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Descriptions of Stratigraphic sections,
Upper Cretaceous Blackhawk Formation and
Star Point Sandstone in the Emery West and
Flagstaff Peak Quadrangles, Utah

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This report is preliminary and has not been
edited or reviewed for conformity with U.S.
Geological Survey standards and nomenclature.

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- Figure 2. Location map of stratigraphic sections in the Flagstaff Peak quadrangle, Utah.

DESCRIPTIONS OF STRATIGRAPHIC SECTIONS, UPPER CRETACEOUS BLACKHAWK FORMATION
AND STAR POINT SANDSTONE IN THE EMERY WEST AND FLAGSTAFF PEAK
QUADRANGLES, UTAH

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W. E. Marley III and R. M. Flores

STRATIGRAPHY

One-hundred-and-twenty-five stratigraphic sections of the Upper Cretaceous Blackhawk Formation and Star Point Sandstone were measured and described in the Emery West and Flagstaff Peak quadrangles (figs. 1 and 2) in central Utah. The stratigraphic sections were measured primarily to obtain information on the thickness and lateral extent of the coal beds of the Blackhawk Formation. In addition, the color, grain size, sedimentary structure, fossil content, and nature of the vertical contact of the rock types of these two formations were described. These characteristics were obtained to determine the depositional environments of the coal and associated rocks.

The stratigraphic sections of the Blackhawk Formation were measured from the top of the Star Point Sandstone and include the coal-bearing lower and middle parts of the formation. The stratigraphic sections of the Star Point Sandstone represent the middle and upper parts. The Blackhawk Formation interfingers laterally with and locally unconformably overlies the Star Point Sandstone.

The Blackhawk Formation consists of sandstone, siltstone, shale, coal, and limestone; the sandstone is the most dominant rock type. The sandstone is very fine grained to coarse-grained; it is mineralogically immature, consisting of only 50 to 65 percent quartz. Major sedimentary structures

of the sandstones include festoon-and-planar crossbeds, convolution, parallel lamination, ripple lamination, and flaser bedding. Minor sedimentary structures include vertical and horizontal animal burrows and root marks. The sandstone beds display an erosional base (noted in lithologic description) or a gradational or sharp vertical contact. The sandstone beds grade vertically and laterally into siltstone and shale. The siltstone consists mainly of silt-size grains, in contrast to the shale which consists of clay-size grains. The sedimentary structures of these fine-grained deposits, when not destroyed by root marks and burrows, include parallel lamination, ripple lamination, and flaser bedding. At one locality the shale is intercalated with micritic limestone. The sandstone, siltstone, shale, and limestone are fossiliferous containing pelecypods. These rock types are separated by coal beds, which vary from a few inches to 10 feet thick. The coal beds often grade vertically and laterally into carbonaceous shale.

The Star Point Sandstone consists of sandstone, siltstone, and shale, sandstone being the dominant rock type. The sandstone is very fine grained to medium-grained and mineralogically more mature (65 to 75 percent quartz content) than the sandstones of the Blackhawk Formation. Sedimentary structures of the sandstones are similar to those of the Blackhawk Formation; however, trace fossils (burrows) and sole marks are also common in the rock types of the Star Point Sandstone. Bioturbation is also intense in the siltstone and shale of the Star Point Sandstone.

The characteristics of the rock types of the Blackhawk Formation suggest that they represent delta-plain deposits, which grade (seaward) into the underlying delta-front and prodelta deposits of the Star Point Sandstone.

CONVERSION TABLE

inch (in) = 25.4 millimeter (mm)

foot (ft) = 0.305 meter (m)

SECTION WM-1

Measured in NW1/4NW1/4 Sec. 16, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part, measured from base to top)

1	2	Siltstone and shale, in thin-bedded alternation with some coal stringers.
1	8	Coal.
1		Siltstone, shale, and carbonaceous shale, in thin-bedded alternation.
2		Sandstone, gray, weathering buff, rippled, burrowed.

STAR POINT SANDSTONE (Upper part; measured from base to top)

17		Sandstone, siltstone, and shale, in thin-bedded alternation.
5	6	Sandstone, gray, weathering buff, medium grained, crossbedded, ripple-laminated, burrowed.
20		Partly covered, probably sandstone, siltstone, and shale, in thin-bedded alternation.
82	6	Sandstone, gray, medium-grained, crossbedded, parallel-laminated, burrowed; upper part is bleached-looking and rooted.

SECTION WM-2

Measured in NW1/4NW1/4 Sec. 16, T. 21 S., R. 6 E.

Thickness		Lithology
Feet	Inches	
BLACKHAWK FORMATION (Lower part; measured from base to top)		
	6	Sandstone, gray, medium-grained, interbedded with thin coal stringers and rafted organics.
15		Sandstone, gray, weathering buff, medium grained, crossbedded, ripple-laminated, erosional base.
	6	Sandstone, rooted, with thin coal stringers.
	4	Carbonaceous shale, coaly.
	1	Sandstone, gray, fine-grained, high organic content.
	7	Coal
5		Sandstone, gray, fine- to medium-grained, rippled, rooted.
1		Siltstone and sandstone, in thin-bedded alternation.
10		Carbonaceous shale
3		Sandstone, gray, locally silty, rippled, burrowed.
	4	Sandstone, gray, fine-grained, ripple-laminated, burrowed
30		Sandstone, gray, weathering buff, medium grained, crossbedded, convoluted, rippled, erosional base.
2	8	Shale, gray, silty, carbonaceous upper part.
	9	Carbonaceous shale, coaly.
	5	Sandstone, gray, fine-grained, parallel-laminated.
1	9	Coal, silty.
	9	Shale, dark gray, fossiliferous (pelecypods).
5		Shale, dark gray.
5		Shale, light gray, silty upper part.
2		Siltstone, gray, rooted.
2	8	Partly covered, probably interbedded sandstone, siltstone, and shale.

	5	Sandstone, dark gray, fine-grained, rooted, intercalated with organic lenses.
1	3	Coal, sandy upper 3 inches.
	2	Sandstone, gray, fine-grained, high organic content.
1	2	Coal, some sandstone lenses.
1	5	Shale, dark gray, very fossiliferous (pelecypods).
3		Shale, interbedded with carbonaceous shale.
4	5	Siltstone, gray, flasered-bedded, locally carbonaceous.
	4	Shale, dark gray, with carbonaceous shale stringers.
	7	Siltstone, gray, rippled.
2	7	Sandstone, gray, fine- to medium-grained, ripple-laminated, burrowed.
	1	Organic layer.
	6	Sandstone, gray, fine-grained, rippled.
12	9	Sandstone, gray, medium-grained, ripple-laminated, convoluted, burrowed.
2		Shale, gray.
1	3	Siltstone, gray, sandy upper part, rippled.
1	9	Sandstone, gray, weathering buff, rippled, convoluted, burrowed.
5		Partly covered, probably interbedded sandstone, siltstone, and shale.
	4	Shale, dark gray, interbedded with carbonaceous shale.
6		Sandstone, gray, weathering buff, massive, erosional base.
8		Partly covered, probably interbedded sandstone, siltstone, and shale.
	1	Carbonaceous shale.
5		Sandstone, gray, medium-grained, crossbedded, erosional base.
4		Covered
5		Partly covered, probably interbedded sandstone, siltstone, and shale.
1		Shale, gray.

- 5 Sandstone, gray, fine-grained, rooted.
- 6 Shale, gray.
- 9 Coal
- 6 Shale, dark gray
- 1 Carbonaceous shale, coaly.

SECTION WM-3

Measured in NW1/4NW1/4 Sec. 16, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

12	4	Sandstone, gray, weathering buff, medium-grained, crossbedded.
3	4	Coal, carbonaceous shale, and sandstone, in thin-bedded alternation.
2		Coal.
1	4	Carbonaceous shale.
4		Shale, light gray, silty upper part.
5		Shale, gray, silty upper part, fossiliferous (pelecypods)
3		Sandstone, gray, fine-grained, ripple-laminated, rooted.
3		Sandstone, gray, medium-grained, crossbedded, rooted, erosional base.
	4	Carbonaceous shale, coaly.
	4	Sandstone, gray, fine-grained, rooted.
	7	Carbonaceous shale, coaly.
2	5	Sandstone, gray, medium-grained, ripple-laminated, erosional base.
1		Shale, gray, silty.
1	1	Coal.
3		Shale dark to light gray, silty upper part, very fossiliferous (pelecypods)
3		Sandstone, gray, medium grained, ripple-laminated.
	5	Coal.
25		Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, ripple-laminated, burrowed, erosional base.
3	4	Covered.
1		Carbonaceous shale.
	3	Coal.

4		Sandstone, gray, medium-grained, ripple-laminated, crossbedded, burrowed.
2	6	Covered
	6	Shale, gray.
	4	Carbonaceous shale, coaly.
1		Shale, light gray, silty upper part.
2	3	Sandstone, buff, fine-grained, highly weathered.
	6	Carbonaceous shale
	10	Coal, badly weathered.
1		Carbonaceous shale
2		Carbonaceous shale, coaly, silty.
3	5	Sandstone, gray, medium-grained, crossbedded, convoluted, rippled, burrowed, erosional base.
	5	Shale, light gray.
	7	Sandstone, buff, fine-grained, rooted.
	5	Shale, gray, rooted.
	5	Coal
3		Sandstone, gray, fine-grained, ripple-laminated, convoluted, parallel lamination, burrowed, erosional base.
	9	Shale, gray, silty.
	6	Coal
	3	Shale, gray.
2	9	Sandstone, gray, medium-grained, crossbedded, rippled, burrowed.
	4	Shale, gray.
1		Carbonaceous shale, coaly.
2	5	Sandstone, gray, fine-grained, ripple-laminated, burrowed, rooted.
2	8	Covered
	10	Carbonaceous shale, coaly.
3	7	Covered
	5	Shale, gray.

