
| G43 | 8863.93 | . . . . | . . . . | -0.01 | 0.06 | -0.02 | -0.02 | -0.03 |
| SG43 | 8861.41 | . . . . | . . . . | . . . . | -0.00 | . . . . | . . . . | . . . . |
| G44 | 8858.04 | . . . . | . . . . | -0.00 | 0.06 | -0.02 | -0.02 | -0.04 |
| SG44 | 8859.48 | . . . . | . . . . | -0.07 | -0.00 | . . . . | . . . . | . . . . |
| G45 | 8859.54 | . . . . | . . . . | 0.00 | 0.06 | -0.01 | -0.01 | -0.03 |
| G46 | 8872.66 | . . . . | . . . . | -0.00 | 0.04 | -0.03 | -0.04 | -0.05 |
| G47 | 8884.46 | . . . . | . . . . | -0.01 | 0.05 | -0.03 | -0.03 | -0.03 |
| G48 | 8898.13 | . . . . | . . . . | -0.01 | 0.05 | -0.03 | -0.03 | -0.03 |
| G49 | 8913.06 | . . . . | . . . . | -0.00 | 0.05 | -0.02 | -0.02 | -0.03 |
| G50 | 8927.28 | . . . . | . . . . | -0.01 | 0.06 | -0.01 | 0.01 | -0.01 |

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|---|---|---|---|---|---|---|---|---|
| DC1 | 8994.68 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| DC2 | 8955.53 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| BM1 | 9025.91 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| BM2 | 9159.51 | . . . . | 4.56 | 4.65 | . . . . | 4.89 | 5.10 | 5.16 |
| BM3 | 9188.67 | . . . . | 3.93 | 4.01 | . . . . | 4.07 | 4.17 | 4.17 |
| BM4 | 9104.14 | . . . . | 0.00 | 0.00 | . . . . | 0.00 | 0.00 | 0.00 |
| BM5 | 9096.70 | . . . . | 0.00 | 0.00 | . . . . | 0.00 | 0.00 | 0.00 |
| BM6 | 8943.36 | . . . . | 0.33 | 0.38 | . . . . | 0.38 | 0.45 | 0.52 |
| BM7 | 9106.90 | . . . . | 0.00 | 0.00 | . . . . | 0.00 | 0.00 | 0.00 |
| BM8 | 8980.15 | . . . . | -0.00 | . . . . | . . . . | . . . . | . . . . | . . . . |
| BM9 | 8961.81 | . . . . | 0.00 | 0.00 | . . . . | 0.00 | -0.07 | 0.00 |
| BM10 | 9067.32 | 0.00 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| NCP0 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| NCP1 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| NCP2 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| NCP3 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| NCP4 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| NCP5 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| NCP6 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| NCP7 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| NCP8 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| NCP9 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| C1 | 8998.65 | 0.08 | . . . . | . . . . | 0.10 | . . . . | . . . . | . . . . |
| C2 | 8988.15 | 0.09 | . . . . | . . . . | 0.12 | . . . . | . . . . | . . . . |
| C3 | 8978.20 | 0.10 | . . . . | . . . . | 0.14 | . . . . | . . . . | . . . . |
| C4 | 8971.85 | 0.12 | . . . . | . . . . | 0.12 | . . . . | . . . . | . . . . |
| C5 | 8970.99 | 0.16 | . . . . | . . . . | 0.20 | . . . . | . . . . | . . . . |
| C6 | 8976.02 | 0.12 | . . . . | . . . . | 0.16 | . . . . | . . . . | . . . . |
| C7 | 8984.61 | 0.18 | . . . . | . . . . | 0.22 | . . . . | . . . . | . . . . |
| C8 | 8990.13 | 0.20 | . . . . | . . . . | 0.22 | . . . . | . . . . | . . . . |
| C9 | 8993.46 | 0.23 | . . . . | . . . . | 0.26 | . . . . | . . . . | . . . . |
| C10 | 8997.67 | 0.25 | . . . . | . . . . | 0.31 | . . . . | . . . . | . . . . |
| C11 | 9001.98 | 0.38 | . . . . | . . . . | 0.43 | . . . . | . . . . | . . . . |
| C12 | 9008.04 | 0.59 | . . . . | . . . . | 0.64 | . . . . | . . . . | . . . . |
| C13 | 9017.60 | 1.51 | . . . . | . . . . | 1.62 | . . . . | . . . . | . . . . |
| C14 | 9030.62 | 1.67 | . . . . | . . . . | 1.81 | . . . . | . . . . | . . . . |
| C15 | 9054.08 | 1.90 | . . . . | . . . . | 2.04 | . . . . | . . . . | . . . . |
| C16 | 9076.04 | 2.10 | . . . . | . . . . | 2.25 | . . . . | . . . . | . . . . |
| C17 | 9096.46 | 2.46 | . . . . | . . . . | 2.61 | . . . . | . . . . | . . . . |
| C18 | 9120.88 | 2.67 | . . . . | . . . . | 2.82 | . . . . | . . . . | . . . . |

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|---|---|---|---|---|---|---|---|---|
| C19 | 9137.26 | 2.88 | . . . . | . . . . | 2.99 | . . . . | . . . . | . . . . |
| C20 | 9152.74 | 2.98 | . . . . | . . . . | 3.09 | . . . . | . . . . | . . . . |
| C21 | 9166.18 | 3.04 | . . . . | . . . . | 3.13 | . . . . | . . . . | . . . . |
| C22 | 9173.53 | 3.15 | . . . . | . . . . | 3.21 | . . . . | . . . . | . . . . |
| C23 | 9175.25 | 3.23 | . . . . | . . . . | 3.28 | . . . . | . . . . | . . . . |
| C24 | 9170.81 | 3.26 | . . . . | . . . . | 3.32 | . . . . | . . . . | . . . . |
| C25 | 9170.54 | 3.25 | . . . . | . . . . | 3.32 | . . . . | . . . . | . . . . |
| C26 | 9181.64 | 3.22 | . . . . | . . . . | 3.30 | . . . . | . . . . | . . . . |
| C27 | 9188.24 | 3.26 | . . . . | . . . . | 3.30 | . . . . | . . . . | . . . . |
| C28 | 9187.66 | 3.21 | . . . . | . . . . | 3.25 | . . . . | . . . . | . . . . |
| C29 | 9189.62 | 3.17 | . . . . | . . . . | 3.21 | . . . . | . . . . | . . . . |
| C30 | 9190.13 | 3.24 | . . . . | . . . . | 3.27 | . . . . | . . . . | . . . . |
| C31 | 9193.08 | 3.06 | . . . . | . . . . | 3.07 | . . . . | . . . . | . . . . |
| C32 | 9188.37 | 2.99 | . . . . | . . . . | 3.01 | . . . . | . . . . | . . . . |
| C33 | 9187.61 | 2.74 | . . . . | . . . . | 2.74 | . . . . | . . . . | . . . . |
| C34 | 9183.94 | 2.16 | . . . . | . . . . | 2.19 | . . . . | . . . . | . . . . |
| C35 | 9179.18 | 1.55 | . . . . | . . . . | 1.58 | . . . . | . . . . | . . . . |
| C36 | 9178.90 | 1.26 | . . . . | . . . . | 1.27 | . . . . | . . . . | . . . . |
| C37 | 9178.13 | 0.80 | . . . . | . . . . | 0.81 | . . . . | . . . . | . . . . |
| C38 | 9175.22 | 0.64 | . . . . | . . . . | 0.66 | . . . . | . . . . | . . . . |
| C39 | 9170.81 | 0.48 | . . . . | . . . . | 0.48 | . . . . | . . . . | . . . . |
| C40 | 9162.20 | 0.30 | . . . . | . . . . | 0.32 | . . . . | . . . . | . . . . |
| C41 | 9148.84 | 0.23 | . . . . | . . . . | 0.24 | . . . . | . . . . | . . . . |
| C42 | 9135.52 | 0.13 | . . . . | . . . . | 0.16 | . . . . | . . . . | . . . . |
| C43 | 9125.00 | 0.05 | . . . . | . . . . | 0.06 | . . . . | . . . . | . . . . |
| C44 | 9117.09 | -0.04 | . . . . | . . . . | -0.04 | . . . . | . . . . | . . . . |
| C45 | 9105.25 | -0.09 | . . . . | . . . . | -0.08 | . . . . | . . . . | . . . . |
| C46 | 9084.48 | -0.10 | . . . . | . . . . | -0.06 | . . . . | . . . . | . . . . |
| C47 | 9065.21 | 0.02 | . . . . | . . . . | 0.03 | . . . . | . . . . | . . . . |
| C48 | 9046.81 | -0.15 | . . . . | . . . . | -0.11 | . . . . | . . . . | . . . . |
| C49 | 9028.02 | -0.06 | . . . . | . . . . | -0.04 | . . . . | . . . . | . . . . |
| C50 | 9004.20 | -0.16 | . . . . | . . . . | -0.08 | . . . . | . . . . | . . . . |
| P16 | 9203.57 | 1.66 | . . . . | . . . . | 1.69 | . . . . | . . . . | . . . . |
| P15 | 9197.23 | 1.95 | . . . . | . . . . | 1.99 | . . . . | . . . . | . . . . |
| P14 | 9194.67 | 2.29 | . . . . | . . . . | 2.32 | . . . . | . . . . | . . . . |
| P13 | 9191.28 | 2.74 | . . . . | . . . . | 2.79 | . . . . | . . . . | . . . . |
| P12 | 9183.72 | 3.76 | 3.69 | 3.79 | 3.83 | 3.84 | 3.94 | 3.93 |
| P11 | 9180.58 | 4.04 | 3.96 | 4.06 | . . . . | 4.11 | 4.22 | 4.22 |
| P10 | 9176.25 | 4.20 | 4.12 | 4.22 | . . . . | 4.28 | 4.40 | 4.40 |
| P9 | 9171.03 | 4.36 | 4.29 | 4.39 | . . . . | 4.47 | 4.59 | 4.60 |

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|---|---|---|---|---|---|---|---|---|
| P8 | 9165.59 | 4.44 | 4.42 | 4.47 | . . . . | 4.58 | 4.72 | 4.73 |
| P7 | 9160.70 | 4.73 | 4.71 | 4.79 | . . . . | 4.91 | 5.07 | 5.08 |
| P6 | 9159.07 | 4.77 | 4.74 | 4.81 | . . . . | 4.98 | 5.15 | 5.17 |
| P5 | 9160.44 | 4.56 | 4.53 | 4.62 | . . . . | 4.82 | 5.02 | 5.08 |
| P4 | 9157.80 | 4.29 | 4.26 | 4.35 | . . . . | 4.61 | 4.86 | 4.96 |
| P3 | 9154.42 | 3.89 | 3.87 | 3.98 | . . . . | 4.33 | 4.65 | 4.81 |
| P2 | 9151.12 | 3.11 | 3.09 | 3.21 | . . . . | 3.66 | 4.12 | 4.43 |
| P1 | 9143.31 | 2.14 | 2.10 | 2.22 | . . . . | 2.79 | 3.39 | 3.90 |
| P17 | 9129.72 | 1.23 | 1.25 | 1.28 | . . . . | 1.82 | 2.48 | 3.21 |
| P18 | 9114.29 | 0.73 | 0.77 | 0.78 | . . . . | 1.29 | 1.99 | 2.81 |
| P19 | 9100.43 | 0.41 | 0.47 | 0.46 | . . . . | 0.85 | 1.50 | 2.37 |
| P20 | 9089.13 | 0.26 | 0.33 | 0.29 | . . . . | 0.59 | 1.15 | 2.01 |
| P21 | 9074.91 | 0.16 | 0.19 | 0.16 | . . . . | 0.40 | 0.82 | 1.54 |
| P22 | 9061.37 | 0.11 | 0.14 | 0.12 | . . . . | 0.30 | 0.65 | 1.16 |
| P23 | 9048.42 | 0.06 | 0.11 | 0.08 | . . . . | 0.21 | 0.45 | 0.75 |
| P24 | 9042.63 | 0.05 | 0.10 | 0.05 | . . . . | 0.15 | 0.31 | 0.46 |
| P25 | 9038.54 | 0.02 | 0.09 | 0.04 | . . . . | 0.09 | 0.21 | 0.31 |
| SP25 | 9039.18 | . . . . | 0.02 | -0.03 | . . . . | 0.01 | 0.12 | 0.19 |
| P26 | 9036.75 | 0.01 | 0.07 | 0.03 | . . . . | 0.06 | 0.15 | 0.22 |
| SP26 | 9036.84 | . . . . | 0.01 | -0.03 | . . . . | -0.01 | 0.08 | 0.14 |
| P27 | 9035.61 | 0.02 | 0.08 | 0.03 | . . . . | 0.05 | 0.13 | 0.18 |
| SP27 | 9033.56 | . . . . | 0.02 | -0.02 | . . . . | -0.01 | 0.06 | 0.11 |
| P28 | 9027.03 | 0.01 | 0.07 | 0.03 | . . . . | 0.03 | 0.11 | 0.14 |
| SP28 | 9020.71 | . . . . | 0.03 | -0.02 | . . . . | -0.03 | 0.05 | 0.08 |
| SP29 | 9014.04 | . . . . | 0.03 | -0.02 | . . . . | -0.02 | 0.05 | 0.08 |
| SP30 | 9007.47 | . . . . | 0.03 | -0.02 | . . . . | -0.03 | 0.04 | 0.07 |
| SP31 | 9000.30 | . . . . | 0.03 | -0.02 | . . . . | -0.03 | 0.04 | 0.07 |
| SP32 | 8991.51 | . . . . | 0.03 | -0.01 | . . . . | -0.04 | 0.03 | 0.06 |
| SP33 | 8979.06 | . . . . | 0.03 | -0.01 | . . . . | -0.04 | 0.03 | 0.06 |
| SP34 | 8966.51 | . . . . | 0.03 | -0.01 | . . . . | -0.04 | 0.03 | 0.05 |
| SP35 | 8954.85 | . . . . | 0.04 | -0.02 | . . . . | -0.05 | 0.01 | 0.04 |
| SP36 | 8945.07 | . . . . | 0.04 | -0.02 | . . . . | -0.05 | 0.03 | 0.04 |
| SP37 | 8937.55 | . . . . | 0.07 | -0.00 | . . . . | -0.04 | 0.03 | 0.05 |
| SP38 | 8932.96 | . . . . | 0.06 | -0.01 | . . . . | -0.05 | 0.02 | 0.05 |
| SP39 | 8929.45 | . . . . | 0.06 | -0.01 | . . . . | -0.06 | 0.01 | 0.04 |
| SP40 | 8926.20 | . . . . | 0.06 | -0.01 | . . . . | -0.06 | 0.01 | 0.03 |
| SP41 | 8923.56 | . . . . | 0.06 | -0.01 | . . . . | -0.05 | 0.01 | 0.04 |
| SP42 | 8922.57 | . . . . | 0.06 | -0.01 | . . . . | -0.06 | -0.01 | 0.02 |
| SP43 | 8922.02 | . . . . | 0.06 | 0.01 | . . . . | -0.06 | -0.00 | 0.02 |
| SP44 | 8921.65 | . . . . | 0.06 | -0.01 | . . . . | -0.06 | 0.00 | 0.02 |