	7	Coal.
5		Covered.
	7	Shale, buff.
	9	Coal.
13	5	Sandstone, gray, medium-grained, crossbedded, rippled, convoluted, burrowed.
	5	Covered.
	3	Sandstone, gray, weathering buff, medium-grained, crossbedded, parallel-laminated.
	4	Partly covered, probably shale.
	1	Coal
10		Sandstone, gray, weathering buff, medium grained, crossbedded.
	6	Covered, coaly carbonaceous shale upper 2 inches.
10		Sandstone, gray, medium-grained, crossbedded.
	5	Covered, probably interbedded siltstone and shale.
	5	Sandstone, gray, fine-grained, rippled, parallel-laminated, convoluted, some crossbedding, burrowed.

SECTION WM-4

Measured in NW1/4NW1/4 Sec. 16, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

8		Covered, probably interbedded sandstone, siltstone, and shale.
20		Sandstone, gray, weathering buff, medium-grained, crossbedded, parallel-laminated.
69	6	Sandstone, gray, weathering buff, medium-grained, crossbedded, burrowed.
2		Carbonaceous shale.
1		Shale, dark gray, with coal stringers.
1		Coal.
6		Covered.
1		Sandstone, gray, medium-grained, burrowed, rooted.
	8	Coal.
25		Sandstone, gray, weathering buff, medium-grained, crossbedded, burrowed, erosional base.
10		Sandstone, gray, fine-grained, intercalated with some siltstone and shale, rippled.
11		Sandstone, gray, fine- to medium-grained, convoluted, burrowed, erosional base.
3		Covered, probably interbedded sandstone and siltstone.
4		Sandstone, gray, fine-grained, thin-bedded, rippled, burrowed.
	7	Covered, probably interbedded shale and siltstone.
	6	Shale, dark gray, carbonaceous.
	4	Coal.
5		Covered.
1		Shale, weathering buff, silty.
	6	Shale, dark gray, carbonaceous.
	3	Carbonaceous shale, coaly.

5		Sandstone, gray, medium-grained, convoluted, rippled, erosional base.
6		Covered, probably interbedded sandstone and siltstone.
	2	Carbonaceous shale, coaly.
14		Sandstone, gray, weathering buff, fine- to coarse-grained, rippled, burrowed, erosional base.
6		Covered.
1	3	Sandstone, gray, fine-grained, crossbedded, rippled, burrowed.
10		Covered, probably interbedded siltstone and shale.
	2	Carbonaceous shale, coaly.
5		Covered.
2	6	Sandstone, gray, fine-grained, rippled, burrowed.
12		Covered.
	2	Carbonaceous shale, coaly.
5		Sandstone, gray, medium-grained, crossbedded, rippled.
6		Covered.
1	6	Sandstone, weathering buff, medium-grained, massive, rooted.
	2	Coal.
	2	Carbonaceous shale.
15		Covered, probably interbedded sandstone and shale.
1		Sandstone, weathering buff, fine-grained, rooted.
	4	Sandstone, fine-grained, weathered bleach, rooted.
	2	Shale, gray.
	2	Coal.
13		Sandstone, gray, medium-grained, convoluted, rippled, parallel-laminated, erosional base.
15		Covered, probably interbedded sandstone, siltstone, and shale.
8		Sandstone, gray, fine-grained, convoluted, rippled, burrowed.
5		Covered, probably shale.
2	6	Sandstone, gray, fine-grained, convoluted, rippled.

- 5 Covered, probably thin-bedded sandstone and siltstone.
- 5 Covered.
- 1 6 Shale, dark gray, upper 2 inches is coaly carbonaceous shale.
- 15 Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, rippled, erosional base.

SECTION WM-5

Measured in NW1/4NW1/4 Sec. 16, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

6	Covered.
6	Carbonaceous shale.
3	Coal.
2	Shale, dark gray, silty.
5	Sandstone, gray, medium-grained, bioturbated.
2	Carbonaceous shale, silty.
1	Coal.
9	Shale, gray, carbonaceous.
30	Sandstone, gray, weathering buff, medium-grained, crossbedded, ripple-laminated, erosional base.

STAR POINT SANDSTONE (Upper part)

5	Sandstone, weathering buff, medium grained, rooted.
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SECTION WM-6

Measured in NE1/4NE1/4 Sec. 17, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (lower part; measured from base to top)

15		Sandstone, gray, weathering buff, fine- to medium-grained, thin to thick bedded, ripple-laminated.
3		Sandstone, gray, medium-grained, separated by coaly stringers.
25		Sandstone, gray, weathering buff, medium-grained, massive lower part, festooned upper part, erosional base.
5		Sandstone, gray, medium-grained, thin-bedded, convoluted, burrowed.
	6	Siltstone, gray.
2		Shale, gray.
1		Siltstone, gray, laminated.
	1	Carbonaceous shale.
1	6	Sandstone, gray, fine-grained to silty, ripple-laminated.
2		Sandstone, gray, medium-grained, thin-bedded, rooted.

SECTION WM-7

Measured in SW1/4NW1/4 Sec. 16, T. 21 S., R. 6 E.

Thickness

Feet

Inches

Lithology

STAR POINT SANDSTONE (Upper part; measured from base to top)

35	Sandstone, gray, medium-grained, crossbedded, parallel-laminated, convoluted, burrowed, fossiliferous (pelecypods).
10	Sandstone and siltstone, in thin-bedded alternation.
30	Sandstone, gray, medium-grained, crossbedded, burrowed.
28	Covered.
7	Sandstone, gray, medium-grained, crossbedded, ripple-laminated.

SECTION WM-8

Measured in SW1/4NW1/4 Sec. 16, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

STAR POINT SANDSTONE (Upper part; measured from base to top)

10	Sandstone and siltstone, in thin-bedded alternation
40	Sandstone, gray, medium-grained, crossbedded, parallel-laminated, burrowed.

SECTION WM-9

Measured in SW1/4NW1/4 Sec. 16, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

3		Covered.
1	2	Shale, gray, carbonaceous.
	4	Coal
2	10	Shale, dark gray, silty.
6		Covered, probably shale.
6		Sandstone, gray, weathering buff, medium-grained, crossbedded, ripple-laminated, burrowed.

SECTION WM-10

Measured in SW1/4NW1/4 Sec. 16, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

4		Covered.
	11	Sandstone, weathering buff, medium-grained, non-bedded.
1	6	Shale, gray.
	8	Sandstone, weathering buff, badly weathered, fine-grained.
	10	Shale, gray, carbonaceous.
	8	Coal.
4	6	Covered.
1	8	Sandstone, siltstone, and shale, in thin-bedded alternation.
7		Sandstone, gray, medium-grained, crossbedded.
4	6	Covered.
9	6	Sandstone, gray, weathering buff, medium-grained, rippled, parallel-laminated, rooted.
7	6	Covered
1	8	Shale, weathering buff, silty.
	5	Carbonaceous shale.
	8	Shale, gray.
4		Sandstone, gray, medium-grained, ripple-laminated, burrowed.

SECTION WM-11

Measured in SW1/4NW1/4 Sec. 16, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

STAR POINT SANDSTONE (Upper part; measured from base to top)

62	Sandstone, gray, medium-grained, crossbedded, convoluted, parallel-laminated, burrowed.
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SECTION WM-12

Measured in NE1/4SW1/4 Sec. 16, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

5		Covered.
1	5	Shale, gray.
	10	Carbonaceous shale.
1	7	Coal
	2	Carbonaceous shale.
15		Covered.
3		Shale, weathering buff, silty.
	4	Carbonaceous shale.
2		Sandstone, gray, medium-grained, ripple-laminated.
43		Sandstone, gray, weathering buff, medium-grained, crossbedded, burrowed, erosional base.
	2	Shale, gray.
	3	Carbonaceous shale, coaly.
	6	Shale, gray.
10		Shale, gray, silty, carbonaceous.
	2	Carbonaceous shale, coaly.
2	6	Shale, gray.
1	4	Carbonaceous shale.
	1	Coal
	4	Carbonaceous shale.
1	8	Shale and siltstone, in thin-bedded alternation.
2		Sandstone, gray, medium-grained, ripple-laminated, rooted.
2		Shale, gray.
2		Sandstone, gray, medium-grained, ripple-laminated, rooted.