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|---|---|---|---|---|---|---|---|---|
| SP45 | 8921.35 | . . . . | 0.06 | -0.01 | . . . . | -0.07 | 0.00 | 0.01 |
| D1 | 8960.18 | 0.02 | . . . . | . . . . | 0.12 | . . . . | . . . . | . . . . |
| D2 | 8953.04 | 0.06 | . . . . | . . . . | 0.16 | . . . . | . . . . | . . . . |
| D3 | 8949.27 | 0.08 | . . . . | . . . . | 0.17 | . . . . | . . . . | . . . . |
| D4 | 8949.94 | 0.11 | . . . . | . . . . | 0.21 | . . . . | . . . . | . . . . |
| D5 | 8957.29 | 0.13 | . . . . | . . . . | 0.21 | . . . . | . . . . | . . . . |
| D6 | 8967.44 | 0.15 | . . . . | . . . . | 0.25 | . . . . | . . . . | . . . . |
| D7 | 8975.26 | 0.15 | . . . . | . . . . | 0.23 | . . . . | . . . . | . . . . |
| D8 | 8983.90 | 0.22 | . . . . | . . . . | 0.30 | . . . . | . . . . | . . . . |
| D9 | 8990.92 | 0.44 | . . . . | . . . . | 0.52 | . . . . | . . . . | . . . . |
| D10 | 8999.20 | 0.63 | . . . . | . . . . | 0.71 | . . . . | . . . . | . . . . |
| D11 | 9007.03 | 1.28 | . . . . | . . . . | 1.38 | . . . . | . . . . | . . . . |
| D12 | 9016.69 | 1.82 | . . . . | . . . . | 1.95 | . . . . | . . . . | . . . . |
| D13 | 9029.19 | 1.91 | . . . . | . . . . | 2.06 | . . . . | . . . . | . . . . |
| A1 | 9015.87 | 1.16 | . . . . | . . . . | 1.28 | . . . . | . . . . | . . . . |
| A2 | 9014.25 | 1.25 | . . . . | . . . . | 1.38 | . . . . | . . . . | . . . . |
| A3 | 9009.87 | 1.41 | . . . . | . . . . | 1.56 | . . . . | . . . . | . . . . |
| A4 | 9004.22 | 1.34 | . . . . | . . . . | 1.49 | . . . . | . . . . | . . . . |
| A5 | 9001.00 | 0.58 | . . . . | . . . . | 0.65 | . . . . | . . . . | . . . . |
| A6 | 8998.65 | 0.60 | . . . . | . . . . | 0.69 | . . . . | . . . . | . . . . |
| A7 | 8993.71 | 0.60 | . . . . | . . . . | 0.70 | . . . . | . . . . | . . . . |
| A8 | 8991.47 | 0.47 | . . . . | . . . . | 0.58 | . . . . | . . . . | . . . . |
| B1 | 9173.78 | 0.62 | . . . . | . . . . | 0.61 | . . . . | . . . . | . . . . |
| B2 | 9170.78 | 0.64 | . . . . | . . . . | 0.63 | . . . . | . . . . | . . . . |
| B3 | 9158.29 | 0.73 | . . . . | . . . . | 0.72 | . . . . | . . . . | . . . . |
| B4 | 9141.32 | 0.65 | . . . . | . . . . | 0.65 | . . . . | . . . . | . . . . |
| B5 | 9124.50 | 0.67 | . . . . | . . . . | 0.68 | . . . . | . . . . | . . . . |
| B6 | 9111.43 | 0.56 | . . . . | . . . . | 0.59 | . . . . | . . . . | . . . . |
| B7 | 9095.66 | 0.63 | . . . . | . . . . | 0.65 | . . . . | . . . . | . . . . |
| E1 | 9008.16 | . . . . | -0.01 | -0.00 | . . . . | -0.01 | -0.00 | 0.00 |
| E2 | 8997.85 | . . . . | -0.01 | 0.02 | . . . . | -0.01 | -0.00 | 0.00 |
| E3 | 8987.42 | . . . . | -0.02 | -0.00 | . . . . | -0.00 | 0.01 | 0.00 |
| E4 | 8977.75 | . . . . | -0.04 | -0.03 | . . . . | -0.03 | -0.02 | -0.02 |
| E5 | 8968.10 | . . . . | -0.02 | -0.01 | . . . . | -0.02 | -0.00 | -0.00 |
| E6 | 8959.71 | . . . . | -0.02 | -0.03 | . . . . | -0.02 | -0.00 | 0.00 |
| E7 | 8954.73 | . . . . | 0.01 | -0.00 | . . . . | 0.01 | 0.02 | 0.02 |
| E8 | 8957.98 | . . . . | -0.00 | 0.00 | . . . . | 0.01 | 0.03 | 0.03 |
| E9 | 8959.92 | . . . . | 0.02 | 0.01 | . . . . | 0.02 | 0.04 | 0.04 |
| E10 | 8960.97 | . . . . | 0.05 | 0.03 | . . . . | 0.05 | 0.07 | 0.07 |
| E11 | 8967.90 | . . . . | 0.11 | 0.10 | . . . . | 0.11 | 0.14 | 0.14 |

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| STATION NAME | BASE DATE BASE FILE | DIFFERENCES BY DATES : 06/21/1982 USBM : L | 06/22/1982 J + T : L | 07/20/1982 J + T : L | 08/09/1982 USBM : L | 08/26/1982 J + T : L | 09/21/1982 J + T : L | 10/13/1982 J + T : L |
|---|---|---|---|---|---|---|---|---|
| E12 | 8983.37 | . . . . | 0.35 | 0.35 | . . . . | 0.38 | 0.41 | 0.41 |
| E13 | 8993.84 | . . . . | 0.62 | 0.64 | . . . . | 0.69 | 0.72 | 0.74 |
| E14 | 9007.06 | . . . . | 1.67 | 1.75 | . . . . | 1.88 | 1.97 | 2.02 |
| E15 | 9029.96 | . . . . | 2.09 | 2.18 | . . . . | 2.34 | 2.43 | 2.49 |
| E16 | 9055.05 | . . . . | 2.35 | 2.45 | . . . . | 2.61 | 2.70 | 2.75 |
| E17 | 9076.10 | . . . . | 2.61 | 2.71 | . . . . | 2.86 | 2.95 | 3.01 |
| E18 | 9094.27 | . . . . | 2.90 | 3.00 | . . . . | 3.15 | 3.25 | 3.31 |
| E19 | 9104.22 | . . . . | 3.12 | 3.21 | . . . . | 3.35 | 3.46 | 3.53 |
| E20 | 9105.05 | . . . . | 3.22 | 3.31 | . . . . | 3.48 | 3.67 | 3.68 |
| E21 | 9118.34 | . . . . | 3.38 | 3.46 | . . . . | 3.61 | 3.78 | 3.80 |
| E22 | 9129.72 | . . . . | 3.51 | 3.60 | . . . . | 3.75 | 3.93 | 3.94 |
| E23 | 9140.18 | . . . . | 3.66 | 3.73 | . . . . | 3.88 | 4.06 | 4.07 |
| E24 | 9147.95 | . . . . | 3.79 | 3.86 | . . . . | 4.01 | 4.18 | 4.20 |
| E25 | 9154.02 | . . . . | 3.92 | 3.99 | . . . . | 4.14 | 4.30 | 4.32 |
| E26 | 9157.11 | . . . . | 4.00 | 4.06 | . . . . | 4.20 | 4.36 | 4.39 |
| E27 | 9159.69 | . . . . | 4.10 | 4.16 | . . . . | 4.28 | 4.45 | 4.47 |
| E28 | 9161.39 | . . . . | 4.16 | 4.22 | . . . . | 4.33 | 4.49 | 4.52 |
| E29 | 9159.70 | . . . . | 3.89 | 3.95 | . . . . | 4.06 | 4.21 | 4.24 |
| E30 | 9155.41 | . . . . | 3.87 | 3.93 | . . . . | 4.02 | 4.17 | 4.20 |
| E31 | 9148.90 | . . . . | 3.76 | 3.82 | . . . . | 3.91 | 4.05 | 4.08 |
| E32 | 9141.48 | . . . . | 3.56 | 3.60 | . . . . | 3.68 | 3.83 | 3.86 |
| E33 | 9134.71 | . . . . | 3.31 | 3.35 | . . . . | 3.42 | 3.56 | 3.59 |
| E34 | 9125.08 | . . . . | 2.72 | 2.76 | . . . . | 2.82 | 2.95 | 2.97 |
| E35 | 9116.50 | . . . . | 1.98 | 2.02 | . . . . | 2.06 | 2.19 | 2.19 |
| E36 | 9112.04 | . . . . | 1.24 | 1.28 | . . . . | 1.32 | 1.42 | 1.41 |
| E37 | 9105.12 | . . . . | 0.73 | 0.76 | . . . . | 0.78 | 0.86 | 0.83 |
| E38 | 9090.76 | . . . . | 0.44 | 0.46 | . . . . | 0.47 | 0.55 | 0.51 |
| E39 | 9075.68 | . . . . | 0.24 | 0.26 | . . . . | 0.26 | 0.33 | 0.29 |
| E40 | 9065.14 | . . . . | 0.18 | 0.20 | . . . . | 0.20 | 0.26 | 0.22 |
| E41 | 9051.25 | . . . . | 0.07 | 0.09 | . . . . | 0.10 | 0.16 | 0.12 |
| E42 | 9040.70 | . . . . | 0.12 | 0.12 | . . . . | 0.11 | 0.17 | 0.14 |
| E43 | 9034.43 | . . . . | -0.01 | -0.01 | . . . . | -0.01 | 0.05 | 0.02 |
| E44 | 9031.28 | . . . . | 0.03 | 0.02 | . . . . | 0.01 | 0.07 | 0.04 |
| E45 | 9025.88 | . . . . | -0.00 | -0.00 | . . . . | -0.01 | 0.05 | 0.02 |
| E46 | 9006.92 | . . . . | -0.03 | -0.04 | . . . . | -0.05 | 0.02 | -0.01 |
| E47 | 8988.15 | . . . . | -0.02 | -0.04 | . . . . | -0.04 | 0.02 | -0.01 |
| E48 | 8971.80 | . . . . | -0.01 | -0.06 | . . . . | -0.06 | 0.00 | -0.02 |
| E49 | 8951.26 | . . . . | 0.02 | -0.06 | . . . . | -0.07 | -0.01 | -0.02 |
| E50 | 8942.68 | . . . . | 0.03 | -0.05 | . . . . | -0.05 | 0.02 | 0.00 |
| F1 | 9023.07 | . . . . | 0.07 | -0.00 | . . . . | -0.02 | -0.01 | -0.02 |

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|---|---|---|---|---|---|---|---|---|
| F2 | 9008.49 | . . . . | 0.08 | 0.01 | . . . . | 0.00 | -0.00 | -0.00 |
| F3 | 8995.51 | . . . . | 0.09 | 0.02 | . . . . | 0.00 | 0.01 | 0.00 |
| F4 | 8982.79 | . . . . | 0.10 | 0.04 | . . . . | 0.02 | 0.03 | 0.02 |
| F5 | 8970.51 | . . . . | 0.11 | 0.05 | . . . . | 0.03 | 0.04 | 0.03 |
| F6 | 8956.47 | . . . . | 0.13 | 0.07 | . . . . | 0.06 | 0.06 | 0.05 |
| F7 | 8945.05 | . . . . | 0.15 | 0.09 | . . . . | 0.07 | 0.08 | 0.07 |
| F8 | 8931.96 | . . . . | 0.16 | 0.10 | . . . . | 0.09 | 0.09 | 0.09 |
| F9 | 8924.71 | . . . . | 0.19 | 0.12 | . . . . | 0.12 | 0.12 | 0.11 |
| F10 | 8926.09 | . . . . | 0.19 | 0.11 | . . . . | 0.11 | 0.11 | 0.10 |
| F11 | 8941.36 | . . . . | 0.18 | 0.13 | . . . . | 0.13 | 0.13 | 0.12 |
| F12 | 8955.26 | . . . . | 0.27 | 0.23 | . . . . | 0.23 | 0.24 | 0.24 |
| F13 | 8966.19 | . . . . | 0.49 | 0.46 | . . . . | 0.47 | 0.50 | 0.50 |
| F14 | 8978.04 | . . . . | 1.11 | 1.18 | . . . . | 1.36 | 1.45 | 1.50 |
| F15 | 9000.47 | . . . . | 1.49 | 1.64 | . . . . | 1.93 | 2.05 | 2.13 |
| F16 | 9026.33 | . . . . | 1.72 | 1.94 | . . . . | 2.28 | 2.40 | 2.50 |
| F17 | 9061.13 | . . . . | 1.93 | 2.28 | . . . . | 2.79 | 2.93 | 3.03 |
| F18 | 9081.04 | . . . . | 2.13 | 2.66 | . . . . | 3.45 | 3.62 | 3.74 |
| F19 | 9093.32 | . . . . | 2.29 | 2.93 | . . . . | 4.02 | 4.23 | 4.36 |
| F20 | 9099.94 | . . . . | 2.27 | 2.88 | . . . . | 4.17 | 4.42 | 4.58 |
| F21 | 9107.45 | . . . . | 2.19 | 2.66 | . . . . | 4.12 | 4.44 | 4.63 |
| F22 | 9114.79 | . . . . | 2.10 | 2.51 | . . . . | 3.90 | 4.31 | 4.56 |
| F23 | 9120.92 | . . . . | 1.97 | 2.19 | . . . . | 3.55 | 4.08 | 4.40 |
| F24 | 9124.11 | . . . . | 1.88 | 2.03 | . . . . | 3.19 | 3.81 | 4.22 |
| F25 | 9125.36 | . . . . | 1.83 | 1.93 | . . . . | 2.86 | 3.53 | 4.05 |
| F26 | 9128.82 | . . . . | 1.71 | 1.77 | . . . . | 2.53 | 3.19 | 3.81 |
| F27 | 9137.33 | 1.68 | 1.70 | 1.72 | . . . . | 2.26 | 2.83 | 3.52 |
| F28 | 9143.67 | . . . . | 1.63 | 1.65 | . . . . | 2.06 | 2.53 | 3.25 |
| F29 | 9142.21 | . . . . | 1.57 | 1.57 | . . . . | 1.89 | 2.27 | 2.95 |
| F30 | 9133.76 | . . . . | 1.50 | 1.49 | . . . . | 1.75 | 2.05 | 2.64 |
| F31 | 9121.28 | . . . . | 1.37 | 1.36 | . . . . | 1.56 | 1.80 | 2.28 |
| F32 | 9108.36 | . . . . | 1.31 | 1.29 | . . . . | 1.46 | 1.64 | 2.02 |
| F33 | 9093.02 | . . . . | 1.18 | 1.15 | . . . . | 1.27 | 1.42 | 1.70 |
| F34 | 9083.37 | . . . . | 1.05 | 1.01 | . . . . | 1.11 | 1.22 | 1.43 |
| F35 | 9075.64 | . . . . | 0.84 | 0.79 | . . . . | 0.84 | 0.92 | 1.06 |
| F36 | 9070.91 | . . . . | 0.70 | 0.65 | . . . . | 0.68 | 0.73 | 0.81 |
| F37 | 9057.40 | . . . . | 0.52 | 0.46 | . . . . | 0.47 | 0.51 | 0.55 |
| F38 | 9039.82 | . . . . | 0.42 | 0.34 | . . . . | 0.35 | 0.37 | 0.40 |
| F39 | 9027.80 | . . . . | 0.36 | 0.30 | . . . . | 0.30 | 0.31 | 0.34 |
| F40 | 9008.94 | . . . . | 0.29 | 0.21 | . . . . | 0.22 | 0.23 | 0.26 |
| F41 | 8989.27 | . . . . | 0.26 | 0.18 | . . . . | 0.19 | 0.20 | 0.23 |

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|---|---|---|---|---|---|---|---|---|
| F42 | 8973.19 | . . . . | 0.19 | 0.11 | . . . . | 0.12 | 0.12 | 0.15 |
| F43 | 8952.18 | . . . . | 0.17 | 0.07 | . . . . | 0.09 | 0.10 | 0.13 |
| F44 | 8931.29 | . . . . | 0.15 | 0.06 | . . . . | 0.07 | 0.08 | 0.11 |
| F45 | 8911.66 | . . . . | 0.13 | 0.04 | . . . . | 0.04 | 0.06 | 0.09 |
| F46 | 8893.75 | . . . . | 0.13 | 0.05 | . . . . | 0.05 | 0.06 | 0.09 |
| F47 | 8889.64 | . . . . | 0.08 | -0.01 | . . . . | -0.01 | -0.00 | 0.03 |
| G1 | 9017.27 | . . . . | 0.04 | -0.02 | . . . . | -0.02 | -0.03 | -0.02 |
| G2 | 9010.00 | . . . . | 0.06 | -0.01 | . . . . | -0.02 | -0.02 | -0.01 |
| G3 | 8996.96 | . . . . | 0.07 | 0.01 | . . . . | -0.00 | 0.00 | 0.01 |
| G4 | 8986.77 | . . . . | 0.07 | -0.00 | . . . . | -0.01 | -0.01 | 0.00 |
| G5 | 8979.31 | . . . . | 0.07 | 0.01 | . . . . | -0.01 | -0.00 | 0.01 |
| SG5 | 8974.82 | . . . . | 0.03 | -0.03 | . . . . | -0.05 | -0.04 | -0.03 |
| G6 | 8968.83 | . . . . | 0.08 | 0.02 | . . . . | -0.00 | 0.01 | 0.02 |
| SG6 | 8964.78 | . . . . | 0.03 | -0.02 | . . . . | -0.05 | -0.04 | -0.02 |
| G7 | 8957.86 | . . . . | 0.08 | 0.03 | . . . . | -0.00 | 0.01 | 0.03 |
| SG7 | 8951.87 | . . . . | 0.01 | -0.03 | . . . . | -0.06 | -0.05 | -0.03 |
| G8 | 8940.86 | . . . . | 0.08 | 0.04 | . . . . | -0.00 | 0.01 | 0.03 |
| SG8 | 8931.87 | . . . . | 0.03 | -0.02 | . . . . | -0.05 | -0.04 | -0.01 |
| G9 | 8920.29 | . . . . | 0.11 | 0.07 | . . . . | 0.04 | 0.05 | 0.08 |
| SG9 | 8911.38 | . . . . | 0.02 | -0.00 | . . . . | -0.04 | -0.02 | 0.00 |
| G10 | 8904.15 | . . . . | 0.12 | 0.09 | . . . . | 0.06 | 0.08 | 0.10 |
| SG10 | 8900.79 | . . . . | 0.00 | -0.03 | . . . . | -0.07 | -0.04 | -0.01 |
| G11 | 8897.67 | . . . . | 0.15 | 0.13 | . . . . | 0.10 | 0.14 | 0.17 |
| SG11 | 8906.63 | . . . . | 0.08 | 0.07 | . . . . | 0.04 | 0.08 | 0.12 |
| G12 | 8916.99 | . . . . | 0.19 | 0.17 | . . . . | 0.17 | 0.21 | 0.25 |
| SG12 | 8929.77 | . . . . | 0.12 | 0.13 | . . . . | 0.15 | 0.20 | 0.24 |
| G13 | 8939.73 | . . . . | 0.26 | 0.27 | . . . . | 0.32 | 0.40 | 0.46 |
| SG13 | 8949.34 | . . . . | 0.28 | 0.32 | . . . . | 0.47 | 0.58 | 0.68 |
| G14 | 8956.60 | . . . . | 0.39 | 0.47 | . . . . | 0.71 | 0.86 | 1.02 |
| SG14 | 8970.00 | . . . . | 0.37 | 0.48 | . . . . | 0.78 | 0.96 | 1.13 |
| G15 | 8986.45 | . . . . | 0.49 | 0.61 | . . . . | 0.94 | 1.14 | 1.32 |
| G16 | 9020.60 | . . . . | 0.50 | 0.64 | . . . . | 1.02 | 1.22 | 1.41 |
| G17 | 9049.24 | . . . . | 0.47 | 0.66 | . . . . | 1.07 | 1.28 | 1.49 |
| G18 | 9068.76 | . . . . | 0.49 | 0.70 | . . . . | 1.20 | 1.42 | 1.64 |
| G19 | 9080.04 | . . . . | 0.43 | 0.67 | . . . . | 1.30 | 1.56 | 1.79 |
| G20 | 9086.97 | . . . . | 0.36 | 0.58 | . . . . | 1.35 | 1.65 | 1.90 |
| G21 | 9090.12 | . . . . | 0.31 | 0.46 | . . . . | 1.30 | 1.64 | 1.92 |
| G22 | 9085.88 | . . . . | 0.25 | 0.34 | . . . . | 1.12 | 1.51 | 1.82 |
| G23 | 9082.52 | . . . . | 0.21 | 0.26 | . . . . | 0.92 | 1.37 | 1.71 |
| G24 | 9079.10 | . . . . | 0.19 | 0.20 | . . . . | 0.72 | 1.19 | 1.58 |

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BASE DATE DIFFERENCES BY DATES :

| STATION NAME | BASE FILE | 06/21/1982 USBM : L | 06/22/1982 J + T : L | 07/20/1982 J + T : L | 08/09/1982 USBM : L | 08/26/1982 J + T : L | 09/21/1982 J + T : L | 10/13/1982 J + T : L |
|---|---|---|---|---|---|---|---|---|
| G25 | 9072.97 | . . . . | 0.13 | 0.13 | . . . . | 0.52 | 0.97 | 1.40 |
| G26 | 9066.68 | . . . . | 0.15 | 0.13 | . . . . | 0.38 | 0.79 | 1.26 |
| G27 | 9058.06 | . . . . | 0.13 | 0.10 | . . . . | 0.27 | 0.58 | 1.04 |
| G28 | 9050.08 | . . . . | 0.12 | 0.08 | . . . . | 0.19 | 0.43 | 0.81 |
| G29 | 9042.11 | . . . . | 0.09 | 0.06 | . . . . | 0.11 | 0.30 | 0.58 |
| G30 | 9033.43 | . . . . | 0.08 | 0.05 | . . . . | 0.07 | 0.22 | 0.42 |
| G31 | 9025.21 | . . . . | 0.06 | 0.02 | . . . . | 0.03 | 0.14 | 0.28 |
| G32 | 9018.40 | . . . . | 0.05 | 0.02 | . . . . | 0.01 | 0.10 | 0.20 |
| G33 | 9006.13 | . . . . | 0.03 | 0.01 | . . . . | -0.01 | 0.07 | 0.13 |
| G34 | 8995.21 | . . . . | 0.03 | 0.01 | . . . . | -0.02 | 0.05 | 0.10 |
| G35 | 8981.85 | . . . . | 0.05 | 0.00 | . . . . | -0.04 | 0.02 | 0.06 |
| SG35 | 8974.89 | . . . . | 0.01 | -0.02 | . . . . | -0.06 | 0.00 | 0.04 |
| G36 | 8964.21 | . . . . | 0.06 | 0.01 | . . . . | -0.04 | 0.02 | 0.05 |
| SG36 | 8956.26 | . . . . | 0.02 | -0.02 | . . . . | -0.07 | -0.01 | 0.02 |
| G37 | 8945.34 | . . . . | 0.07 | 0.02 | . . . . | -0.03 | 0.02 | 0.06 |
| SG37 | 8937.39 | . . . . | -0.01 | -0.05 | . . . . | -0.09 | -0.04 | -0.00 |
| G38 | 8930.39 | . . . . | 0.06 | 0.02 | . . . . | -0.04 | 0.01 | 0.05 |
| SG38 | 8923.44 | . . . . | -0.05 | -0.07 | . . . . | -0.12 | -0.06 | -0.04 |
| G39 | 8916.86 | . . . . | -0.00 | -0.03 | . . . . | -0.08 | -0.03 | 0.00 |
| SG39 | 8913.78 | . . . . | -0.02 | -0.06 | . . . . | -0.12 | -0.07 | -0.03 |
| G40 | 8908.02 | . . . . | 0.02 | -0.01 | . . . . | -0.06 | 0.00 | 0.03 |
| SG40 | 8902.15 | . . . . | -0.02 | -0.06 | . . . . | -0.12 | -0.06 | -0.03 |
| G41 | 8892.67 | . . . . | 0.02 | -0.03 | . . . . | -0.09 | -0.03 | 0.00 |
| SG41 | 8886.58 | . . . . | -0.02 | -0.08 | . . . . | -0.13 | -0.08 | -0.05 |
| G42 | 8877.43 | . . . . | 0.02 | -0.04 | . . . . | -0.10 | -0.05 | -0.01 |
| SG42 | 8872.97 | . . . . | -0.05 | -0.10 | . . . . | -0.16 | -0.11 | -0.08 |
| G43 | 8863.93 | . . . . | 0.01 | -0.06 | . . . . | -0.12 | -0.07 | -0.03 |
| SG43 | 8861.41 | . . . . | -0.06 | -0.13 | . . . . | -0.19 | -0.14 | -0.10 |
| G44 | 8858.04 | . . . . | -0.00 | -0.07 | . . . . | -0.13 | -0.09 | -0.04 |
| SG44 | 8859.48 | . . . . | -0.09 | -0.13 | . . . . | -0.18 | -0.13 | -0.09 |
| G45 | 8859.54 | . . . . | 0.01 | -0.05 | . . . . | -0.10 | -0.06 | -0.01 |
| G46 | 8872.66 | . . . . | -0.00 | -0.06 | . . . . | -0.12 | 0.01 | -0.03 |
| G47 | 8884.46 | . . . . | -0.01 | -0.07 | . . . . | -0.14 | -0.01 | -0.04 |
| G48 | 8898.13 | . . . . | 0.02 | -0.04 | . . . . | -0.11 | 0.02 | -0.02 |
| G49 | 8913.06 | . . . . | 0.03 | -0.03 | . . . . | -0.09 | 0.03 | -0.02 |
| G50 | 8927.28 | . . . . | 0.06 | -0.06 | . . . . | -0.11 | 0.01 | -0.03 |

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|---|---|---|---|---|---|
| DC1 | 8994.68 | . . . . | . . . . | . . . . | . . . . |
| DC2 | 8955.53 | . . . . | . . . . | . . . . | . . . . |
| BM1 | 9025.91 | 0.00 | 0.00 | 0.00 | 0.00 |
| BM2 | 9159.51 | 5.31 | 5.81 | 5.81 | 5.86 |
| BM3 | 9188.67 | 4.30 | 4.90 | 4.90 | 4.97 |
| BM4 | 9104.14 | -0.07 | -0.07 | 0.02 | -0.03 |
| BM5 | 9096.70 | -0.11 | 0.07 | 0.10 | 0.09 |
| BM6 | 8943.36 | 0.52 | 0.71 | 0.73 | 0.79 |
| BM7 | 9106.90 | -0.08 | -0.08 | 0.00 | -0.04 |
| BM8 | 8980.15 | -0.03 | 0.03 | 0.01 | 0.04 |
| BM9 | 8961.81 | -0.09 | -0.08 | -0.06 | . . . . |
| BM10 | 9067.32 | . . . . | 1.29 | 1.81 | 2.36 |
| NCP0 | . . . . | . . . . | . . . . | . . . . | . . . . |
| NCP1 | . . . . | . . . . | . . . . | . . . . | . . . . |
| NCP2 | . . . . | . . . . | . . . . | . . . . | . . . . |
| NCP3 | . . . . | . . . . | . . . . | . . . . | . . . . |
| NCP4 | . . . . | . . . . | . . . . | . . . . | . . . . |
| NCP5 | . . . . | . . . . | . . . . | . . . . | . . . . |
| NCP6 | . . . . | . . . . | . . . . | . . . . | . . . . |
| NCP7 | . . . . | . . . . | . . . . | . . . . | . . . . |
| NCP8 | . . . . | . . . . | . . . . | . . . . | . . . . |
| NCP9 | . . . . | . . . . | . . . . | . . . . | . . . . |
| C1 | 8998.65 | 0.11 | 0.13 | 0.12 | 0.13 |
| C2 | 8988.15 | 0.13 | 0.16 | 0.15 | 0.17 |
| C3 | 8978.20 | 0.14 | 0.20 | 0.18 | 0.20 |
| C4 | 8971.85 | 0.17 | . . . . | 0.69 | 0.72 |
| C5 | 8970.99 | 0.20 | 0.25 | 0.22 | 0.25 |
| C6 | 8976.02 | 0.17 | 0.24 | 0.22 | 0.25 |
| C7 | 8984.61 | 0.22 | 0.30 | 0.28 | 0.31 |
| C8 | 8990.13 | 0.23 | 0.31 | 0.30 | 0.34 |
| C9 | 8993.46 | 0.28 | 0.37 | 0.36 | 0.40 |
| C10 | 8997.67 | 0.33 | 0.38 | 0.38 | 0.42 |
| C11 | 9001.98 | 0.44 | 0.56 | 0.59 | 0.62 |
| C12 | 9008.04 | 0.69 | 0.88 | 0.94 | 0.99 |
| C13 | 9017.60 | 1.75 | 2.33 | 2.53 | 2.65 |
| C14 | 9030.62 | 1.98 | 2.58 | 2.84 | 3.01 |
| C15 | 9054.08 | 2.23 | 2.90 | 3.14 | 3.33 |
| C16 | 9076.04 | 2.49 | 3.17 | 3.40 | 3.63 |
| C17 | 9096.46 | 2.90 | 3.59 | 3.82 | 4.09 |
| C18 | 9120.88 | 3.16 | 3.80 | 4.06 | 4.36 |

DEER CREEK SUBSIDENCE PROJECT LISTING OF ELEVATION

| STATION NAME | BASE DATE BASE FILE | DIFFERENCES BY DATES : 11/03/1982 J + T : L | 06/28/1983 J + T : L | 08/08/1983 J + T : L | 09/16/1983 J + T: L |
|---|---|---|---|---|---|
| C19 | 9137.26 | 3.35 | 3.99 | 4.21 | 4.54 |
| C20 | 9152.74 | 3.42 | 4.05 | 4.28 | 4.62 |
| C21 | 9166.18 | 3.44 | 4.09 | 4.29 | 4.64 |
| C22 | 9173.53 | 3.51 | 4.18 | 4.35 | 4.70 |
| C23 | 9175.25 | 3.56 | 4.23 | 4.39 | 4.74 |
| C24 | 9170.81 | 3.57 | 4.27 | 4.42 | 4.76 |
| C25 | 9170.54 | 3.55 | 4.24 | 4.36 | 4.67 |
| C26 | 9181.64 | 3.50 | 4.20 | 4.32 | 4.63 |
| C27 | 9188.24 | 3.47 | 4.21 | 4.31 | 4.58 |
| C28 | 9187.66 | 3.47 | 4.16 | 4.25 | 4.53 |
| C29 | 9189.62 | 3.40 | 4.12 | 4.20 | 4.44 |
| C30 | 9190.13 | 3.46 | 4.18 | 4.24 | 4.45 |
| C31 | 9193.08 | 3.25 | 3.98 | 4.03 | 4.22 |
| C32 | 9188.37 | 3.18 | 3.88 | 3.93 | 4.09 |
| C33 | 9187.61 | 2.89 | 3.55 | 3.60 | 3.76 |
| C34 | 9183.94 | 2.33 | 2.89 | 2.94 | 3.08 |
| C35 | 9179.18 | 1.70 | 2.08 | 2.13 | 2.24 |
| C36 | 9178.90 | 1.36 | 1.64 | 1.66 | 1.72 |
| C37 | 9178.13 | 0.88 | 1.06 | 1.07 | 1.12 |
| C38 | 9175.22 | 0.71 | 0.85 | 0.86 | 0.89 |
| C39 | 9170.81 | 0.51 | 0.63 | 0.63 | 0.66 |
| C40 | 9162.20 | 0.35 | 0.44 | 0.44 | 0.47 |
| C41 | 9148.84 | 0.26 | 0.34 | 0.34 | 0.37 |
| C42 | 9135.52 | 0.19 | 0.23 | 0.22 | 0.25 |
| C43 | 9125.00 | 0.06 | 0.06 | 0.05 | 0.10 |
| C44 | 9117.09 | -0.02 | 0.02 | -0.01 | 0.03 |
| C45 | 9105.25 | -0.07 | -0.01 | -0.04 | 0.00 |
| C46 | 9084.48 | -0.04 | -0.03 | -0.05 | 0.01 |
| C47 | 9065.21 | 0.04 | 0.08 | 0.05 | 0.10 |
| C48 | 9046.81 | -0.10 | -0.08 | -0.11 | -0.05 |
| C49 | 9028.02 | -0.01 | 0.03 | -0.01 | 0.06 |
| C50 | 9004.20 | -0.09 | -0.06 | -0.10 | -0.04 |
| P16 | 9203.57 | 1.76 | 2.21 | 2.34 | 2.88 |
| P15 | 9197.23 | 2.09 | 2.63 | 2.77 | 3.31 |
| P14 | 9194.67 | 2.45 | 3.11 | 3.23 | 3.74 |
| P13 | 9191.28 | 2.94 | 3.68 | 3.80 | 4.23 |
| P12 | 9183.72 | 4.08 | 4.73 | 4.81 | 4.99 |
| P11 | 9180.58 | 4.36 | 4.95 | 5.00 | 5.11 |
| P10 | 9176.25 | 4.55 | 5.10 | 5.14 | 5.21 |
| P9 | 9171.03 | 4.74 | 5.27 | 5.30 | 5.37 |