3	Carbonaceous shale.
1	Coal.
3	Covered, probably interbedded sandstone, siltstone, and shale.
5	Shale, gray, silty.
2	Carbonaceous shale.
1	Carbonaceous shale, coaly.
1	Carbonaceous shale.
15	Sandstone, gray, medium-grained, crossbedded, ripple-laminated, rooted, erosional base.
3	Shale, gray, silty.
1	Carbonaceous shale.
2	Shale, gray, silty.
6	Sandstone, gray, fine- to medium-grained, convoluted, ripple-laminated, rooted.
6	Shale, gray.
5	Sandstone, gray, weathering buff, medium-grained, thin to thick bedded, ripple-laminated, rooted.
10	Shale, gray.
8	Sandstone, gray, weathering buff, medium-grained, thick-bedded, ripple-laminated, crossbedded.
10	Covered, probably interbedded sandstone, siltstone, and shale.
5	Sandstone, gray, fine-grained, ripple-laminated, convoluted, rooted.
STAR POINT SANDSTONE (Upper part; measured from base to top)	
128	Sandstone, gray, medium-grained, crossbedded, parallel-laminated, burrowed, rooted.

SECTION WM-13

Measured in NE1/4NW1/4 Sec. 16, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

5		Covered.
	6	Sandstone, weathering buff, medium-grained, badly weathered.
	3	Shale, gray.
	1	Coal.
38		Sandstone, gray, medium-grained, crossbedded, ripple-laminated, erosional base.
8		Sandstone, gray, medium-grained, convoluted, ripple-laminated, burrowed, rooted, erosional base.
6		Covered.
3		Sandstone, gray, medium-grained, ripple-laminated, burrowed, rooted.
	4	Carbonaceous shale.
6		Covered.
3		Sandstone, gray, medium-grained, ripple-laminated, burrowed, rooted.
	3	Shale, gray.
1		Siltstone, gray, sandy, ripple-laminated.
3		Sandstone, gray, medium-grained, ripple-laminated, burrowed, rooted.
4		Covered.
1		Siltstone, gray, burrowed.
2	6	Sandstone, gray, medium-grained, ripple-laminated, convoluted, rooted.
10		Covered.
	2	Sandstone, weathering buff, fine-grained, badly weathered.
	1	Shale, gray.
	2	Carbonaceous shale.
6	6	Sandstone, gray, medium-grained, ripple-laminated, convoluted, rooted.

9		Covered.
1	6	Sandstone, gray, fine-grained, thin-bedded.
2		Covered.
4		Sandstone, gray, medium-grained, thin-bedded, ripple-laminated, rooted.
2	6	Covered.
	3	Shale, gray, silty.
	2	Carbonaceous shale.
1	6	Sandstone, gray, fine-grained, ripple-laminated, burrowed, rooted.
1		Covered.
	4	Shale, light gray.
	3	Shale, gray, carbonaceous.
6		Covered.
	3	Siltstone, weathering buff.
	3	Shale, gray.
1	6	Sandstone, gray, medium-grained, ripple-laminated, rooted.
	6	Shale, gray, silty.
2		Sandstone, weathering buff, fine-grained, ripple-laminated, rooted.
	6	Carbonaceous shale, coaly.
	2	Carbonaceous shale.
3	6	Covered.
4		Sandstone, gray, medium-grained, thin-bedded, rippled, rooted.
5		Covered.
	6	Shale, gray, carbonaceous.
10		Covered.
1	6	Sandstone, gray, medium-grained, thin-bedded, ripple-laminated, rooted.
19		Covered.
4		Sandstone, gray, medium grained, ripple-laminated, rooted.
25		Sandstone, gray, medium-grained, crossbedded, convoluted, erosional base.

SECTION WM-14

Measured in NE1/4NW1/4 Sec. 21, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

5	6	Siltstone, sandy, laminated, carbonaceous.
	2	Coal.
	2	Carbonaceous shale.
26		Sandstone, gray, weathering buff, medium-grained, crossbedded, rooted.
2		Covered, probably interbedded siltstone and shale.
5		Sandstone, gray, medium-grained, convoluted.

SECTION WM-15

Measured in NE1/4NW1/4 Sec. 21, T. 21 S., R. 6 E.

Thickness

Feet

Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

6		Covered.
	3	Carbonaceous shale.
	2	Coal, weathered.
3		Covered.
	6	Carbonaceous shale.
5		Covered, probably interbedded sandstone, siltstone, and shale.
8		Sandstone, gray, weathering buff, medium-grained, crossbedded, ripple-laminated, convoluted.
5	6	Covered, probably interbedded siltstone and shale.
	4	Carbonaceous shale.
5	6	Sandstone, gray, medium-grained, thin- to thick-bedded.
1		Siltstone, white.
	6	Coal.
	2	Carbonaceous shale.
	8	Coal.
	6	Carbonaceous shale.
4		Covered, probably interbedded sandstone, siltstone, and shale.
5	6	Sandstone, gray, medium-grained, thick bedded, ripple-laminated, rooted.
	6	Shale, gray.
5		Sandstone, gray, weathering buff, medium-grained, ripple-laminated, convoluted.
13	6	Covered, probably interbedded sandstone, siltstone, and shale.
	4	Shale, gray.
	2	Carbonaceous shale.

- 3 Sandstone, gray, medium-grained, thin bedded, ripple-laminated.
- 8 Covered, probably interbedded sandstone, siltstone, and shale.
- 2 Siltstone, weathering buff.
- 1 Carbonaceous shale.
- 1 Carbonaceous shale, coaly. .
- 2 Siltstone, gray, sandy.
- 5 Sandstone, gray, medium-grained, convoluted, ripple-laminated, rooted.
- 6 Siltstone, gray, sandy, rooted.
- 2 Carbonaceous shale.
- 2 10 Covered, probably interbedded siltstone and shale.
- 6 Siltstone, gray, rooted.
- 1 Coal.
- 2 Sandstone, gray, medium-grained, convoluted, ripple-laminated, rooted.
- 1 Siltstone and shale, in thin-bedded alternation.
- 3 Coal.
- 3 Covered, upper 6 inches is siltstone.
- 4 Sandstone, gray, medium-grained, ripple-laminated, convoluted.
- 4 Covered, probably interbedded sandstone and siltstone.
- 6 Sandstone, gray, fine-grained, silty, leaf imprints.
- 4 Sandstone, gray, medium-grained, rippled, rooted..
- 4 6 Covered, probably interbedded siltstone and sandstone.
- 3 Sandstone, gray, medium-grained, ripple-laminated.
- 3 Covered, probably, interbedded siltstone and sandstone.
- 2 Sandstone, gray, medium-grained, ripple-laminated.
- 6 Siltstone and shale, in thin-bedded alternation.
- 5 Sandstone, gray, weathering buff, medium-grained, thick bedded, burrowed.
- 4 Siltstone and shale, in thin-bedded alternation.

- 35 Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, erosional base.
- 5 Covered, probably interbedded sandstone, siltstone, and shale.
- 6 Siltstone, gray.
- 6 Shale, gray.
- 30 Sandstone, gray, weathering buff, crossbedded, burrowed.
- 15 Covered.
- 93 Sandstone, gray, weathering buff, medium-grained, crossbedded, ripple-laminated, erosional base.

SECTION WM-16

Measured in NE1/4SW1/4 Sec. 21, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

6		Covered, probably interbedded siltstone and shale.
	4	Carbonaceous shale.
	6	Coal.
	1	Carbonaceous shale.
7		Covered, probably interbedded sandstone, siltstone and shale.
5		Sandstone, gray, medium-grained, crossbedded, ripple-laminated.
6	6	Covered, probably interbedded sandstone, siltstone, and shale.
4		Sandstone, gray, medium-grained, thin bedded, ripple-laminated.
	3	Carbonaceous shale, silty.
	8	Coal.
	1	Carbonaceous shale.
	4	Coal.
	2	Carbonaceous shale.
4		Covered, probably interbedded siltstone and shale.
8		Sandstone, gray, weathering buff, medium-grained, thin bedded, rippled.
4		Covered, probably interbedded siltstone and shale.
	1	Carbonaceous shale.
	4	Coal.
	1	Carbonaceous shale.
7		Covered, probably interbedded siltstone and shale.
7	6	Sandstone, gray, medium-grained, thin- to thick-bedded, ripple-laminated.
11		Covered, probably interbedded sandstone and siltstone.

7	6	Sandstone, gray, medium-grained, rippled, parallel-laminated, rooted.
	1	Carbonaceous shale.
6		Covered, probably interbedded siltstone and shale.
12		Sandstone, gray, medium-grained, thick bedded, ripple-laminated, convoluted.
	4	Siltstone, weathering buff, sandy.
	4	Coal.
4		Sandstone, gray, medium-grained, thick bedded.
5		Covered, probably interbedded siltstone and shale.
5	6	Sandstone, gray, fine-grained, thin bedded, ripple-laminated.
21		Covered.
16		Sandstone, gray, weathering buff, thin- to thick-bedded, medium-grained.
1		Shale, gray.
5		Sandstone, gray, medium-grained, thick bedded, convoluted.

SECTION WM-17

Measured in SE1/4SW1/4 Sec. 21, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

4		Coal.
2		Sandstone, with coaly stringers.
6		Carbonaceous shale.
4		Covered.
2		Sandstone, gray, medium-grained, burrowed.
1		Covered.
4		Coal.
1		Carbonaceous shale.
3		Shale, gray.
5		Covered.
4	6	Sandstone, gray, medium-grained, crossbedded, rippled, parallel-laminated, convoluted.
6		Covered.
5		Sandstone, gray, medium-grained, thin- to thick-bedded, ripple-laminated, rooted.
1		Covered.
8		Carbonaceous shale, sandy.
4		Coal.
1		Carbonaceous shale, sandy.
3		Coal.
1		Carbonaceous shale, sandy.
8		Coal.
2	6	Sandstone, weathering buff, medium-grained, rippled, parallel-laminated.
5	6	Covered.

- 21 Sandstone, gray, weathering buff, medium-grained, crossbedded.
- 10 Covered.
- 6 Sandstone, gray, weathering buff, medium-grained, ripple-laminated, convoluted.

SECTION WM-18

Measured in NE1/4NW1/4 and NW1/4NW1/4 Sec. 28, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (lower part; measured from base to top)

6		Covered.
	6	Sandstone, gray, medium-grained, thin bedded.
	6	Carbonaceous shale.
1	8	Coal.
1		Carbonaceous shale.
6		Covered, probably interbedded siltstone and shale.
5		Sandstone, gray, fine-grained, rippled.
3		Covered, probably interbedded sandstone and siltstone.
3	6	Sandstone, gray, medium-grained, thin- to thick-bedded, rooted.
	6	Carbonaceous shale.
2		Coal.
1		Carbonaceous shale.
9		Covered, probably interbedded sandstone, siltstone, and shale.
12		Sandstone, gray, fine-grained, ripple-laminated, convoluted, burrowed, rooted.
38		Covered.
5		Sandstone, gray, medium-grained, ripple-laminated.
2		Covered.
	3	Siltstone, gray.
1	6	Coal.
	6	Shale, gray.
19		Covered.
12		Sandstone, gray, medium-grained, thin- to thick-bedded, ripple-laminated.

- 4 Carbonaceous shale.
- 6 Coal.
- 1 Shale, gray.
- 25 Sandstone, gray, weathering buff, medium-grained, crossbedded, ripple-laminated, erosional base.
- 2 Covered, probably interbedded siltstone and shale.
- 2 Sandstone, gray, medium-grained, ripple-laminated.
- 12 Covered, probably interbedded siltstone and shale.
- 2 Sandstone, gray, medium-grained, ripple-laminated.
- 5 Covered, probably interbedded siltstone and shale.
- 1 6 Sandstone, gray, medium-grained, ripple-laminated.
- 11 Covered.
- 36 Sandstone, gray, weathering buff, medium-grained, thin- to thick-bedded, rippled, parallel-laminated, erosional base.
- 27 Covered, probably interbedded sandstone and siltstone.
- 3 Sandstone, gray, medium-grained, ripple-laminated.
- 4 Covered.
- 11 Sandstone, gray, medium-grained, crossbedded, burrowed.

STAR POINT SANDSTONE (Upper part; measured from base to top)

- 5 Sandstone, gray, weathered bleached, medium-grained, burrowed, rooted.

SECTION WM-19

Measured in SE1/4NW1/4 and SW1/4NW1/4 Sec. 28, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

5		Sandstone, light gray, medium-grained, burrowed, rooted.
5		Covered, probably interbedded siltstone and shale.
1		Sandstone, light gray, fine-grained, thin bedded.
3	6	Covered, probably interbedded siltstone and shale.
	3	Shale, gray, silty, carbonaceous.
1		Coal.
	3	Carbonaceous shale.
5		Covered, probably interbedded siltstone and shale.
3	6	Sandstone, gray, fine-grained, thin-bedded.
3		Covered, probably interbedded siltstone and shale.
5		Sandstone, gray, weathering buff, medium-grained, ripple-laminated.
	2	Siltstone, gray.
	4	Carbonaceous shale.
5		Coal.
2		Carbonaceous shale.
1	6	Coal.
	6	Carbonaceous shale.
6		Covered.
7		Sandstone, gray, medium-grained, thin- to thick-bedded.
14		Covered, probably interbedded siltstone and shale.
4		Sandstone, gray, medium-grained, ripple-laminated.
26		Sandstone, gray, weathering buff, medium-grained, crossbedded, erosional base.

SECTION WM-20

Measured in NE1/4NE1/4 Sec. 5, T. 22 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

10		Covered, probably interbedded siltstone and shale.
3		Sandstone, gray, medium-grained, rippled, fossiliferous (pelecypods).
1		Siltstone, gray.
	3	Carbonaceous shale, sandy.
	4	Coal.
	2	Sandstone, with coaly stringers.
40		Sandstone, gray weathering buff, medium-grained, crossbedded, burrowed, rooted, erosional base.
20		Sandstone, gray, fine-grained, crossbedded, parallel-laminated, burrowed, erosional base.
	6	Carbonaceous shale.
1		Sandstone, gray, medium-grained, ripple-laminated.
	6	Siltstone, gray, sandy, carbonaceous.
	6	Sandstone, gray, medium-grained, ripple-laminated.
	6	Carbonaceous shale.
1		Sandstone, weathering buff, medium-grained, ripple-laminated, burrowed.
1	6	Carbonaceous shale.
	2	Coal.
2		Carbonaceous shale.
3		Shale, gray, silty.
2	6	Sandstone, gray, medium-grained, ripple-laminated, burrowed.
1		Carbonaceous shale.
4	6	Coal.

2		Carbonaceous shale, coaly.
1		Carbonaceous shale.
3	6	Shale, gray, silty.
6		Sandstone, gray, fine-grained, ripple-laminated, burrowed, rooted.
1		Shale, gray, silty.
	6	Carbonaceous shale.
2		Shale, gray.
20		Covered, probably interbedded siltstone and shale.
1		Sandstone, gray, fine-grained, ripple-laminated.
1		Coal.
	6	Carbonaceous shale.
5		Covered, probably interbedded siltstone and shale.
	6	Siltstone, gray.
	3	Coal.
	3	Carbonaceous shale.
5		Covered, probably interbedded siltstone and shale.
	3	Carbonaceous shale.
3	6	Covered, probably interbedded siltstone and shale.
	6	Carbonaceous shale.
	1	Coal.
	3	Carbonaceous shale.
5		Covered, probably interbedded siltstone and shale.
1	6	Sandstone, gray, medium-grained, ripple-laminated.
5		Covered, probably interbedded siltstone and shale.
	6	Carbonaceous shale, coaly.
4		Covered, probably interbedded siltstone and shale.
	6	Carbonaceous shale, coaly.
4		Sandstone, siltstone, and shale, in thin-bedded alternation.

1		Carbonaceous shale, coaly.
	6	Siltstone, gray.
1		Carbonaceous shale, coaly.
4		Covered, probably interbedded siltstone and shale.
	6	Carbonaceous shale.
	6	Coal.
	6	Shale, dark gray.
3		Covered, probably interbedded siltstone and shale.
1		Shale, gray.
	6	Carbonaceous shale.
	6	Shale, gray.
3		Sandstone, gray, medium-grained, ripple-laminated.
1		Shale, gray.
	6	Siltstone, gray.
	3	Coal.
1		Shale, dark gray.
2		Sandstone, gray, medium-grained, ripple-laminated.
6		Covered, probably interbedded siltstone and shale.
	6	Carbonaceous shale.
12		Covered, probably interbedded siltstone and shale.
2		Sandstone, gray, medium-grained, ripple-laminated, rooted.
3		Shale and siltstone, in thin-bedded alternation.
2		Sandstone, gray, fine-grained, ripple-laminated.
9		Covered, probably interbedded siltstone and shale.
6	6	Sandstone, gray, weathering buff, medium-grained, thick bedded, rooted.
4		Covered, probably interbedded siltstone and shale.
	6	Carbonaceous shale.
6		Coal.

- 2 Carbonaceous shale.
 - 4 Shale, gray.
 - 7 Covered.
 - 16 Sandstone, gray, weathering buff, medium-grained, thick bedded,
 ripple-laminated, burrowed.
- STAR POINT SANDSTONE (Upper part; measured from base to top)
- 62 Sandstone, gray, medium-grained, crossbedded, parallel-laminated,
 convoluted, burrowed.

SECTION WM-21

Measured in SW1/4NE1/4 and SE1/4NE1/4 Sec. 5, T. 22 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

	6	Sandstone, light gray, medium-grained, rooted.
	6	Carbonaceous shale.
1		Coal.
6		Shale, gray, fossiliferous (pelecypods).
4	6	Sandstone, gray, fine-grained, ripple-laminated.
	6	Shale, gray.
15		Sandstone, gray, medium-grained, thick bedded, burrowed.
5		Shale, gray.
8		Sandstone, gray, fine- to medium-grained, crossbedded, burrowed, fossiliferous (pelecypods).
4	6	Covered.
3		Sandstone, gray, fine-grained, ripple-laminated.
1		Sandstone and shale, in thin-bedded alternation.
1	8	Coal.
2		Carbonaceous shale.
5		Sandstone, light gray, weathered bleached, medium-grained, burrowed, rooted.
1		Sandstone, siltstone, and shale, in thin-bedded alternation.
1		Carbonaceous shale.
3		Coal.
2		Carbonaceous shale.
3		Covered, probably interbedded shale and siltstone.
	6	Shale, gray, silty.
12		Sandstone, gray, medium-grained, crossbedded, ripple-laminated, burrowed, rooted.