DEER CREEK SUBSIDENCE PROJECT LISTING OF ELEVATION

| STATION NAME | BASE DATE BASE FILE | DIFFERENCES BY DATES : 11/03/1982 J + T : L | 06/28/1983 J + T : L | 08/08/1983 J + T : L | 09/16/1983 J + T: L |
|---|---|---|---|---|---|
| P8 | 9165.59 | 4.88 | 5.37 | 5.39 | 5.46 |
| P7 | 9160.70 | 5.21 | 5.69 | 5.70 | 5.76 |
| P6 | 9159.07 | 5.32 | 5.81 | 5.81 | 5.89 |
| P5 | 9160.44 | 5.24 | 5.75 | 5.75 | 5.81 |
| P4 | 9157.80 | 5.13 | 5.66 | 5.65 | 5.69 |
| P3 | 9154.42 | 5.01 | 5.57 | 5.58 | 5.62 |
| P2 | 9151.12 | 4.69 | 5.41 | 5.42 | 5.45 |
| P1 | 9143.31 | 4.25 | 5.14 | 5.17 | 5.20 |
| P17 | 9129.72 | 3.64 | 4.76 | 4.86 | 4.90 |
| P18 | 9114.29 | 3.34 | 4.59 | 4.68 | 4.75 |
| P19 | 9100.43 | 2.96 | 4.42 | 4.50 | 4.55 |
| P20 | 9089.13 | 2.63 | 4.25 | 4.31 | 4.37 |
| P21 | 9074.91 | 2.07 | 3.91 | 3.96 | 4.04 |
| P22 | 9061.37 | 1.54 | 3.46 | 3.50 | 3.59 |
| P23 | 9048.42 | 0.94 | 2.79 | 2.89 | 2.93 |
| P24 | 9042.63 | 0.53 | 2.19 | 2.29 | 2.34 |
| P25 | 9038.54 | 0.33 | 1.87 | 1.97 | 2.01 |
| SP25 | 9039.18 | 0.20 | 1.67 | 1.78 | 1.81 |
| P26 | 9036.75 | 0.21 | 1.62 | 1.73 | 1.76 |
| SP26 | 9036.84 | 0.12 | 1.40 | 1.51 | 1.55 |
| P27 | 9035.61 | 0.16 | 1.29 | 1.39 | 1.43 |
| SP27 | 9033.56 | 0.08 | 1.02 | 1.12 | 1.17 |
| P28 | 9027.03 | 0.11 | 0.86 | 0.95 | 1.00 |
| SP28 | 9020.71 | 0.05 | 0.62 | 0.70 | 0.76 |
| SP29 | 9014.04 | 0.04 | 0.55 | 0.62 | 0.67 |
| SP30 | 9007.47 | 0.03 | 0.43 | 0.49 | 0.54 |
| SP31 | 9000.30 | 0.02 | 0.33 | 0.39 | 0.44 |
| SP32 | 8991.51 | 0.01 | 0.25 | 0.30 | 0.35 |
| SP33 | 8979.06 | 0.01 | 0.20 | 0.24 | 0.30 |
| SP34 | 8966.51 | 0.01 | 0.16 | 0.20 | 0.26 |
| SP35 | 8954.85 | -0.01 | 0.10 | 0.13 | 0.19 |
| SP36 | 8945.07 | 0.00 | 0.09 | 0.12 | 0.19 |
| SP37 | 8937.55 | -0.00 | 0.11 | 0.13 | 0.20 |
| SP38 | 8932.96 | -0.01 | 0.07 | 0.09 | 0.17 |
| SP39 | 8929.45 | -0.02 | 0.06 | 0.07 | 0.15 |
| SP40 | 8926.20 | -0.02 | 0.03 | 0.05 | 0.13 |
| SP41 | 8923.56 | -0.02 | 0.04 | 0.06 | 0.13 |
| SP42 | 8922.57 | -0.03 | -0.00 | 0.01 | 0.09 |
| SP43 | 8922.02 | -0.03 | -0.00 | 0.01 | 0.09 |
| SP44 | 8921.65 | -0.03 | -0.02 | -0.01 | 0.07 |

DEER CREEK SUBSIDENCE PROJECT LISTING OF ELEVATION

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|---|---|---|---|---|---|
| SP45 | 8921.35 | -0.04 | -0.03 | -0.02 | 0.06 |
| D1 | 8960.18 | 0.08 | 0.10 | 0.08 | 0.15 |
| D2 | 8953.04 | 0.10 | 0.16 | 0.15 | 0.21 |
| D3 | 8949.27 | 0.14 | 0.18 | 0.18 | 0.23 |
| D4 | 8949.94 | 0.18 | 0.19 | 0.18 | 0.25 |
| D5 | 8957.29 | 0.18 | 0.22 | 0.21 | 0.26 |
| D6 | 8967.44 | 0.21 | 0.25 | 0.25 | 0.30 |
| D7 | 8975.26 | 0.22 | 0.26 | 0.26 | 0.30 |
| D8 | 8983.90 | 0.28 | 0.33 | 0.32 | 0.36 |
| D9 | 8990.92 | 0.51 | 0.57 | 0.57 | 0.60 |
| D10 | 8999.20 | 0.72 | 0.82 | 0.84 | 0.88 |
| D11 | 9007.03 | 1.48 | 1.74 | 1.79 | 1.85 |
| D12 | 9016.69 | 2.10 | 2.52 | 2.62 | 2.71 |
| D13 | 9029.19 | 2.22 | 2.74 | 2.90 | 3.04 |
| A1 | 9015.87 | 1.40 | 1.91 | 2.04 | 2.18 |
| A2 | 9014.25 | 1.51 | 1.94 | 2.06 | 2.17 |
| A3 | 9009.87 | 1.69 | 2.04 | 2.12 | 2.21 |
| A4 | 9004.22 | 1.62 | 1.86 | 1.91 | 1.99 |
| A5 | 9001.00 | 0.69 | 0.78 | 0.81 | 0.86 |
| A6 | 8998.65 | 0.73 | 0.82 | 0.84 | 0.89 |
| A7 | 8993.71 | 0.76 | 0.85 | 0.86 | 0.91 |
| A8 | 8991.47 | 0.64 | 0.72 | 0.74 | 0.79 |
| B1 | 9173.78 | 0.66 | 0.80 | 0.82 | 0.86 |
| B2 | 9170.78 | 0.69 | 0.84 | 0.86 | 0.90 |
| B3 | 9158.29 | 0.79 | 0.96 | 0.97 | 1.02 |
| B4 | 9141.32 | 0.72 | 0.91 | 0.91 | 0.97 |
| B5 | 9124.50 | 0.75 | 0.96 | 0.96 | 1.02 |
| B6 | 9111.43 | 0.64 | 0.86 | 0.86 | 0.93 |
| B7 | 9095.66 | 0.72 | 0.97 | 0.96 | 1.04 |
| E1 | 9008.16 | -0.01 | 0.01 | 0.00 | 0.01 |
| E2 | 8997.85 | -0.01 | 0.02 | 0.01 | 0.01 |
| E3 | 8987.42 | -0.01 | -0.00 | -0.01 | 0.01 |
| E4 | 8977.75 | -0.04 | 0.01 | -0.00 | 0.01 |
| E5 | 8968.10 | -0.02 | 0.03 | 0.01 | 0.03 |
| E6 | 8959.71 | -0.03 | 0.01 | -0.01 | 0.01 |
| E7 | 8954.73 | -0.00 | 0.05 | 0.04 | 0.06 |
| E8 | 8957.98 | 0.00 | 0.05 | 0.05 | 0.07 |
| E9 | 8959.92 | 0.02 | 0.08 | 0.08 | 0.09 |
| E10 | 8960.97 | 0.06 | 0.10 | 0.10 | 0.13 |
| E11 | 8967.90 | 0.13 | 0.19 | 0.18 | 0.21 |

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|---|---|---|---|---|---|
| E12 | 8983.37 | 0.42 | 0.52 | 0.51 | 0.54 |
| E13 | 8993.84 | 0.75 | 0.87 | 0.88 | 0.91 |
| E14 | 9007.06 | 2.06 | 2.28 | 2.32 | 2.37 |
| E15 | 9029.96 | 2.54 | 2.77 | 2.80 | 2.85 |
| E16 | 9055.05 | 2.82 | 3.07 | 3.12 | 3.17 |
| E17 | 9076.10 | 3.08 | 3.35 | 3.38 | 3.43 |
| E18 | 9094.27 | 3.40 | 3.64 | 3.69 | 3.75 |
| E19 | 9104.22 | 3.63 | 3.89 | 3.93 | 3.97 |
| E20 | 9105.05 | 3.79 | 4.07 | 4.11 | 4.17 |
| E21 | 9118.34 | 3.91 | 4.25 | 4.28 | 4.34 |
| E22 | 9129.72 | 4.06 | 4.42 | 4.45 | 4.52 |
| E23 | 9140.18 | 4.20 | 4.59 | 4.62 | 4.68 |
| E24 | 9147.95 | 4.33 | 4.76 | 4.79 | 4.85 |
| E25 | 9154.02 | 4.46 | 4.90 | 4.94 | 5.00 |
| E26 | 9157.11 | 4.53 | 5.01 | 5.04 | 5.09 |
| E27 | 9159.69 | 4.62 | 5.11 | 5.13 | 5.20 |
| E28 | 9161.39 | 4.67 | 5.19 | 5.21 | 5.28 |
| E29 | 9159.70 | 4.38 | 4.93 | 4.94 | 5.02 |
| E30 | 9155.41 | 4.34 | 4.95 | 4.96 | 5.02 |
| E31 | 9148.90 | 4.22 | 4.82 | 4.81 | 4.88 |
| E32 | 9141.48 | 3.99 | 4.66 | 4.65 | 4.72 |
| E33 | 9134.71 | 3.72 | 4.45 | 4.43 | 4.49 |
| E34 | 9125.08 | 3.10 | 3.85 | 3.83 | 3.90 |
| E35 | 9116.50 | 2.31 | 2.97 | 2.94 | 3.01 |
| E36 | 9112.04 | 1.49 | 1.96 | 1.93 | 2.00 |
| E37 | 9105.12 | 0.88 | 1.22 | 1.20 | 1.27 |
| E38 | 9090.76 | 0.55 | 0.83 | 0.81 | 0.87 |
| E39 | 9075.68 | 0.32 | 0.59 | 0.57 | 0.62 |
| E40 | 9065.14 | 0.25 | 0.48 | 0.46 | 0.51 |
| E41 | 9051.25 | 0.15 | 0.36 | 0.34 | 0.40 |
| E42 | 9040.70 | 0.16 | 0.37 | 0.35 | 0.40 |
| E43 | 9034.43 | 0.03 | 0.22 | 0.19 | 0.24 |
| E44 | 9031.28 | 0.06 | 0.25 | 0.22 | 0.25 |
| E45 | 9025.88 | 0.03 | 0.17 | 0.15 | 0.20 |
| E46 | 9006.92 | 0.00 | 0.14 | 0.12 | 0.15 |
| E47 | 8988.15 | 0.00 | 0.09 | 0.08 | 0.11 |
| E48 | 8971.80 | -0.04 | 0.09 | 0.08 | 0.09 |
| E49 | 8951.26 | -0.02 | 0.05 | 0.04 | 0.03 |
| E50 | 8942.68 | 0.00 | 0.04 | 0.04 | 0.05 |
| F1 | 9023.07 | -0.04 | 0.06 | 0.05 | 0.04 |

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|---|---|---|---|---|---|
| F2 | 9008.49 | -0.03 | 0.08 | 0.06 | 0.06 |
| F3 | 8995.51 | -0.02 | 0.08 | 0.06 | 0.05 |
| F4 | 8982.79 | -0.02 | 0.10 | 0.07 | 0.06 |
| F5 | 8970.51 | -0.01 | 0.09 | 0.06 | 0.08 |
| F6 | 8956.47 | 0.02 | 0.11 | 0.08 | 0.10 |
| F7 | 8945.05 | 0.04 | 0.13 | 0.09 | 0.11 |
| F8 | 8931.96 | 0.06 | 0.15 | 0.10 | 0.12 |
| F9 | 8924.71 | 0.08 | 0.18 | 0.13 | 0.17 |
| F10 | 8926.09 | 0.07 | 0.19 | 0.14 | 0.15 |
| F11 | 8941.36 | 0.11 | 0.21 | 0.17 | 0.20 |
| F12 | 8955.26 | 0.21 | 0.30 | 0.28 | 0.32 |
| F13 | 8966.19 | 0.49 | 0.63 | 0.60 | 0.63 |
| F14 | 8978.04 | 1.53 | 1.80 | 1.81 | 1.86 |
| F15 | 9000.47 | 2.18 | 2.52 | 2.55 | 2.62 |
| F16 | 9026.33 | 2.55 | 2.94 | 2.97 | 3.02 |
| F17 | 9061.13 | 3.10 | 3.53 | 3.57 | 3.63 |
| F18 | 9081.04 | 3.82 | 4.27 | 4.33 | 4.39 |
| F19 | 9093.32 | 4.44 | 4.90 | 4.96 | 5.02 |
| F20 | 9099.94 | 4.67 | 5.16 | 5.23 | 5.26 |
| F21 | 9107.45 | 4.74 | 5.23 | 5.31 | 5.35 |
| F22 | 9114.79 | 4.68 | 5.24 | 5.32 | 5.37 |
| F23 | 9120.92 | 4.55 | 5.19 | 5.28 | 5.31 |
| F24 | 9124.11 | 4.40 | 5.14 | 5.23 | 5.26 |
| F25 | 9125.36 | 4.28 | 5.08 | 5.17 | 5.21 |
| F26 | 9128.82 | 4.10 | 4.97 | 5.08 | 5.14 |
| F27 | 9137.33 | 3.89 | 4.96 | 5.05 | 5.10 |
| F28 | 9143.67 | 3.68 | 4.91 | 5.02 | 5.05 |
| F29 | 9142.21 | 3.43 | 4.87 | 4.97 | 5.00 |
| F30 | 9133.76 | 3.13 | 4.82 | 4.91 | 4.96 |
| F31 | 9121.28 | 2.72 | 4.67 | 4.76 | 4.81 |
| F32 | 9108.36 | 2.38 | 4.50 | 4.59 | 4.66 |
| F33 | 9093.02 | 1.97 | 4.15 | 4.23 | 4.29 |
| F34 | 9083.37 | 1.60 | 3.55 | 3.63 | 3.70 |
| F35 | 9075.64 | 1.14 | 2.60 | 2.68 | 2.75 |
| F36 | 9070.91 | 0.84 | 1.78 | 1.85 | 1.92 |
| F37 | 9057.40 | 0.54 | 1.17 | 1.24 | 1.32 |
| F38 | 9039.82 | 0.36 | 0.85 | 0.90 | 0.99 |
| F39 | 9027.80 | 0.30 | 0.67 | 0.73 | 0.82 |
| F40 | 9008.94 | 0.20 | 0.53 | 0.56 | 0.66 |
| F41 | 8989.27 | 0.18 | 0.43 | 0.46 | 0.56 |