20		Covered, probably interbedded sandstone, siltstone, and shale.
2		Shale, gray.
1		Sandstone, gray, medium-grained, non-bedded.
1		Shale, gray.
5		Covered, probably interbedded sandstone, siltstone, and shale.
1		Sandstone, gray, medium-grained, rooted.
1		Shale, gray.
125		Covered.
1		Sandstone, gray, medium-grained, thin bedded.
	6	Shale, gray.
1	6	Siltstone, gray.
7		Sandstone, gray, weathering buff, medium-grained, thin- to thick-bedded, ripple-laminated, rooted, erosional base.
19		Covered, probably interbedded siltstone and shale.
4		Sandstone, gray, medium-grained, ripple-laminated, rooted.
10		Covered, probably interbedded siltstone and shale.
1		Sandstone, gray, medium-grained, ripple-laminated.
7		Covered.
10		Sandstone, gray, weathering buff, medium-grained, crossbedded, burrowed.
3		Covered.
1		Shale, gray.
3		Covered, probably interbedded shale and siltstone.
	6	Shale, gray, carbonaceous.

SECTION WM-22

Measured in NW1/4SE1/4 Sec. 6, T. 22 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

2	6	Covered, probably interbedded siltstone and shale.
1		Sandstone, gray, fine-grained, ripple-laminated, rooted.
4		Covered, probably interbedded siltstone and shale.
4		Siltstone and shale, in thin-bedded alternation.
5		Shale, gray, silty.
3		Sandstone and siltstone, in thin-bedded alternation.
	6	Shale, gray.
	1	Carbonaceous shale.
2	6	Siltstone, gray, sandy.
5	6	Sandstone, gray, medium-grained, heavily burrowed.
1	6	Shale, gray.
5		Siltstone and shale, in thin-bedded alternation.
2	6	Shale, gray, silty.
3		Sandstone, gray, medium-grained, ripple-laminated, rooted.
	1	Shale, gray.
	4	Coal.
6		Sandstone, gray, weathering buff, medium-grained, crossbedded, ripple-laminated.
21		Siltstone and shale, in thin-bedded alternation.
1		Sandstone, gray, fine-grained, thin bedded, rooted.
1	6	Coal.
	6	Carbonaceous shale, coaly.
8		Sandstone, gray, weathering buff, medium-grained, thick bedded, ripple-laminated, rooted, erosional base.

- 4 Siltstone and shale, in thin-bedded alternation, with some carbonaceous shale intercalation.
- 6 Carbonaceous shale.
- 5 6 Sandstone, gray, medium-grained, thick bedded, rippled, parallel-laminated, rooted.
- 2 Shale and siltstone, in thin-bedded alternation.
- 1 6 Sandstone, gray, fine-grained, ripple-laminated, rooted.
- 8 Sandstone, gray, medium-grained, thin- to thick-bedded, convoluted, rooted.
- 20 Covered.
- 1 Siltstone, gray.
- 2 Carbonaceous shale, coaly.
- 1 6 Shale, gray.
- 1 Coal.

STAR POINT SANDSTONE (Upper part; measured from base to top)

- 12 Sandstone, light gray, weathered bleached, medium-grained, crossbedded, rooted.

SECTION WM-23

Measured in NW1/4SE1/4 Sec. 6, T. 22 S., R. 6 E.

Thickness		<u>Lithology</u>
<u>Feet</u>	<u>Inches</u>	
BLACKHAWK FORMATION (Lower part; measured from base to top)		
12		Covered, probably interbedded sandstone, siltstone, and shale.
2	6	Sandstone, gray, fine-grained, thin bedded, ripple-laminated, rooted.
1	6	Shale and siltstone, in thin-bedded alternation.
6		Sandstone, gray, weathering buff, medium-grained, crossbedded, ripple-laminated, rooted, erosional base.
2		Shale, gray.
3		Siltstone, gray.
2		Carbonaceous shale, silty.
1		Siltstone, gray.
7	6	Sandstone and siltstone, in thin-bedded alternation.
1		Shale, gray, silty.
	1	Carbonaceous shale.
4		Covered, probably interbedded siltstone, shale, and sandstone.
1		Sandstone, weathering buff, medium-grained, burrowed.
9		Covered, probably interbedded shale and siltstone.
2		Carbonaceous shale.
7		Siltstone and shale, in thin-bedded alternation.
1	6	Siltstone, gray, clayey, carbonaceous.
	10	Coal.
	6	Carbonaceous shale, silty.
12		Sandstone, gray, weathering buff, medium-grained, crossbedded, erosional base.
4		Covered, probably interbedded shale and siltstone.
1	1	Carbonaceous shale, coaly.

4		Sandstone, gray, fine-grained, ripple-laminated, rooted.
	6	Siltstone, gray, clayey.
15		Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, burrowed, rooted.
	4	Shale, gray, carbonaceous.
	6	Siltstone, gray.
5	6	Sandstone, gray, medium-grained, thick bedded, ripple-laminated, rooted.
11	6	Covered, probably interbedded shale and siltstone.
1		Sandstone, gray, medium-grained, parallel-laminated, rooted.
11		Covered, probably interbedded sandstone, siltstone, and shale.
5		Sandstone, gray, fine-grained, thin bedded, ripple-laminated, rooted.
15		Covered, probably interbedded sandstone, siltstone, and shale.
	3	Carbonaceous shale.
	6	Coal.
6		Shale and siltstone, in thin-bedded alternation.
4		Sandstone, gray, medium-grained, ripple-laminated, rooted, erosional base.
9		Siltstone and shale, in thin-bedded alternation.
2		Sandstone, gray, medium-grained, ripple-laminated, rooted.
	6	Shale, gray.
2		Sandstone, gray, medium-grained, ripple-laminated, rooted.
4		Shale, gray, silty.
1		Shale, dark gray.
	6	Carbonaceous shale.
3	6	Sandstone, gray, medium-grained, thick bedded, ripple-laminated, burrowed, rooted.
3	6	Shale and siltstone, in thin-bedded alternation.
1	6	Sandstone, gray, medium-grained, ripple-laminated, rooted.
3		Shale and siltstone, in thin-bedded alternation.

- 4 Sandstone, gray, medium-grained, thick bedded, ripple-laminated, rooted.
- 6 Shale, gray.
- 6 Carbonaceous shale.
- 3 Sandstone, gray, medium-grained, thin bedded, ripple-laminated, burrowed.

STAR POINT SANDSTONE (Upper part; measured from base to top)

- 6 Sandstone, light gray, weathered bleached, medium-grained, rooted.

SECTION WM-24

Measured in NW1/4SE1/4 and NE1/4SE1/4 Sec. 6, T.22 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part, measured from base to top)

22		Shale, gray, fossiliferous (pelecypods)
4	6	Shale, gray, silty.
3		Siltstone and shale, in thin-bedded alternation.
4	6	Sandstone, gray, fine-grained, thin bedded, ripple-laminated, rooted.
	6	Siltstone, dark gray, carbonaceous.
	2	Coal.
1	6	Shale, gray.
1		Siltstone, gray, sandy.
9		Sandstone, gray, weathering buff, medium-grained, crossbedded, burrowed, rooted.
12		Covered, probably interbedded sandstone, siltstone, and shale.
4		Sandstone, gray, medium-grained, thin bedded, ripple-laminated, rooted.
1		Siltstone and shale, in thin-bedded alternation.
	8	Coal.
12		Shale, weathering buff, silty.
1	6	Carbonaceous shale.
6		Shale and siltstone, in thin-bedded alternation.
2		Sandstone, gray, medium-grained, thin bedded, rooted.
	6	Carbonaceous shale, coaly.
10	6	Covered, probably interbedded sandstone, siltstone, and shale.
6	6	Sandstone, gray, weathering buff, medium-grained, crossbedded, burrowed, rooted, erosional base.
3		Sandstone, gray, medium-grained, thin bedded, ripple-laminated, rooted.

- 6 Carbonaceous shale, coaly.
- 5 Sandstone, weathering buff, medium-grained, thick bedded, convoluted, burrowed, rooted.
- 2 Siltstone, gray, clayey.
- 17 Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, ripple-laminated, erosional base.
- 45 Covered.
- 1 Sandstone, gray, fine-grained, ripple-laminated.

SECTION WM-25

Measured in SE1/4SW1/4 Sec. 35, T. 21 S., R. 5 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

17		Sandstone, gray, medium-grained, thin- to thick-bedded, burrowed, erosional base.
3		Siltstone and shale, in thin-bedded alternation.
	4	Carbonaceous shale.
23		Partly covered, interbedded shale and siltstone upper part.
2		Shale, gray, fossiliferous.
3		Shale, gray, silty.
2	6	Sandstone, gray, fine-grained, thin bedded, ripple-laminated, rooted.
1		Siltstone, gray.
1		Carbonaceous shale, coaly.
2		Siltstone, gray, carbonaceous.
1		Carbonaceous shale, coaly.
3	6	Siltstone and shale, in thin-bedded alternation.
5		Siltstone, gray, heavily rooted.
1	6	Sandstone, gray, fine-grained, rippled.
2		Coal.
1	4	Siltstone, gray.
	6	Carbonaceous shale.
9		Covered, probably interbedded siltstone and shale.
2	6	Sandstone, gray, medium-grained, ripple-laminated.
6		Shale, gray, silty.
5		Sandstone, gray, fine- to medium-grained, thin bedded, ripple-laminated.
	6	Shale, gray.

10		Sandstone, gray, weathering buff, medium-grained, crossbedded, ripple-laminated, erosional base.
6		Partly covered, silty shale upper 3 feet.
5	6	Sandstone, gray, medium-grained, ripple-laminated, rooted.
18		Partly covered, interbedded sandstone, siltstone, and shale.
2		Sandstone, gray, fine- to medium-grained, thin bedded, ripple-laminated, rooted.
1		Shale, dark gray, carbonaceous.
7		Covered, probably interbedded shale and siltstone.
1	6	Shale, gray.
15		Covered.
1		Sandstone, gray, fine-grained, thin bedded, rippled, rooted.
5		Partly covered, shale upper 1 foot.
7		Covered, probably interbedded siltstone and shale.
1		Sandstone, gray, medium-grained, ripple-laminated.
	6	Shale, dark gray.
2		Covered, probably shale.
2		Sandstone, gray, medium-grained, ripple-laminated, rooted.
5		Shale, gray.
5	6	Sandstone, gray, weathering buff, medium-grained, thick bedded, rooted.
6		Covered, probably interbedded sandstone and siltstone.
2		Sandstone, gray, fine-grained, ripple-laminated, rooted.
15		Covered, probably interbedded siltstone and shale.

STAR POINT SANDSTONE (Upper part; measured from base to top)

5		Sandstone, light gray, weathered bleached, rooted.
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SECTION WM-26

Measured in SE1/4SW1/4 Sec. 35, T. 21 S., R. 5 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

8		Partly covered, rooted sandstone upper 1 foot, interbedded shale and siltstone lower part.
1		Shale, gray.
2		Siltstone, gray, weathered bleached, thin bedded.
1		Siltstone, dark gray, carbonaceous.
	6	Carbonaceous shale.
1		Sandstone, gray, medium-grained, thin bedded, ripple-laminated.
1		Siltstone, dark gray, carbonaceous.
1		Coal.
1		Carbonaceous shale.
1		Shale, gray, silty.
3		Sandstone, gray, medium-grained, non-bedded, erosional base.
5	6	Shale, gray, silty.
3		Siltstone, gray, clayey, parallel-laminated.
9		Sandstone, gray, weathering buff, medium-grained, thick bedded, ripple-laminated, rooted, erosional base.
16		Covered, probably interbedded shale and siltstone.
5		Sandstone, gray, fine- to medium-grained, ripple-laminated, rooted.
7		Shale and siltstone, in thin-bedded alternation.
2		Sandstone, gray, medium-grained, rippled, parallel-laminated, rooted.
1		Shale, gray.
4		Sandstone, gray, weathering buff, fine-grained, ripple-laminated, rooted.
1		Shale, gray.
15		Sandstone, gray, medium-grained, crossbedded, ripple-laminated, convoluted, erosional base.

7		Siltstone and shale, in thin-bedded alternation.
	1	Shale, burned.
2		Shale, gray.
	1	Shale, burned.
1		Shale, gray.
21		Sandstone, weathering buff, medium-grained, convoluted, burrowed, rooted, erosional base.
24	6	Covered, probably interbedded sandstone, siltstone, and shale.
	2	Sandstone, gray, fine-grained, ripple-laminated, rooted.
11		Covered, burned rocks.
	2	Shale, gray
	1	Carbonaceous shale.
	1	Shale, dark gray.
	2	6 Sandstone, gray, medium-grained, ripple-laminated, rooted.
	2	Siltstone and shale, in thin-bedded alternation.
	2	Sandstone, gray, medium-grained, ripple-laminated, rooted.
	8	6 Partly covered, shale upper 3 feet.
10		Sandstone, gray, weathering buff, medium-grained, thin bedded, convoluted, ripple-laminated, rooted.
	4	Shale, gray.
	4	Sandstone, gray, fine- to medium-grained, thick bedded, ripple-laminated, rooted.
	7	Shale, gray.
	1	Burned rock.
	2	Covered.
	4	Sandstone, weathering buff, medium-grained, ripple-laminated, rooted.
	7	Shale, gray.
	4	Sandstone, gray, medium-grained, thick bedded, ripple-laminated.
	1	6 Shale, gray.
	2	Sandstone, gray, fine-grained, ripple-laminated, rooted.

- 6 Shale and siltstone, in thin-bedded alternation.
- 10 Sandstone, gray, weathering buff, convoluted, ripple-laminated, burrowed.

STAR POINT SANDSTONE (Upper part; measured from base to top)

- 5 Sandstone, light gray, weathered bleached, medium-grained, thin bedded.

SECTION WM-27

Measured in SW1/4SW1/4 Sec. 35, T. 21 S, R. 5 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

5	Shale and siltstone, in thin-bedded alternation, carbonaceous.
2	Shale, gray, silty.
2	Siltstone, dark gray, carbonaceous.
3	Siltstone, blue-gray, carbonaceous upper 1 foot.
2	Coal.
35	Sandstone, gray, weathering buff, fine- to medium-grained, crossbedded, convoluted, ripple-laminated, erosional base.
1	Carbonaceous shale.
29	Covered.
6	Siltstone, gray.
1	Coal.
12	Sandstone, gray, medium-grained, convoluted, erosional base.
6	Coal.
15	Sandstone, weathering buff, medium-grained, crossbedded, convoluted.
2	Shale, gray.
10	Sandstone, gray, medium-grained, thick bedded.
6	Carbonaceous shale, coaly.
4	Sandstone, gray, medium-grained, ripple-laminated.
8	Coal.
5	Siltstone and shale, in thin-bedded alternation.
1	Coal.
10	Sandstone, siltstone, and shale, in thin-bedded alternation.

STAR POINT SANDSTONE (Upper part; measured from base to top)

59	Sandstone, light gray, medium-grained, crossbedded, rippled, parallel-laminated, burrowed.
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SECTION WM-28

Measured in NW1/4NW1/4 Sec. 2, T. 22 S., R. 5 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

18		Covered, probably interbedded siltstone and shale.
2		Siltstone, blue-gray, thin bedded.
1		Coal.
5		Sandstone, gray, medium-grained, crossbedded, erosional base.
1	6	Sandstone, gray, fine-grained, silty, flaser-bedded.
15		Sandstone, gray, medium-grained, thin- to thick-bedded,
21		Partly covered, interbedded shale and siltstone lower part.

SECTION WM-29

Measured in NW1/4SW1/4 Sec. 35, T. 21 S., R. 5 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

1		Siltstone, gray, clayey.
1	6	Sandstone, gray, medium-grained, ripple-laminated, rooted.
1		Siltstone, dark gray, carbonaceous.
1		Sandstone, light gray, weathered bleached, fine-grained, ripple-laminated.
2		Coal.
2		Siltstone, gray, ripple-laminated, rooted.
2		Sandstone, gray, medium-grained, non-bedded, burrowed, rooted.
2	6	Covered, probably interbedded siltstone and shale.
1	6	Sandstone, gray, medium-grained, ripple-laminated, rooted.
3		Coal.
1		Carbonaceous shale.
2	6	Shale, gray, silty.
3		Sandstone, gray, medium-grained, thick bedded, erosional base.
2		Covered, probably shale.
2		Siltstone, gray, clayey.
	6	Coal.
3		Siltstone, gray, rooted.
3	6	Shale, gray.
3		Sandstone, gray, fine-grained, thin bedded, ripple-laminated, rooted.
1		Shale, gray.
4		Shale, dark gray, carbonaceous.
4		Covered, probably interbedded shale and siltstone.

2		Sandstone, light gray, weathered bleached, fine-grained, ripple-laminated, rooted.
5		Covered, probably interbedded sandstone, siltstone, and shale.
2	6	Sandstone, gray, medium-grained, ripple-laminated, rooted.
11		Shale and siltstone, in thin-bedded alternation.
1		Carbonaceous shale.
	6	Carbonaceous shale, coaly
1		Siltstone, gray.
2		Sandstone, gray, medium-grained, thin bedded, ripple-laminated, rooted.
2	6	Siltstone and shale, in thin-bedded alternation.
8		Sandstone, gray, weathering buff, medium-grained, crossbedded, burrowed, rooted, erosional base.
9		Shale and siltstone, in thin-bedded alternation.
3		Sandstone, gray, medium-grained, thin bedded, ripple-laminated, rooted.
4	6	Siltstone and shale, in thin-bedded alternation.
4		Sandstone, gray, medium-grained, ripple-laminated, rooted.
	3	Shale, gray.
2	6	Sandstone, gray, medium-grained, ripple-laminated, rooted.
	2	Shale, gray.
	3	Coal.
	1	Shale, gray.
3		Sandstone, gray, medium-grained, ripple-laminated, rooted, erosional base.
4		Shale and siltstone, in thin-bedded alternation.
	6	Carbonaceous shale.
6		Covered, probably interbedded shale and siltstone.
	6	Carbonaceous shale.
2	6	Sandstone, gray, medium-grained, convoluted, ripple-laminated.
10		Shale and siltstone, in thin-bedded alternation.

1	6	Siltstone, weathering buff, rooted.
1		Siltstone, gray.
1		Coal.
7		Covered, probably silty shale.
2	6	Siltstone, weathering buff.
1		Siltstone, gray.
1		Coal
6		Sandstone, gray, fine- to medium-grained, thin bedded, ripple-laminated, erosional base.
3		Siltstone, gray, clayey.
	6	Coal, dirty.
1		Coal.
10		Sandstone, gray, medium-grained, ripple-laminated, convoluted, burrowed, erosional base.
7		Shale, gray.
2		Carbonaceous shale.
11	6	Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, ripple-laminated, burrowed.