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|---|---|---|---|---|---|
| F42 | 8973.19 | 0.10 | 0.35 | 0.37 | 0.48 |
| F43 | 8952.18 | 0.06 | 0.33 | 0.32 | 0.43 |
| F44 | 8931.29 | 0.04 | 0.28 | 0.27 | 0.38 |
| F45 | 8911.66 | 0.02 | 0.24 | 0.20 | 0.33 |
| F46 | 8893.75 | 0.02 | 0.22 | 0.19 | 0.31 |
| F47 | 8889.64 | -0.05 | 0.08 | 0.03 | 0.15 |
| G1 | 9017.27 | -0.04 | -0.02 | 0.41 | 0.46 |
| G2 | 9010.00 | -0.03 | 0.20 | 0.22 | 0.26 |
| G3 | 8996.96 | -0.01 | 0.11 | 0.13 | 0.18 |
| G4 | 8986.77 | -0.02 | 0.10 | 0.10 | 0.16 |
| G5 | 8979.31 | -0.02 | 0.08 | 0.09 | 0.14 |
| SG5 | 8974.82 | -0.06 | 0.04 | 0.05 | 0.10 |
| G6 | 8968.83 | -0.00 | 0.09 | 0.09 | 0.15 |
| SG6 | 8964.78 | -0.05 | 0.02 | 0.03 | 0.08 |
| G7 | 8957.86 | -0.00 | 0.06 | 0.08 | 0.13 |
| SG7 | 8951.87 | -0.06 | 0.00 | 0.01 | 0.07 |
| G8 | 8940.86 | -0.00 | 0.09 | 0.09 | 0.15 |
| SG8 | 8931.87 | -0.04 | 0.03 | 0.03 | 0.09 |
| G9 | 8920.29 | 0.04 | 0.11 | 0.11 | 0.18 |
| SG9 | 8911.38 | -0.03 | 0.04 | 0.04 | 0.11 |
| G10 | 8904.15 | 0.07 | 0.16 | 0.16 | 0.22 |
| SG10 | 8900.79 | -0.04 | 0.03 | 0.04 | 0.12 |
| G11 | 8897.67 | 0.15 | 0.23 | 0.24 | 0.31 |
| SG11 | 8906.63 | 0.09 | 0.20 | 0.22 | 0.28 |
| G12 | 8916.99 | 0.23 | 0.36 | 0.38 | 0.44 |
| SG12 | 8929.77 | 0.23 | 0.37 | 0.41 | 0.47 |
| G13 | 8939.73 | 0.47 | 0.69 | 0.71 | 0.76 |
| SG13 | 8949.34 | 0.73 | 1.01 | 1.05 | 1.12 |
| G14 | 8956.60 | 1.13 | 1.57 | 1.61 | 1.67 |
| SG14 | 8970.00 | 1.25 | 1.74 | 1.80 | 1.85 |
| G15 | 8986.45 | 1.44 | 1.97 | 2.02 | 2.06 |
| G16 | 9020.60 | 1.53 | 2.10 | 2.17 | 2.23 |
| G17 | 9049.24 | 1.61 | 2.29 | 2.37 | 2.40 |
| G18 | 9068.76 | 1.78 | 2.62 | 2.71 | 2.73 |
| G19 | 9080.04 | 1.95 | 2.96 | 3.05 | 3.06 |
| G20 | 9086.97 | 2.05 | 3.23 | 3.33 | 3.34 |
| G21 | 9090.12 | 2.11 | 3.42 | 3.50 | 3.52 |
| G22 | 9085.88 | 2.04 | 3.44 | 3.54 | 3.56 |
| G23 | 9082.52 | 1.93 | 3.46 | 3.57 | 3.58 |
| G24 | 9079.10 | 1.83 | 3.47 | 3.56 | 3.60 |

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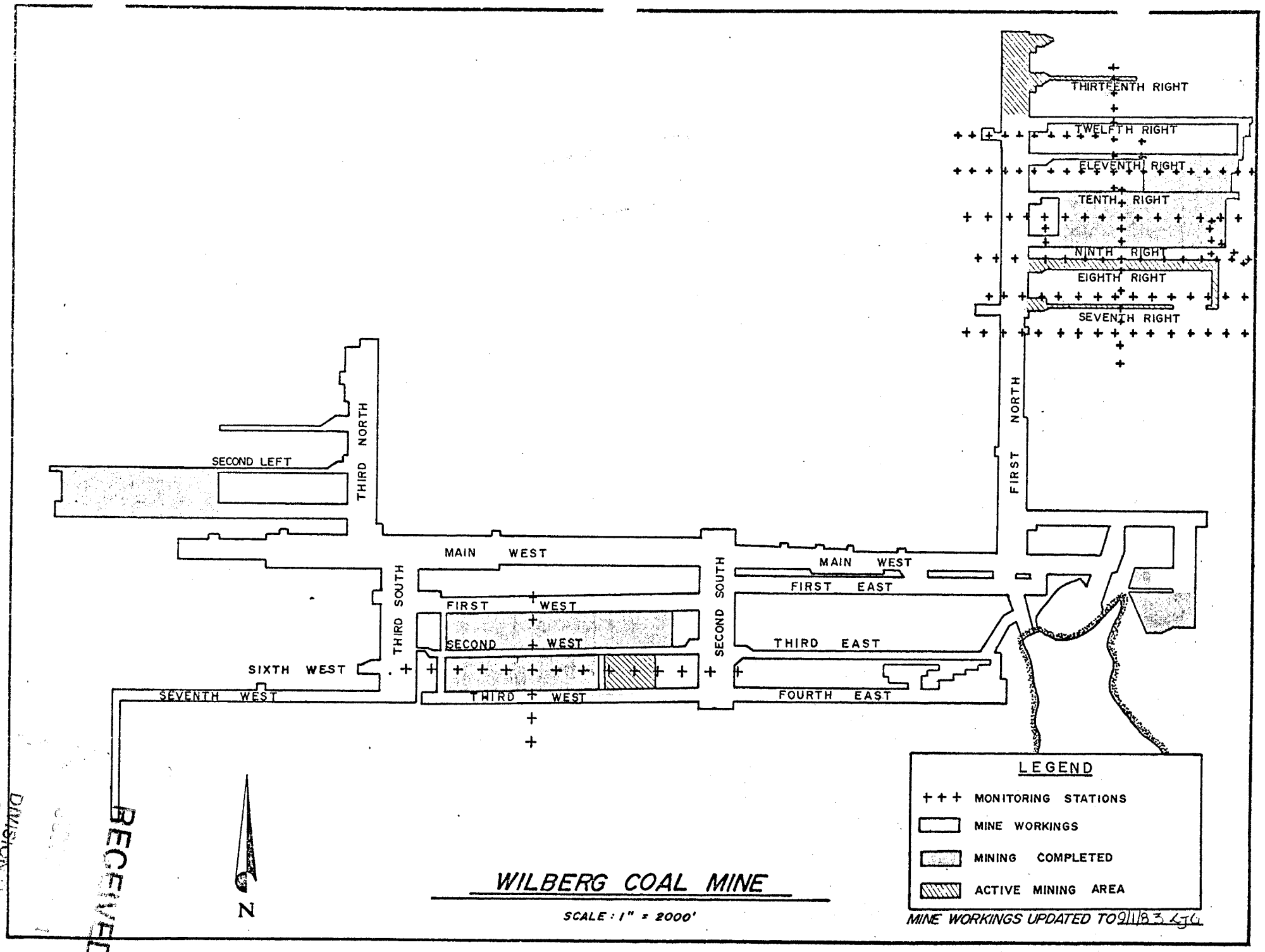
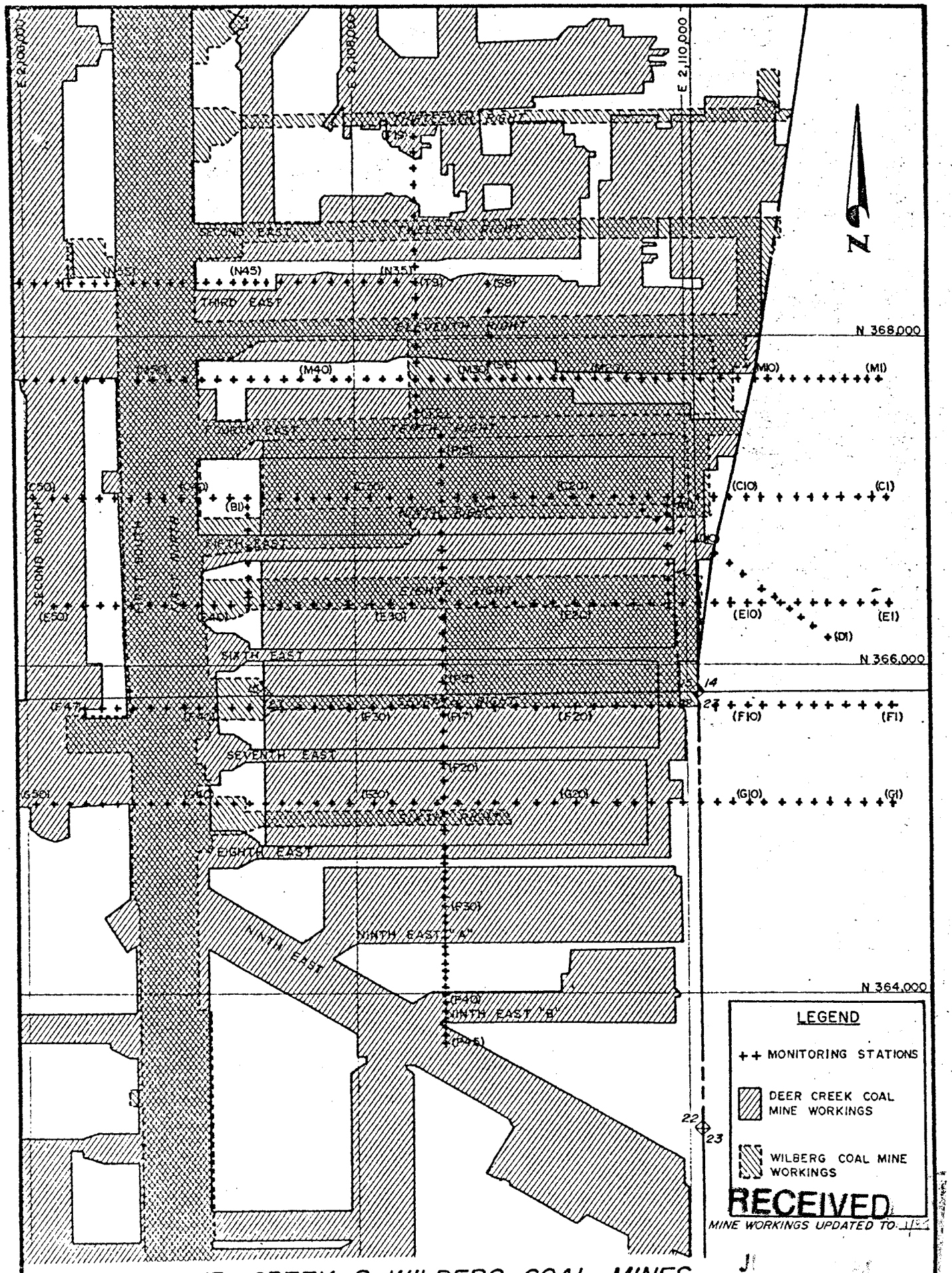
|---|---|---|---|---|---|
| G25 | 9072.97 | 1.67 | 3.38 | 3.50 | 3.53 |
| G26 | 9066.68 | 1.58 | 3.39 | 3.50 | 3.52 |
| G27 | 9058.06 | 1.39 | 3.28 | 3.39 | 3.42 |
| G28 | 9050.08 | 1.17 | 3.17 | 3.27 | 3.30 |
| G29 | 9042.11 | 0.91 | 2.97 | 3.07 | 3.11 |
| G30 | 9033.43 | 0.68 | 2.74 | 2.85 | 2.90 |
| G31 | 9025.21 | 0.47 | 2.49 | 2.59 | 2.65 |
| G32 | 9018.40 | 0.33 | 2.23 | 2.33 | 2.39 |
| G33 | 9006.13 | 0.21 | 1.95 | 2.05 | 2.11 |
| G34 | 8995.21 | 0.14 | 1.55 | 1.64 | 1.70 |
| G35 | 8981.85 | 0.08 | 1.21 | 1.28 | 1.32 |
| SG35 | 8974.89 | 0.05 | 0.99 | 1.07 | 1.12 |
| G36 | 8964.21 | 0.06 | 0.85 | 0.91 | 0.96 |
| SG36 | 8956.26 | 0.02 | 0.67 | 0.73 | 0.78 |
| G37 | 8945.34 | 0.06 | 0.57 | 0.62 | 0.67 |
| SG37 | 8937.39 | -0.01 | 0.39 | 0.46 | 0.52 |
| G38 | 8930.39 | 0.04 | 0.40 | 0.44 | 0.48 |
| SG38 | 8923.44 | -0.05 | 0.25 | 0.31 | 0.36 |
| G39 | 8916.86 | -0.01 | 0.23 | 0.27 | 0.33 |
| SG39 | 8913.78 | -0.04 | 0.19 | 0.21 | 0.27 |
| G40 | 8908.02 | 0.01 | 0.19 | 0.23 | 0.31 |
| SG40 | 8902.15 | -0.05 | 0.16 | 0.19 | 0.25 |
| G41 | 8892.67 | -0.02 | 0.18 | 0.03 | 0.29 |
| SG41 | 8886.58 | -0.06 | 0.13 | 0.17 | 0.23 |
| G42 | 8877.43 | -0.04 | 0.16 | 0.19 | 0.25 |
| SG42 | 8872.97 | -0.10 | 0.07 | 0.11 | 0.18 |
| G43 | 8863.93 | -0.06 | 0.13 | 0.17 | 0.22 |
| SG43 | 8861.41 | -0.13 | 0.03 | 0.08 | 0.13 |
| G44 | 8858.04 | -0.08 | 0.03 | 0.08 | 0.13 |
| SG44 | 8859.48 | -0.12 | 0.00 | 0.05 | 0.11 |
| G45 | 8859.54 | -0.04 | 0.10 | 0.14 | 0.19 |
| G46 | 8872.66 | -0.06 | 0.08 | 0.13 | 0.16 |
| G47 | 8884.46 | -0.07 | 0.06 | 0.11 | 0.14 |
| G48 | 8898.13 | -0.06 | 0.03 | 0.09 | 0.12 |
| G49 | 8913.06 | -0.04 | 0.01 | 0.07 | 0.09 |
| G50 | 8927.28 | -0.06 | 0.01 | 0.07 | 0.10 |