STAR POINT SANDSTONE (Upper part; measured from base to top)

5		Sandstone, light gray, weathered bleached, medium-grained, burrowed, rooted.
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SECTION WM-30

Measured in SW1/4NW1/4 Sec. 35, T. 21 S., R. 5 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

4		Covered, probably interbedded shale and siltstone.
2		Sandstone, gray, medium-grained, ripple-laminated, rooted.
3		Covered, probably interbedded shale and siltstone.
3		Coal.
1	6	Shale, gray.
2		Sandstone, gray, medium-grained, ripple-laminated, rooted.
6		Siltstone and shale, in thin-bedded alternation.
1	6	Siltstone, gray, ripple-laminated.
1		Sandstone, gray, fine-grained, ripple-laminated, rooted.
3	6	Carbonaceous shale.
2		Siltstone, dark gray, rooted.
1		Carbonaceous shale.
10		Sandstone, gray, weathering buff, fine-grained, thin- to thick-bedded.
1		Covered, probably interbedded shale and siltstone.
1		Sandstone, gray, fine-grained, ripple-laminated.
	6	Burned rock.
12		Sandstone, weathering buff, medium-grained, crossbedded, erosional base.
7		Covered, probably interbedded shale and siltstone.
	4	Shale, gray.
2		Sandstone, gray, medium-grained, ripple-laminated, rooted.
1		Siltstone, gray.
1		Shale, gray.

6		Sandstone, gray, medium-grained, crossbedded, ripple-laminated, rooted.
2		Shale, gray.
20		Covered.
1		Siltstone, gray.
	6	Burned rock.
2		Shale and siltstone, in thin-bedded alternation.
11		Covered, probably interbedded siltstone and shale.
6		Sandstone, gray, medium-grained, ripple-laminated, parallel-laminated.
7		Covered, siltstone upper 2 feet.
	6	Coal.
	6	Carbonaceous shale.
3		Shale, dark gray, carbonaceous.
1		Siltstone, gray, clayey.
4	6	Sandstone, gray, weathering buff, medium-grained, thin-bedded, convoluted, erosional base.
4	6	Siltstone and shale, in thin-bedded alternation.
1		Sandstone, gray, fine-grained, ripple-laminated, rooted.
1	6	Siltstone and shale, in thin-bedded alternation.
1		Sandstone, gray, fine-grained, ripple-laminated.
2	6	Shale, gray, silty.
1		Sandstone, gray, medium-grained, ripple-laminated.
4		Shale and siltstone, in thin-bedded alternation.
1		Coal.
1		Shale, dark gray.
1		Siltstone, gray, ripple-laminated.
1	6	Sandstone, gray, fine-grained, ripple-laminated.
4		Covered, probably interbedded siltstone and shale.
1	6	Shale, dark gray, carbonaceous.

1		Coal.
4		Covered, probably interbedded shale and siltstone.
	6	Sandstone, gray, fine-grained, ripple-laminated.
1	6	Shale, gray.
5	6	Sandstone, gray, medium-grained, ripple-laminated, erosional base.
	6	Coal.
10	6	Covered, probably interbedded shale and siltstone.
1	6	Sandstone, gray, fine-grained, thin bedded, ripple-laminated, rooted.
	6	Siltstone, gray.
2		Carbonaceous shale, silty.
	6	Coal.
16		Sandstone, weathering buff, medium-grained, thin bedded, ripple-laminated, erosional base.
20		Covered, upper 10 feet is probably interbedded siltstone and shale.
4		Shale and siltstone, in thin-bedded alternation.
1	6	Sandstone, gray, fine-grained, ripple-laminated.
2		Shale, gray.
	6	Carbonaceous shale.
7		Shale, gray.
1		Siltstone, gray.
	6	Shale, gray.
6		Siltstone and sandstone, in thin-bedded alternation.
4	6	Shale, gray.
4		Sandstone, gray, fine-grained, ripple-laminated.
4	6	Shale, gray, silty.
5		Sandstone, gray, fine-grained, non-bedded.
1		Coal.
22		Sandstone, weathering buff, coarse-grained, crossbedded, parallel-laminated, erosional base.

SECTION WM-31

Measured in NW1/4NW1/4 Sec. 35, T. 21 S., R. 5 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

2		Sandstone, gray, medium-grained, thin bedded, rooted.
1		Shale, gray.
1		Sandstone, gray, medium-grained, ripple-laminated.
2		Covered, probably interbedded shale and siltstone.
1	6	Coal.
2		Shale, gray.
1		Sandstone, gray, medium-grained, ripple-laminated, rooted.
	6	Carbonaceous shale.
1		Coal.
15		Covered.
4		Sandstone, weathering buff, medium-grained, ripple-laminated, parallel-laminated.
1		Carbonaceous shale.
5		Covered, probably interbedded shale and siltstone.
1		Siltstone, weathering buff.
1		Carbonaceous shale.
1	4	Coal.
8	6	Covered, probably interbedded shale and siltstone.
7		Sandstone, gray, medium-grained, thin- to thick-bedded, ripple-laminated, convoluted, crossbedded, burrowed, rooted.
	6	Shale, gray.
3		Sandstone, gray, medium-grained, thin bedded, ripple-laminated, rooted.
5		Covered, probably interbedded sandstone and siltstone.
1	6	Shale, gray.

1		Sandstone, gray, medium-grained, thin bedded, ripple-laminated, rooted.
3		Covered, probably interbedded siltstone and shale.
7	6	Sandstone, gray, medium-grained, crossbedded, ripple-laminated, convoluted, burrowed, rooted, erosional base.
1		Shale, gray.
4		Covered, probably interbedded shale, siltstone, and sandstone.
1	6	Siltstone, gray.
1		Sandstone, gray, fine-grained, thin bedded, ripple-laminated, rooted.
5		Covered, probably interbedded shale and siltstone.
6		Covered.
4		Sandstone, weathering buff, medium-grained, crossbedded, ripple-laminated, convoluted, burrowed, rooted.
6		Covered, probably interbedded siltstone and shale.
1		Shale, gray.
5		Shale, gray, silty.
2	6	Siltstone and shale, in thin-bedded alternation.
2		Sandstone, gray, medium-grained, thin bedded, ripple-laminated, rooted.
1		Shale, gray, carbonaceous.
5		Siltstone and shale, in thin-bedded alternation.
1		Sandstone, gray, fine-grained, ripple-laminated, rooted.
4	6	Covered, probably interbedded shale and siltstone.
1		Sandstone, gray, fine-grained, ripple-laminated.
5		Covered, probably interbedded shale and siltstone.
1		Sandstone, gray, fine-grained, ripple-laminated.
4	6	Covered.
1		Shale, gray.
20		Covered.
3		Shale and siltstone, in thin-bedded alternation.

- 2 Sandstone, weathered bleached, fine-grained, parallel-laminated, rooted.
- 7 Sandstone, gray, medium-grained, thick bedded, ripple-laminated, parallel-laminated, burrowed, erosional base.

STAR POINT SANDSTONE (Upper part; measured from base to top)

- 10 Sandstone, weathered bleached, medium-grained, crossbedded, rooted.

SECTION WM-32

Measured in SW1/4SW1/4 Sec. 26, T. 21 S., R. 5 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

6	6	Sandstone and shale, in thin-bedded alternation; sandstone is ripple-laminated, rooted.
2		Siltstone, gray, clayey.
1		Carbonaceous shale, silty.
3		Coal.
1		Shale, gray, silty.
	6	Siltstone, gray.
1		Sandstone, gray, fine-grained, thin bedded, ripple-laminated, rooted.
3		Covered, probably interbedded siltstone and shale.
19		Sandstone, weathering buff, medium-grained, crossbedded, rooted, erosional base.
1		Carbonaceous shale.
3		Covered, probably shale.
1		Carbonaceous shale.
2		Covered, probably interbedded shale and siltstone.
	6	Carbonaceous shale.
68		Covered.
24		Sandstone, gray, weathering buff, coarse grained, crossbedded, convoluted, erosional base.
	6	Carbonaceous shale.
12	6	Covered, probably interbedded shale and siltstone.
	4	Coal.
	6	Carbonaceous shale.
10		Covered, probably interbedded shale and siltstone.

- 6 Carbonaceous shale, silty.
- 2 6 Sandstone, gray, fine-grained, ripple-laminated, rooted.
- 11 Covered, probably interbedded shale and siltstone.
- 4 Sandstone, gray, medium-grained, thin bedded, ripple-laminated, rooted.
- 24 Covered, probably interbedded shale and siltstone.
- 6 Carbonaceous shale.
- 1 Shale and siltstone, in thin-bedded alternation.
- 17 6 Sandstone, gray, weathering buff, crossbedded, ripple-laminated, parallel-laminated, erosional base.

STAR POINT SANDSTONE (Upper part, measured from base to top)

- 10 Sandstone, weathered bleached, medium-grained, crossbedded.