# APPENDIX

# WILBERG MINE



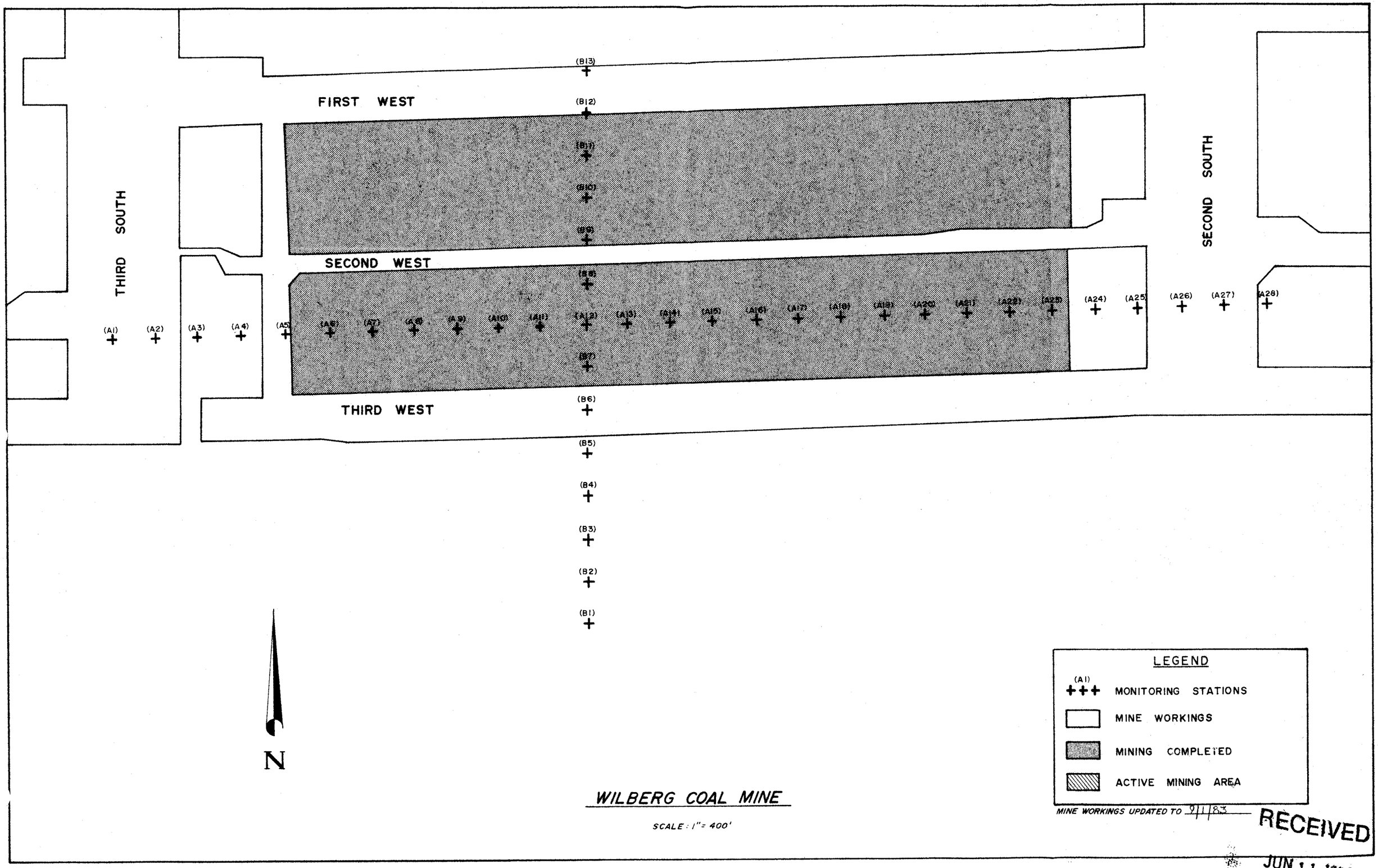

RECEIVED
DIVISION OF OIL
GAS & MINING




# DEER CREEK & WILBERG COAL MINES

SCALE: 1" = 800'

DIVISION OF OIL GAS & MINING




WILBERG COAL MINE

SCALE: 1" = 400'

MINE WORKINGS UPDATED TO 9/1/83

RECEIVED
JUN 11 1984
DIVISION

LBERG SUBSIDENCE PROJECT LISTING OF ELEVATI

| STATION NAME | BASE DATE 09/17/1980 USBMO: L | DIFFERENCES BY DATES : 07/07/1981 USBMO: L | 09/23/1981 USBMO: L | 10/27/1981 USBMO: L | 07/12/1982 USBMO: L | 07/06/1983 USBMO: L | 08/24/1983 USBMO: L | 09/22/1983 USBMO: L |
|---|---|---|---|---|---|---|---|---|
| F2 | 9638.13 | 0.00 | 0.00 | . . . . | 0.00 | 0.00 | 0.00 | 0.00 |
| BM2 | 9282.42 | 0.00 | 0.00 | . . . . | 0.00 | . . . . | . . . . | . . . . |
| BM8 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| BM9 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| BM10 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| B1 | 9637.48 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | . . . . | . . . . |
| B2 | 9637.40 | 0.00 | 0.03 | 0.03 | 0.04 | 0.12 | 0.08 | 0.12 |
| B3 | 9636.68 | -0.00 | 0.05 | 0.04 | 0.05 | 0.18 | 0.15 | 0.19 |
| B4 | 9635.25 | 0.00 | 0.09 | 0.08 | 0.09 | 0.30 | 0.26 | 0.30 |
| B5 | 9633.91 | -0.01 | 0.12 | 0.11 | 0.13 | 0.46 | 0.42 | 0.47 |
| B6 | 9632.56 | 0.00 | 0.14 | 0.14 | 0.16 | 0.70 | 0.68 | 0.73 |
| B7 | 9631.13 | -0.01 | 0.17 | 0.17 | 0.18 | 1.17 | 1.15 | 1.20 |
| B8 | 9626.92 | 0.00 | 0.18 | 0.17 | 0.18 | 2.43 | 2.44 | 2.50 |
| B9 | 9624.58 | -0.01 | 0.18 | 0.16 | 0.16 | 2.61 | 2.63 | 1.69 |
| B10 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| B11 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| B12 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| B13 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| A1 | 9647.02 | 0.01 | -0.03 | -0.03 | -0.04 | -0.05 | -0.07 | -0.03 |
| A2 | 9645.81 | -0.02 | -0.02 | -0.02 | -0.03 | -0.00 | -0.03 | 0.02 |
| A3 | 9644.09 | -0.00 | -0.01 | -0.01 | -0.01 | 0.07 | 0.03 | 0.08 |
| A4 | 9640.17 | -0.01 | 0.03 | 0.02 | 0.03 | 0.17 | 0.14 | 0.19 |
| A5 | 9636.54 | -0.02 | 0.05 | 0.04 | 0.05 | 0.33 | 0.29 | 0.33 |
| A6 | 9633.89 | 0.00 | 0.09 | 0.08 | 0.09 | 0.56 | 0.53 | 0.58 |
| A7 | 9633.23 | 0.01 | 0.11 | 0.10 | 0.11 | 0.96 | 0.93 | 0.98 |
| A8 | 9632.33 | 0.00 | 0.14 | 0.13 | 0.15 | 1.44 | 1.42 | 1.47 |
| A9 | 9632.49 | 0.02 | 0.15 | 0.13 | 0.15 | 1.70 | 1.67 | 1.73 |
| A10 | 9630.70 | 0.00 | 0.16 | 0.16 | 0.16 | 1.81 | 1.80 | 1.86 |
| A11 | 9629.99 | 0.01 | 0.16 | 0.16 | 0.18 | 1.85 | 1.83 | 1.89 |
| A12 | 9628.88 | 0.01 | 0.39 | 0.40 | 0.40 | 2.02 | 2.03 | 2.09 |
| A13 | 9627.27 | -0.01 | 0.17 | 0.16 | 0.17 | 1.72 | 1.72 | 1.78 |
| A14 | 9624.34 | 0.00 | 0.13 | 0.16 | 0.17 | 1.51 | 1.52 | 1.58 |
| A15 | 9621.75 | 0.01 | 0.12 | 0.13 | 0.15 | 1.22 | 1.23 | 1.29 |
| A16 | 9617.33 | -0.00 | 0.10 | 0.11 | 0.10 | 0.88 | 0.90 | 0.96 |
| A17 | 9533.08 | -0.02 | 0.01 | . . . . | 0.12 | . . . . | . . . . | . . . . |
| A18 | 9459.85 | -0.00 | -0.01 | . . . . | 0.08 | . . . . | . . . . | . . . . |
| A19 | 9400.86 | -0.01 | 0.00 | . . . . | 0.06 | . . . . | . . . . | . . . . |
| A20 | 9366.92 | -0.01 | 0.00 | . . . . | 0.02 | . . . . | . . . . | . . . . |
| A21 | 9331.97 | -0.01 | 0.02 | . . . . | 0.01 | . . . . | . . . . | . . . . |
| A22 | 9308.38 | 0.01 | 0.02 | . . . . | 0.01 | . . . . | . . . . | . . . . |

LISTING OF ELEVATION

| STATION NAME | WILBERG BASE DATE 09/17/1980 USBMO: L | SUBSIDENCE PROJECT DIFFERENCES BY DATES : 07/07/1981 USBMO: L | 09/23/1981 USBMO: L | 10/27/1981 USBMO: L | 07/12/1982 USBMO: L | 07/06/1983 USBMO: L | 08/24/1983 USBMO: L | 09/22/1983 USBMO: L |
|---|---|---|---|---|---|---|---|---|
| A23 | 9294.86 | 0.01 | 0.04 | . . . . | -0.00 | . . . . | . . . . | . . . . |
| A24 | 9280.90 | -0.01 | 0.04 | . . . . | -0.00 | . . . . | . . . . | . . . . |
| A25 | 9242.48 | 0.01 | 0.02 | . . . . | -0.05 | . . . . | . . . . | . . . . |
| A26 | 9191.45 | -0.03 | 0.03 | . . . . | -0.07 | . . . . | . . . . | . . . . |
| A27 | 9138.56 | -0.01 | 0.02 | . . . . | -0.07 | . . . . | . . . . | . . . . |
| A28 | 9083.71 | 0.01 | 0.04 | . . . . | -0.10 | . . . . | . . . . | . . . . |
| M1 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| M2 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| M3 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| M4 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| M5 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| M6 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| M7 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| M8 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| M9 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| M10 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| M11 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| M12 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| M13 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| M14 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| M15 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| M16 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| M17 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| M18 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| M19 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| M20 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| M21 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| M22 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| M23 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| M24 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| M25 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| M26 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| M27 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| M28 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| M29 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| M30 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| M31 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| M32 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |
| M33 | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . | . . . . |

2nd West W
and 11th R

WILBERG SUBSIDENCE PROJECT LISTING OF ELEVATION

BASE DATE DIFFERENCES BY DATES :

| STATION NAME | 07/15/1982 USBM : L | 08/08/1983 J + T: L | 08/22/1983 USBM : L | 09/20/1983 USBM : L | 09/12/1983 J + T: L |
|---|---|---|---|---|---|
| A23 | . . . . | . . . . | . . . . | . . . . | . . . . |
| A24 | . . . . | . . . . | . . . . | . . . . | . . . . |
| A25 | . . . . | . . . . | . . . . | . . . . | . . . . |
| A26 | . . . . | . . . . | . . . . | . . . . | . . . . |
| A27 | . . . . | . . . . | . . . . | . . . . | . . . . |
| A28 | . . . . | . . . . | . . . . | . . . . | . . . . |
| M1 | 8970.57 | 0.08 | 0.09 | . . . . | 0.12 |
| M2 | 8963.07 | 0.10 | 0.11 | . . . . | 0.14 |
| M3 | 8956.49 | 0.12 | 0.13 | . . . . | 0.15 |
| M4 | 8949.65 | 0.12 | 0.13 | . . . . | 0.16 |
| M5 | 8943.69 | 0.16 | 0.18 | . . . . | 0.20 |
| M6 | 8939.49 | -0.08 | 0.16 | . . . . | 0.19 |
| M7 | 8936.49 | 0.18 | 0.19 | . . . . | 0.23 |
| M8 | 8939.38 | 0.17 | 0.18 | . . . . | 0.20 |
| M9 | 8945.42 | 0.12 | 0.15 | . . . . | 0.20 |
| M10 | 8953.63 | 0.21 | 0.22 | . . . . | 0.25 |
| M11 | 8962.77 | 0.24 | 0.25 | . . . . | 0.27 |
| M12 | 8970.55 | 0.29 | 0.31 | . . . . | 0.33 |
| M13 | 8977.47 | 0.39 | 0.41 | . . . . | 0.44 |
| M14 | 8985.02 | 0.55 | 0.58 | . . . . | 0.62 |
| M15 | 8994.98 | 0.97 | 1.05 | . . . . | 1.13 |
| M16 | 9006.30 | 1.26 | 1.38 | . . . . | 1.49 |
| M17 | 9024.23 | 1.36 | 1.50 | . . . . | 1.64 |
| M18 | 9053.06 | 1.48 | 1.67 | . . . . | 1.83 |
| M19 | 9072.41 | 1.47 | 1.70 | . . . . | 1.90 |
| M20 | 9092.87 | 1.42 | 1.69 | . . . . | 1.96 |
| M21 | 9120.58 | 1.34 | 1.63 | . . . . | 1.96 |
| M22 | 9137.29 | 1.24 | 1.56 | . . . . | 1.92 |
| M23 | 9149.41 | 1.15 | 1.48 | . . . . | 1.86 |
| M24 | 9157.68 | 1.06 | 1.38 | . . . . | 1.78 |
| M25 | 9165.07 | 0.98 | 1.30 | . . . . | 1.70 |
| M26 | 9174.50 | 0.87 | 1.18 | . . . . | 1.58 |
| M27 | 9185.51 | 0.78 | 1.07 | . . . . | 1.46 |
| M28 | 9192.02 | 0.71 | 0.97 | . . . . | 1.34 |
| M29 | 9198.46 | 0.63 | 0.88 | . . . . | 1.21 |
| M30 | 9203.97 | 0.54 | 0.76 | . . . . | 1.06 |
| M31 | 9208.54 | 0.66 | 0.69 | . . . . | 0.92 |
| M32 | 9213.36 | 0.59 | 0.60 | . . . . | 0.77 |
| M33 | 9217.36 | 0.50 | 0.52 | . . . . | 0.64 |
| M34 | 9221.91 | 0.41 | 0.41 | . . . . | 0.48 |

WILBERG SUBSIDENCE PROJECT LISTING OF ELEVATION

| STATION NAME | BASE DATE 07/15/1982 USBM : L | DIFFERENCES BY DATES : 08/08/1983 J + T: L | 08/22/1983 USBM : L | 09/20/1983 USBM : L | 09/12/1983 J + T: L |
|---|---|---|---|---|---|
| M35 | 9230.36 | 0.40 | 0.38 | . . . . | 0.40 |
| M36 | 9243.60 | 0.37 | 0.32 | . . . . | 0.30 |
| M37 | 9255.35 | 0.35 | 0.29 | . . . . | 0.24 |
| M38 | 9263.60 | 0.29 | 0.21 | . . . . | 0.15 |
| M39 | 9264.29 | 0.27 | 0.18 | . . . . | 0.09 |
| M40 | 9243.46 | 0.24 | 0.16 | . . . . | 0.05 |
| M41 | 9216.93 | 0.20 | 0.11 | . . . . | -0.01 |
| M42 | 9194.21 | 0.19 | 0.10 | . . . . | -0.01 |
| M43 | 9183.30 | 0.14 | 0.05 | . . . . | -0.07 |
| M44 | 9172.13 | 0.09 | 0.01 | . . . . | -0.12 |
| M45 | 9158.34 | 0.10 | 0.01 | . . . . | -0.13 |
| M46 | 9141.58 | 0.09 | -0.00 | . . . . | -0.14 |
| M47 | 9130.43 | 0.04 | -0.04 | . . . . | -0.18 |
| M48 | 9122.01 | 0.02 | -0.05 | . . . . | -0.18 |
| M49 | 9115.27 | -0.05 | -0.13 | . . . . | -0.26 |
| M50 | 9112.33 | 0.01 | -0.06 | . . . . | -0.19 |
| M51 | 9110.83 | -0.01 | -0.07 | . . . . | -0.20 |
| M52 | 9109.36 | -0.01 | -0.06 | . . . . | -0.19 |
| M53 | 9109.19 | -0.01 | -0.09 | . . . . | -0.21 |
| M54 | 9112.33 | -0.01 | -0.09 | . . . . | -0.22 |
| M55 | 9114.53 | -0.02 | -0.10 | . . . . | -0.24 |
| M56 | 9117.61 | -0.03 | -0.11 | . . . . | -0.25 |
| M57 | 9124.05 | -0.02 | -0.11 | . . . . | -0.25 |
| M58 | 9127.00 | -0.03 | -0.11 | . . . . | -0.27 |
| M59 | 9129.60 | -0.02 | -0.11 | . . . . | -0.26 |
| M60 | 9131.83 | -0.03 | -0.12 | . . . . | -0.28 |
| M61 | 9132.92 | -0.03 | -0.12 | . . . . | -0.27 |
| R1 | 9200.61 | 0.54 | 0.74 | . . . . | 1.01 |
| R2 | 9197.72 | 0.50 | 0.67 | . . . . | 0.88 |
| R3 | 9195.69 | 0.46 | 0.61 | . . . . | 0.78 |
| R4 | 9191.73 | 0.43 | 0.56 | . . . . | 0.69 |
| R5 | 9187.40 | 0.38 | 0.49 | . . . . | 0.59 |
| R6 | 9183.60 | 0.36 | 0.46 | . . . . | 0.52 |
| R7 | 9179.94 | 0.33 | 0.42 | . . . . | 0.45 |
| R8 | 9176.07 | 0.30 | -0.63 | . . . . | 0.37 |
| R9 | 9172.11 | 0.28 | -0.66 | . . . . | 0.32 |
| R10 | . . . . | . . . . | . . . . | . . . . | . . . . |
| R11 | . . . . | . . . . | . . . . | . . . . | . . . . |
| R12 | . . . . | . . . . | . . . . | . . . . | . . . . |
| R13 | . . . . | . . . . | . . . . | . . . . | . . . . |

WILBERG SUBSIDENCE PROJECT LISTING OF ELEVATION

BASE DATE DIFFERENCES BY DATES :

| STATION NAME | 07/15/1982 USBM : L | 08/08/1983 J + T: L | 08/22/1983 USBM : L | 09/20/1983 USBM : L | 09/12/1983 J + T: L |
|---|---|---|---|---|---|
| R14 | . . . . | . . . . | . . . . | . . . . | . . . . |
| R15 | . . . . | . . . . | . . . . | . . . . | . . . . |
| R16 | . . . . | . . . . | . . . . | . . . . | . . . . |
| R17 | . . . . | . . . . | . . . . | . . . . | . . . . |
| R18 | . . . . | . . . . | . . . . | . . . . | . . . . |
| R19 | . . . . | . . . . | . . . . | . . . . | . . . . |
| R20 | . . . . | . . . . | . . . . | . . . . | . . . . |
| R21 | . . . . | . . . . | . . . . | . . . . | . . . . |
| R22 | . . . . | . . . . | . . . . | . . . . | . . . . |
| R23 | . . . . | . . . . | . . . . | . . . . | . . . . |
| R24 | . . . . | . . . . | . . . . | . . . . | . . . . |
| R25 | . . . . | . . . . | . . . . | . . . . | . . . . |
| R26 | . . . . | . . . . | . . . . | . . . . | . . . . |
| R27 | . . . . | . . . . | . . . . | . . . . | . . . . |
| R28 | . . . . | . . . . | . . . . | . . . . | . . . . |
| R29 | . . . . | . . . . | . . . . | . . . . | . . . . |
| R30 | . . . . | . . . . | . . . . | . . . . | . . . . |
| T1 | 9211.33 | 0.69 | 0.70 | . . . . | 0.83 |
| T2 | 9215.45 | 0.60 | 0.61 | . . . . | 0.71 |
| T3 | 9221.05 | 0.49 | 0.49 | . . . . | 0.58 |
| T4 | 9218.13 | 0.40 | 0.38 | . . . . | 0.43 |
| T5 | 9213.20 | 0.38 | 0.35 | . . . . | 0.38 |
| T6 | 9208.05 | 0.35 | 0.31 | . . . . | 0.31 |
| T7 | 9198.90 | 0.28 | 0.25 | . . . . | 0.24 |
| T8 | 9190.38 | 0.26 | 0.23 | . . . . | 0.20 |
| T9 | 9180.19 | 0.19 | 0.15 | 8128.83 | 0.12 |
| T10 | 9175.18 | 0.14 | 0.10 | 8128.76 | 0.06 |
| T11 | . . . . | . . . . | 9166.15 | 8128.62 | . . . . |
| T12 | . . . . | . . . . | 9156.94 | 8128.59 | . . . . |
| T13 | . . . . | . . . . | 9149.80 | 8128.57 | . . . . |
| T14 | . . . . | . . . . | 9143.14 | 8128.57 | . . . . |
| T15 | . . . . | . . . . | 9142.66 | 8128.53 | . . . . |
| T16 | . . . . | . . . . | 9138.96 | 8128.53 | . . . . |
| T17 | . . . . | . . . . | 9138.63 | 8128.52 | . . . . |
| T18 | . . . . | . . . . | 9135.56 | 8128.52 | . . . . |
| T19 | . . . . | . . . . | 9130.67 | 8128.52 | . . . . |
| T20 | . . . . | . . . . | 9124.57 | 8128.54 | . . . . |
| T21 | . . . . | . . . . | . . . . | . . . . | . . . . |
| T22 | . . . . | . . . . | . . . . | . . . . | . . . . |
| T23 | . . . . | . . . . | . . . . | . . . . | . . . . |

WILBERG SUBSIDENCE PROJECT LISTING OF ELEVATION

| STATION NAME | BASE DATE 07/15/1982 USBM : L | DIFFERENCES BY DATES : 08/08/1983 J + T: L | 08/22/1983 USBM : L | 09/20/1983 USBM : L | 09/12/1983 J + T: L |
|---|---|---|---|---|---|
| T24 | . . . . | . . . . | . . . . | . . . . | . . . . |
| T25 | . . . . | . . . . | . . . . | . . . . | . . . . |
| T26 | . . . . | . . . . | . . . . | . . . . | . . . . |
| T27 | . . . . | . . . . | . . . . | . . . . | . . . . |
| T28 | . . . . | . . . . | . . . . | . . . . | . . . . |
| T29 | . . . . | . . . . | . . . . | . . . . | . . . . |
| T30 | . . . . | . . . . | . . . . | . . . . | . . . . |
| S1 | 9127.75 | 1.21 | 1.49 | . . . . | 1.78 |
| S2 | 9154.75 | 1.03 | 1.33 | . . . . | 1.68 |
| S3 | 9171.52 | 0.86 | 1.16 | . . . . | 1.52 |
| S4 | 9187.49 | 0.68 | 0.94 | . . . . | 1.28 |
| S5 | 9199.46 | 0.55 | 0.78 | . . . . | 1.06 |
| S6 | 9194.83 | 0.56 | 0.76 | . . . . | 1.03 |
| S7 | 9189.39 | 0.43 | 0.59 | . . . . | 0.76 |
| S8 | 9182.62 | 0.41 | 0.53 | . . . . | 0.61 |
| S9 | 9177.23 | 0.35 | 0.43 | . . . . | 0.45 |
| S10 | . . . . | . . . . | 9200.84 | 8128.56 | . . . . |
| S11 | . . . . | . . . . | 9192.23 | 8128.54 | . . . . |
| S12 | . . . . | . . . . | 9180.55 | 8128.54 | . . . . |
| S13 | . . . . | . . . . | 9174.49 | 8128.52 | . . . . |
| S14 | . . . . | . . . . | 9170.52 | 8128.53 | . . . . |
| S15 | . . . . | . . . . | 9165.26 | 8128.53 | . . . . |
| S16 | . . . . | . . . . | 9160.76 | 8128.52 | . . . . |
| S17 | . . . . | . . . . | 9154.55 | 8128.52 | . . . . |
| S18 | . . . . | . . . . | . . . . | . . . . | . . . . |
| S19 | . . . . | . . . . | . . . . | . . . . | . . . . |
| S20 | . . . . | . . . . | . . . . | . . . . | . . . . |
| S21 | . . . . | . . . . | . . . . | . . . . | . . . . |
| S22 | . . . . | . . . . | . . . . | . . . . | . . . . |
| S23 | . . . . | . . . . | . . . . | . . . . | . . . . |
| S24 | . . . . | . . . . | . . . . | . . . . | . . . . |
| S25 | . . . . | . . . . | . . . . | . . . . | . . . . |
| S26 | . . . . | . . . . | . . . . | . . . . | . . . . |
| S27 | . . . . | . . . . | . . . . | . . . . | . . . . |
| S28 | . . . . | . . . . | . . . . | . . . . | . . . . |
| S29 | . . . . | . . . . | . . . . | . . . . | . . . . |
| S30 | . . . . | . . . . | . . . . | . . . . | . . . . |
| N35 | . . . . | . . . . | . . . . | . . . . | . . . . |
| N36 | . . . . | . . . . | 9185.87 | 8128.65 | . . . . |
| N37 | . . . . | . . . . | 9189.65 | 8128.63 | . . . . |
| | . . . . | . . . . | 9198.38 | 8128.64 | . . . . |

WILBERG SUBSIDENCE PROJECT LISTING OF ELEVATION

| STATION NAME | BASE DATE 07/15/1982 USBM : L | DIFFERENCES BY DATES : 08/08/1983 J + T: L | 08/22/1983 USBM : L | 09/20/1983 USBM : L | 09/12/1983 J + T: L |
|---|---|---|---|---|---|
| N38 | . . . . | . . . . | 9201.25 | 8128.61 | . . . . |
| N39 | . . . . | . . . . | 9202.77 | 8128.60 | . . . . |
| N40 | . . . . | . . . . | 9204.16 | 8128.59 | . . . . |
| N41 | . . . . | . . . . | 9201.97 | 8128.57 | . . . . |
| N42 | . . . . | . . . . | 9197.70 | 8128.57 | . . . . |
| N43 | . . . . | . . . . | 9193.89 | 8128.56 | . . . . |
| N44 | . . . . | . . . . | 9190.81 | 8128.55 | . . . . |
| N45 | . . . . | . . . . | 9185.34 | 8128.53 | . . . . |
| N46 | . . . . | . . . . | 9180.88 | 8128.54 | . . . . |
| N47 | . . . . | . . . . | 9177.66 | 8128.53 | . . . . |
| N48 | . . . . | . . . . | 9175.42 | 8128.53 | . . . . |
| N49 | . . . . | . . . . | 9173.78 | 8128.52 | . . . . |
| N50 | . . . . | . . . . | 9171.73 | 8128.53 | . . . . |
| N51 | . . . . | . . . . | 9169.25 | 8128.52 | . . . . |
| N52 | . . . . | . . . . | 9166.75 | 8128.52 | . . . . |
| N53 | . . . . | . . . . | 9164.02 | 8128.52 | . . . . |
| N54 | . . . . | . . . . | 9159.86 | 8128.53 | . . . . |
| N55 | . . . . | . . . . | 9155.59 | 8128.51 | . . . . |
| N56 | . . . . | . . . . | 9151.04 | 8128.52 | . . . . |
| N57 | . . . . | . . . . | 9148.43 | 8128.53 | . . . . |
| N58 | . . . . | . . . . | 9146.13 | 8128.51 | . . . . |
| N59 | . . . . | . . . . | 9144.68 | 8128.51 | . . . . |
| N60 | . . . . | . . . . | 9142.92 | 8128.52 | . . . . |
| N61 | . . . . | . . . . | 9141.08 | 8128.52 | . . . . |
| N62 | . . . . | . . . . | 9140.77 | 8128.51 | . . . . |
| N63 | . . . . | . . . . | 9137.49 | 8128.52 | . . . . |
| N64 | . . . . | . . . . | 9134.30 | 8128.52 | . . . . |
| N65 | . . . . | . . . . | 9128.51 | 8128.51 | . . . . |
| N66 | . . . . | . . . . | . . . . | . . . . | . . . . |
| N67 | . . . . | . . . . | . . . . | . . . . | . . . . |
| N68 | . . . . | . . . . | . . . . | . . . . | . . . . |
| N69 | . . . . | . . . . | . . . . | . . . . | . . . . |
| N70 | . . . . | . . . . | . . . . | . . . . | . . . . |
| Z1 | . . . . | . . . . | 9264.62 | . . . . | . . . . |
| Z2 | . . . . | . . . . | 9265.02 | . . . . | . . . . |
| Z3 | . . . . | . . . . | 9263.98 | . . . . | . . . . |
| Z4 | . . . . | . . . . | 9264.59 | . . . . | . . . . |
| Z5 | . . . . | . . . . | 9264.50 | . . . . | . . . . |
| Z6 | . . . . | . . . . | 9264.54 | . . . . | . . . . |
| Z7 | . . . . | . . . . | 9255.29 | . . . . | . . . . |

WILBERG SUBSIDENCE PROJECT LISTING OF ELEVATION

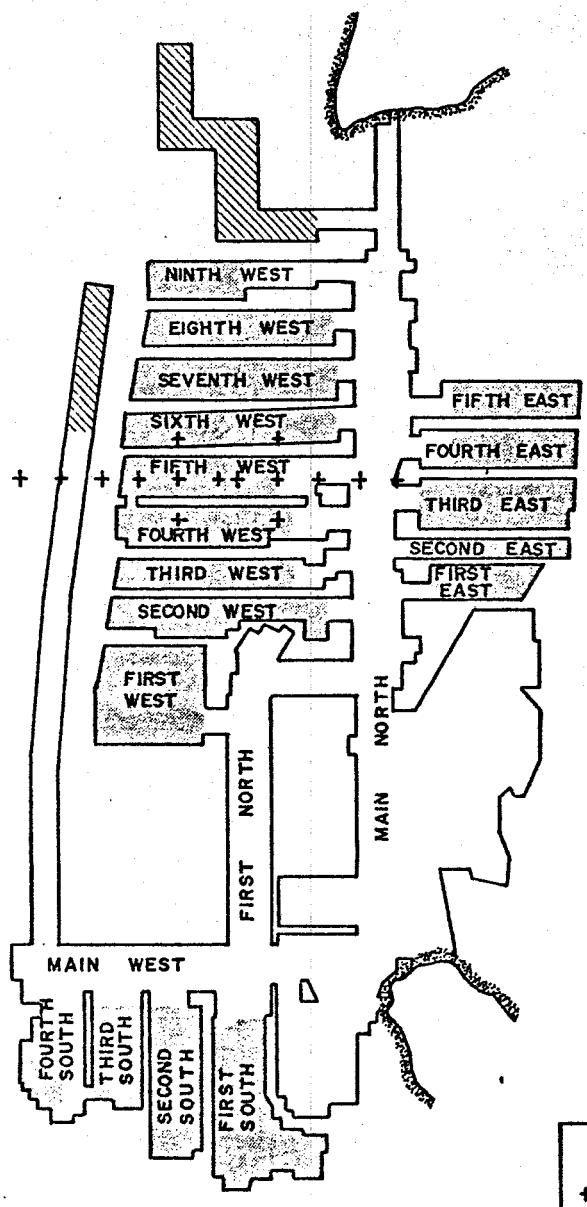
| STATION NAME | BASE DATE 07/15/1982 USBM : L | DIFFERENCES BY DATES : 10/21/1982 USBM : L | 11/03/1982 J + T: L | 06/21/1983 USBM : L | 07/06/1983 USBM : L | 07/07/1983 USBM : L | 07/26/1983 USBM : L | 07/26/1983 USBM : L |
|---|---|---|---|---|---|---|---|---|
| Z8 | . . . . | . . . . | . . . . | . . . . | . . . . | 9247.76 | 0.05 | 0.05 |
| Z9 | . . . . | . . . . | . . . . | . . . . | . . . . | 9252.73 | 0.05 | 0.05 |
| Z10 | . . . . | . . . . | . . . . | . . . . | . . . . | 9253.11 | 0.04 | 0.04 |
| Z11 | . . . . | . . . . | . . . . | . . . . | . . . . | 9251.29 | 0.04 | 0.04 |
| Z12 | . . . . | . . . . | . . . . | . . . . | . . . . | 9252.85 | 0.04 | 0.04 |

```
SELECT LISTING OPTION DESIRED,
     ,
  1    EASTINGS AND NORTHINGS,
  2    ELEVATIONS ONLY,
  3    ALL COORDINATES,
  4    END  ,4

END OF SUB-LISTING,
 MULTIPLE FORMAT LISTING,
    ,
 OPTION  DESCRIPTION,
 NUMBER  ,
 ======  ===========,
   1     SINGLE SURVEY LISTING,
   2     MULTIPLE SURVEY LISTING,
   3     SUB-LIST,
   4     COMPARISON OF TWO SURVEYS,
   5     UPDATE COORDINATE VALUES ,
   6     ADD OR UPDATE SURVEY TITLES,
   7     ADD STATION NAMES TO FILE,
   8     CHANGE DATA FILES,
   9     END SESSION,
ENTER NUMBER : ,3

DO YOU WISH A LISTING OF,
SURVEY DATES  ,Y
```

| NUMBER | RECORD, DESCRIPTION, |
|---|---|
| 1 | : 09/17/1980 , USBMO: L |
| 2 | : 07/07/1981 , USBMO: L |
| 3 | : 09/23/1981 , USBMO: L |
| 4 | : 10/27/1981 , USBMO: L |
| 5 | : 07/12/1982 , USBMO: L |
| 6 | : 07/15/1982 , USBM : L |
| 7 | : 10/21/1982 , USBM : L |
| 8 | : 11/03/1982 , J + T: L |
| 9 | : 07/12/1982 , USBM : T |
| 10 | : 10/19/1982 , USBM : T |
| 11 | : 11/19/1982 , USBM : T |
| 12 | : 06/21/1983 , USBM : L |
| 13 | : 07/06/1983 , USBMO: L |
| 14 | : 07/06/1983 , USBM : L |
| 15 | : 07/07/1983 , USBM : L |
| 16 | : 07/26/1983 , USBM : L |
| 17 | : 07/26/1983 , USBM : L |
| 18 | : 07/06/1983 , USBM : T |
| 19 | : 07/24/1983 , USBM : T |
| 20 | : 08/08/1983 , J + T: L |

# APPENDIX

# DES-BEE-DOVE MINE

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N

**LEGEND**

+++ MONITORING STATIONS

MINE WORKINGS

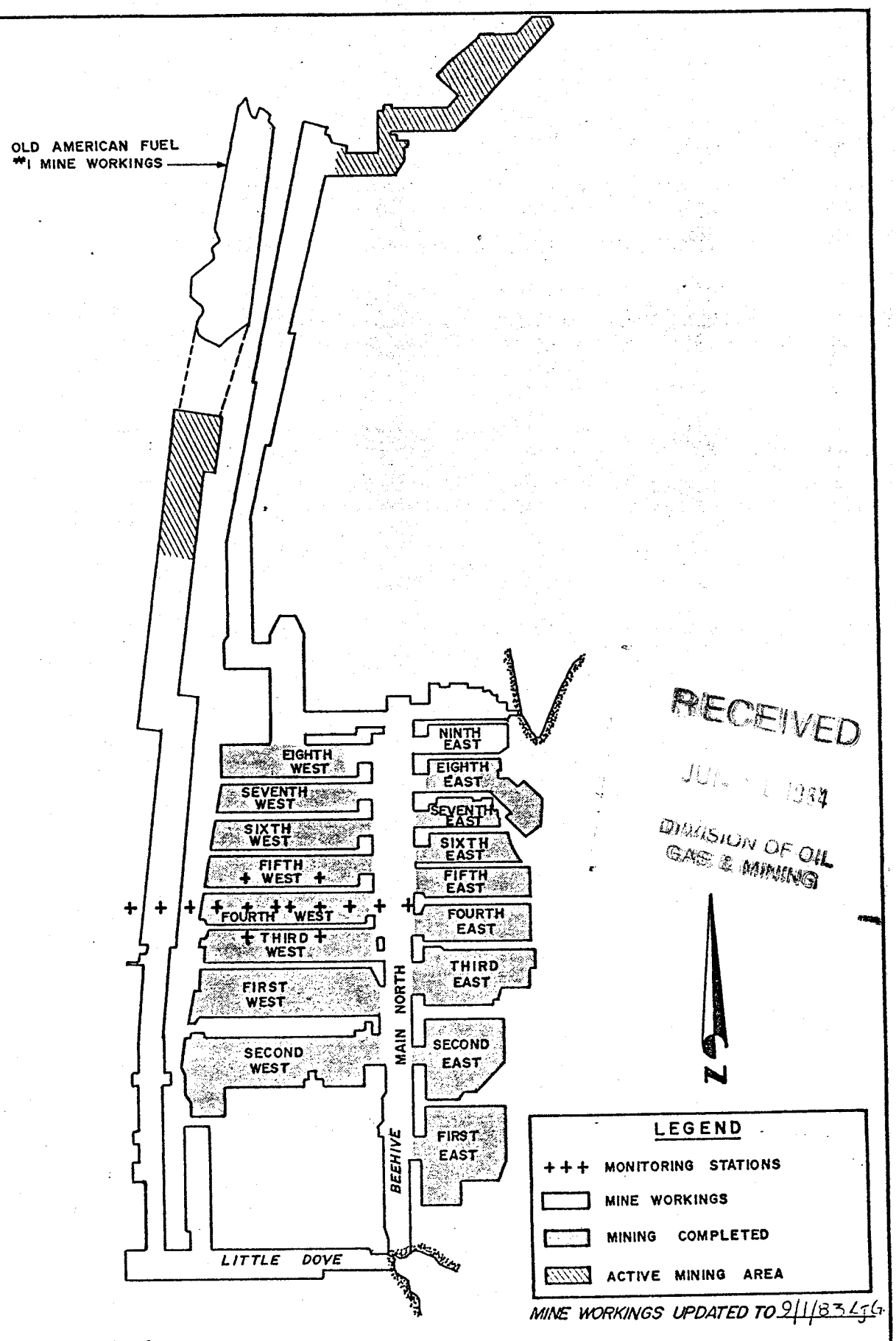
MINING COMPLETED

ACTIVE MINING AREA

MINE WORKINGS UPDATED TO 9/1/83 LJG

# DESERET COAL MINE

SCALE: 1" = 2000'

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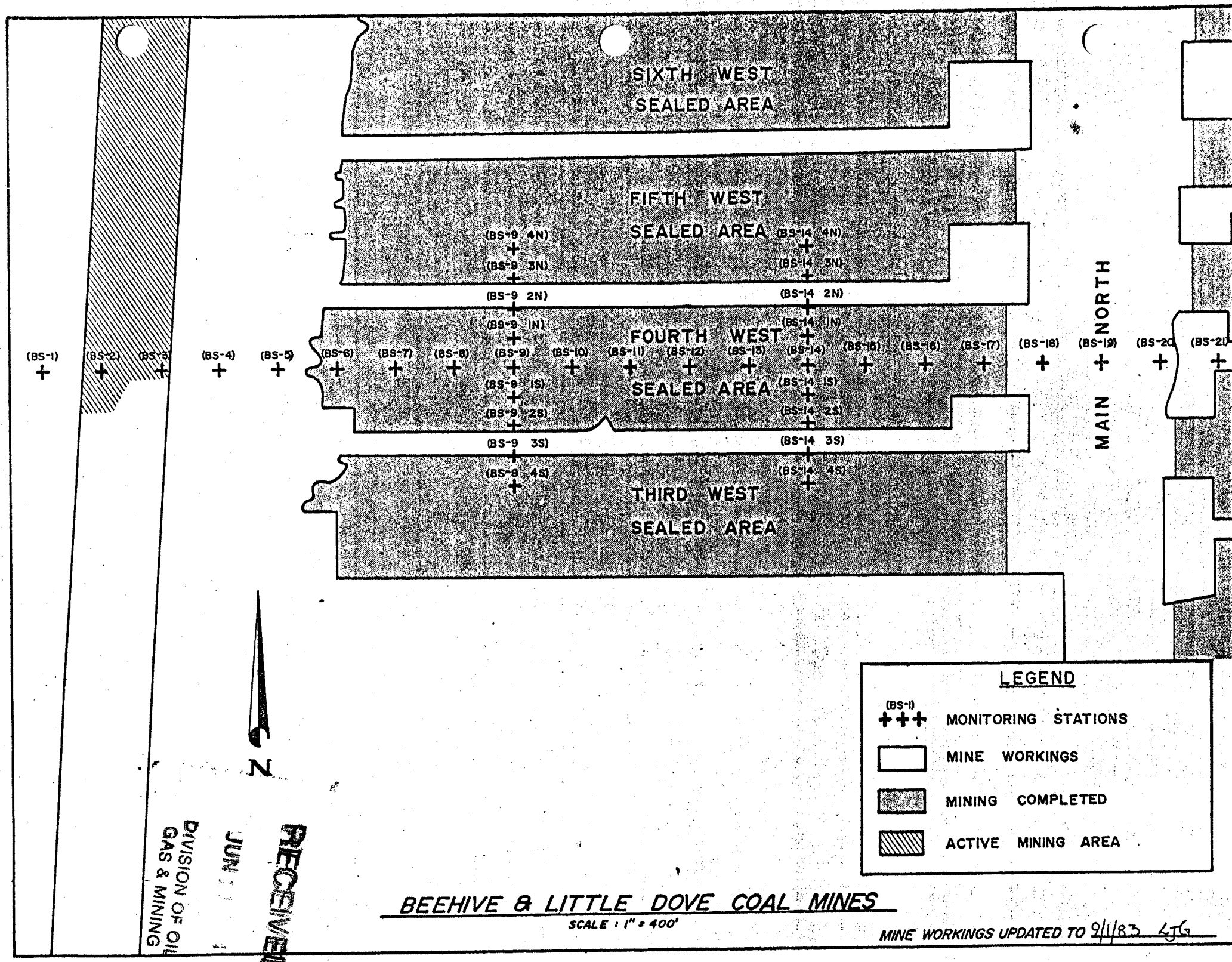
GAS & MINING

MINE WORKINGS UPDATED TO 9/1/83 JG

# BEEHIVE & LITTLE DOVE COAL MINES

SCALE: 1" = 2000




BEEHIVE & LITTLE DOVE COAL MINES

SCALE : 1" = 400'

MINE WORKINGS UPDATED TO 9/1/83 JG

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# REPORT OF SUBSIDENCE STUDY

# LOCATED ON EAST MOUNTAIN ABOVE THE

# DES-BEE-DOVE
# COAL MINES

from October 1980
to October 1983

By

Intermountain Aerial Surveys
A Div. of Engineering Enterprises, Inc.

Salt Lake City, Utah

# SUBSIDENCE REPORT
# DES-BEE-DOVE COAL MINES

## I. Scope of Work

A. Establish Monuments on East Mountain above the "Des-Bee-Dove" Mine System as directed. Included sketch shows locations as related to mine workings. Computation sheets identify station location by State Plane Coordinate System (Utah Central Zone Modified C.A.F. = 1.0004350)

B. Monitor elevation changes on Monuments at monthly intervals as long as weather allows practical access.

## II. Procedures

A. Elevations were established in 1980 by use of trigonometric leveling. Vertical angles were measured with a Wild T-2 theodolite. Accepted survey practices were utilized to insure reasonable accuracies.

B. 1983 Elevations were monitored by differential leveling. Third order technique and accuracies were observed.

C. Horizontal point determination was accomplished by employing third order techniques. Wild T-2 theodolites and AGA Model 78 Distance Measuring Equipment were used.

## III. Control Datum

Control point "P-3" is used as the reference monument for this study. It is located on East Mountain, east of the monitoring line (See computation sheets). Its stability has been tested by recalculating several control networks which have passed through the station throughout the last several years. To insure against the possibility of future subsidence it will be tied to control point "M-2" at systematic periods throughout the monitoring year by trigonometric leveling. M-2 is located near the portal of the Deseret Mine and is outside of the area of any suspected subsidence.

SUBSIDENCE STUDY
DES-BEE-DOVE COAL MINES

| Station | VABM OCT 80 | NOV 82 | AUG 83 | SEPT 83 | OCT 83 | Diff. 80 OCT 83 |
|---|---|---|---|---|---|---|
| P-3 | 9239.89 | 9239.89 | 9239.89 | 9239.89 | 9239.89 | Fixed |
| BS-21 | 9223.5 | 9223.56 | 9223.59 | 9223.59 | 9223.60 | +0.1 |
| BS-20 | 9210.2 | 9210.28 | 9210.30 | 9210.30 | 9210.32 | +0.1 |
| BS-19 | 9201.9 | 9201.96 | 9202.00 | 9202.00 | 9202.02 | +0.1 |
| BS-18 | 9188.7 | 9188.68 | 9188.70 | 9188.70 | 9188.71 | 0 |
| BS-17 | 9167.2 | 9167.08 | 9167.12 | 9167.12 | 9167.13 | -0.1 |
| BS-16 | 9147.1 | 9146.66 | 9146.65 | 9146.65 | 9146.67 | -0.4 |
| BS-15 | 9125.4 | 9124.66 | 9124.65 | 9124.65 | 9124.66 | -0.7 |
| BS-14 | 9106.7 | 9105.81 | 9105.79 | 9105.79 | 9105.78 | -0.9 |
| BS-13 | 9085.8 | 9084.70 | 9084.67 | 9084.67 | 9084.67 | -1.1 |
| BS-12 | 9062.3 | 9061.11 | 9061.07 | 9061.07 | 9061.08 | -1.2 |
| BS-11 | 9038.3 | 9037.05 | 9036.99 | 9036.99 | 9037.00 | -1.3 |
| BS-10 | 9016.5 | 9015.27 | 9015.25 | 9015.25 | 9015.25 | -1.2 |
| BS-9 | 8993.3 | 8992.03 | 8991.98 | 8991.98 | 8991.97 | -1.3 |
| BS-8 | 8962.8 | 8961.64 | 8961.54 | 8961.54 | 8961.57 | -1.2 |

SUBSIDENCE STUDY

| Station | VABM OCT 80 | NOV 82 | AUG 83 | SEPT 83 | OCT 83 | Diff. 80 OCT 83 |
|---|---|---|---|---|---|---|
| BS-7 | 8931.0 | 8929.98 | 8929.88 | 8929.88 | 8929.90 | -1.1 |
| BS-6 | 8900.6 | 8899.71 | 8899.64 | 8899.63 | 8899.64 | -1.0 |
| BS-5 | 8867.4 | 8867.39 | 8867.30 | 8867.29 | 8867.32 | -0.1 |
| BS-4 | 8846.5 | 8846.51 | 8846.42 | 8846.41 | 8846.46 | -0.1 |
| BS-3 | 8806.6 | 8806.71 | 8806.61 | 8806.60 | 8806.65 | 0 |
| BS-2 | 8795.2 | 8795.29 | 8795.21 | 8795.20 | 8795.25 | 0 |
| BS-1 | 8785.6 | 8785.54 | 8785.52 | 8785.51 | 8785.57 | 0 |

SUBSIDENCE STUDY
DES-BEE-DOVE COAL MINES

| Station | VABM OCT 80 | NOV 82 | AUG 83 | SEPT 83 | OCT 83 | Diff. 80 OCT 83 |
|---|---|---|---|---|---|---|
| BS-9 | | | | | | |
| #1 No. | 8983.8 | 8982.36 | 8982.31 | 8982.31 | 8982.31 | -1.5 |
| #2 No. | 8973.9 | 8972.32 | 8972.27 | 8972.27 | 8972.24 | -1.7 |
| #3 No. | 8960.0 | 8958.32 | 8958.27 | 8958.27 | 8958.22 | -1.8 |
| #4 No. | 8946.8 | 8945.02 | 8944.97 | 8944.97 | 8944.87 | -1.9 |
| BS-9 | | | | | | |
| #1 So. | 8995.7 | 8994.61 | 8994.56 | 8994.56 | 8994.57 | -1.1 |
| #2 So. | 8992.6 | 8991.61 | 8991.56 | 8991.56 | 8991.60 | -1.0 |
| #3 So. | 8980.6 | 8979.75 | 8979.70 | 8979.70 | 8979.72 | -0.9 |
| #4 So. | 8958.3 | 8957.50 | 8957.45 | 8957.46 | 8957.50 | -0.8 |

SUBSIDENCE STUDY
DES-BEE-DOVE COAL MINES

| Station | VABM OCT 80 | NOV 82 | AUG 83 | SEPT 83 | OCT 83 | Diff. 80 OCT 83 |
|---|---|---|---|---|---|---|
| BS-14 | | | | | | |
| #1 No. | 9103.0 | 9102.05 | 9102.03 | 9102.03 | 9102.02 | -1.0 |
| #2 No. | 9098.8 | 9097.76 | 9097.73 | 9097.73 | 9097.72 | -1.1 |
| #3 No. | 9087.4 | 9086.22 | 9086.19 | 9086.19 | 9086.18 | -1.2 |
| #4 No. | 9076.8 | 9075.61 | 9075.58 | 9075.58 | 9075.56 | -1.2 |
| BS-14 | | | | | | |
| #1 So. | 9105.2 | 9104.35 | 9104.36 | 9104.36 | 9104.36 | -0.8 |
| #2 So. | 9095.0 | 9094.21 | 9094.21 | 9094.21 | 9094.21 | -0.8 |
| #3 So. | 9082.8 | 9082.05 | 9082.09 | 9082.09 | 9082.09 | -0.7 |
| #4 So. | 9079.4 | 9078.77 | 9078.81 | 9078.81 | 9078.81 | -0.6 |