SECTION WM-33

Measured in NW1/4SW1/4 Sec. 26, T. 21 S., R. 5 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

2		Sandstone, siltstone, and shale, in thin-bedded alternation, coaly fragments, carbonaceous, erosional base.
6		Sandstone, gray, medium-grained, thin bedded, parallel-laminated, ripple-laminated, burrowed, erosional base.
10		Covered.
1	6	Siltstone, gray, carbonaceous.
1	6	Sandstone, gray, fine-grained, thin bedded, flaser-bedded.
	6	Shale, gray.
3		Sandstone and shale, in thin-bedded alternation, burrowed, rooted.
	6	Siltstone, light gray, weathered bleached.
2		Coal.
4		Covered, probably interbedded shale and siltstone.
	6	Coal
4		Siltstone and shale, in thin-bedded alternation.
3		Shale, gray.
1		Sandstone, gray, fine-grained, thin bedded.
1		Siltstone, gray.
2		Carbonaceous shale.
1	6	Siltstone, dark gray.
	6	Carbonaceous shale.
1		Sandstone, gray, fine-grained, thin bedded
1	6	Siltstone and shale, in thin-bedded alternation.
	3	Coal.
1	6	Sandstone, gray, medium-grained, thin bedded, rooted.

- 6 Shale, gray.
- 5 Sandstone, gray, medium-grained, thick bedded, ripple-laminated, convoluted, rooted, erosional base.
- 11 6 Shale and siltstone, in thin-bedded alternation.
- 1 6 Sandstone, gray, medium-grained, thin bedded, ripple-laminated, rooted.
- 1 6 Shale and siltstone, in thin-bedded alternation.
- 3 Carbonaceous shale.
- 6 6 Shale, gray, carbonaceous.
- 1 6 Shale and siltstone, in thin-bedded alternation.
- 3 Sandstone, gray, weathering buff, medium-grained, thin bedded, ripple-laminated, rooted.
- 4 Siltstone and shale, in thin-bedded alternation.
- 1 Shale, gray.
- 12 Covered, probably interbedded siltstone and shale.
- 3 6 Sandstone, gray, medium-grained, thick bedded, ripple-laminated, rooted.
- 13 Covered, probably interbedded sandstone, siltstone, and shale.
- 1 Shale, gray, carbonaceous.
- 6 Sandstone, gray, fine-grained, ripple-laminated, parallel-laminated, rooted.
- 3 Shale and siltstone, in thin-bedded alternation.
- 3 Carbonaceous shale.
- 24 Sandstone, weathering buff, medium-grained, thick bedded, convoluted, burrowed, erosional base.
- 2 Shale, gray.
- 11 Covered, probably interbedded shale and siltstone.
- 5 6 Sandstone, gray, weathering buff, medium-grained, ripple-laminated, rooted.
- 4 Shale, gray.
- 4 Sandstone, gray, medium-grained, thin bedded, ripple-laminated, rooted.

3		Covered.
2	6	Shale and siltstone, in thin-bedded alternation.
1		Carbonaceous shale.
1		Coal.
10		Siltstone and shale, in thin-bedded alternation.
1	6	Carbonaceous shale.
	6	Coal.
10		Covered, probably interbedded siltstone and shale.
9	6	Covered.
2		Sandstone, gray, medium-grained, ripple-laminated, rooted.
4		Shale, gray.
1		Sandstone, gray, medium-grained, thin bedded, ripple-laminated.
	6	Shale, gray.
5	6	Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, burrowed, erosional base.
1		Shale, gray.
1		Carbonaceous shale.
5		Shale, gray.
16		Covered, probably interbedded shale and siltstone.
2	6	Sandstone, gray, medium-grained, ripple-laminated.
13		Covered.
18		Sandstone, weathering buff, medium-grained, convoluted, burrowed, erosional base.

STAR POINT SANDSTONE (Upper part; measured from base to top)

12		Sandstone, light gray, weathered bleached, medium-grained, crossbedded.
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SECTION WM-34

Measured in SW1/4NW1/4 Sec. 26, T. 21 S., R. 5 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (lower part; measured from base to top)

6		Covered.
6		Shale, gray, silty, intensely burrowed.
1	6	Carbonaceous shale.
2		Siltstone, gray, burrowed.
1	6	Sandstone, gray, fine-grained, ripple-laminated, rooted.
14		Covered.
1		Coal, bony.
3		Carbonaceous shale.
2		Coal.
26		Sandstone, gray, weathering buff, medium-grained, thin- to thick-bedded, convoluted, erosional base.
6		Covered.
2		Sandstone, gray, medium-grained, ripple-laminated, rooted.
1		Sandstone and siltstone, in thin-bedded alternation.
	6	Coal.
1		Shale, gray, carbonaceous.
6		Sandstone, gray, medium-grained, ripple-laminated, parallel-laminated, burrowed, erosional base.
	6	Coal.
20		Covered.
1		Sandstone, weathering buff, fine-grained, ripple-laminated.
35		Sandstone, gray, weathering buff, medium-grained, crossbedded, erosional base.
1	6	Coal.
	6	Carbonaceous shale

6	Shale, gray.
1	Shale, gray, silty.
3	Sandstone, gray, medium-grained, ripple-laminated, erosional base.
6	Shale, gray.
6	Sandstone, gray, fine-grained, ripple-laminated.
2	Siltstone, gray.
4	Carbonaceous shale.
2	6 Sandstone, gray, medium-grained, thin bedded, ripple-laminated, rooted.
1	Shale, gray, silty.
8	6 Sandstone, weathering buff, medium-grained, convoluted, ripple-laminated, erosional base.
1	Shale, gray.
9	6 Covered, probably interbedded shale and siltstone.
1	Sandstone, gray, medium-grained, ripple-laminated, rooted.
6	Covered, probably interbedded shale and siltstone.
1	6 Coal.
7	Siltstone and shale, in thin-bedded alternation.
	6 Sandstone, gray, fine-grained, ripple-laminated.
5	6 Shale and siltstone, in thin-bedded alternation.
1	Sandstone, gray, medium-grained, ripple-laminated.
	6 Shale, gray.
1	6 Coal.
2	6 Sandstone, gray, medium-grained, ripple-laminated, rooted.
2	6 Shale, gray.
1	Sandstone, gray, fine-grained, ripple-laminated.
1	Shale, gray.
1	Sandstone, gray, fine-grained, ripple-laminated.
14	Covered, probably interbedded siltstone and shale.
6	Carbonaceous shale.

2	6	Coal.
	6	Shale, gray.
	4	Coal.
	6	Shale, gray
1		Siltstone and shale, in thin-bedded alternation.
1		Sandstone, gray, fine-grained, ripple-laminated.
3		Covered, probably interbedded siltstone and shale.
	6	Carbonaceous shale
	6	Siltstone, gray.
1		Carbonaceous shale, coaly.
27		Sandstone, gray, weathering buff, medium-grained, crossbedded, erosional base.
	6	Carbonaceous shale, coaly.
6		Sandstone, gray, medium-grained, ripple-laminated, rooted, erosional base.
18		Covered, probably interbedded shale, siltstone, and sandstone.
2	6	Sandstone, weathering buff, medium-grained, ripple-laminated.
1		Shale, gray.
4	6	Sandstone, gray, medium-grained, thin bedded, ripple-laminated, rooted.
8	6	Covered, probably interbedded siltstone and shale.
1	6	Shale, gray.
1		Sandstone, gray, fine-grained, ripple-laminated.
1		Shale, gray.
14		Sandstone, weathering buff, medium-grained, crossbedded, convoluted, erosional base.

STAR POINT SANDSTONE (Upper part; measured from base to top)

10		Sandstone, light gray, weathered bleached, medium-grained, crossbedded.
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SECTION WM-35

Measured in NW1/4SW1/4 and SW1/4NW1/4 Sec. 26, T. 21 S., R. 5 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

10		Shale, gray, carbonaceous.
5		Siltstone and shale, in thin-bedded alternation.
5		Sandstone, siltstone, and shale, in thin-bedded alternation.
1		Sandstone, gray, fine-grained, ripple-laminated, rooted.
	6	Shale, gray.
	6	Coal.
	6	Carbonaceous shale.
1		Shale, gray.
6		Covered, probably interbedded shale and sandstone.
10		Siltstone and shale, in thin-bedded alternation.
1		Shale, gray.
1	6	Shale, gray, silty.
	6	Shale, dark gray.
	6	Coal.
	6	Carbonaceous shale, coaly.
	6	Shale, gray.
4		Covered.
1		Shale, dark gray.
	6	Coal.
3		Covered
10		Sandstone, weathering buff, medium-grained, medium-grained, thin- to thick-bedded, convoluted, rooted, erosional base.
5		Covered, probably interbedded sandstone, siltstone, and shale.
1	6	Sandstone, gray, medium-grained, ripple-laminated, rooted.

1		Shale, gray.
62		Covered.
20		Sandstone, weathering buff, medium-grained, thick bedded, convoluted, ripple-laminated, burrowed, erosional base.
2		Carbonaceous shale.
1		Shale, gray.
2		Covered.
2		Sandstone, gray, medium-grained, ripple-laminated.
1	6	Shale, gray.
6	6	Sandstone, gray, medium-grained, crossbedded, ripple-laminated, rooted, erosional base.
15		Covered.
1		Shale, gray.
1	6	Siltstone, gray.
1		Carbonaceous shale.
4		Sandstone, gray, medium-grained, ripple-laminated, rooted.
	6	Siltstone, gray, carbonaceous.
4		Sandstone and siltstone, in thin-bedded alternation.
4		Shale and siltstone, in thin-bedded alternation.
1		Shale, gray, silty.
2	6	Siltstone and sandstone, in thin-bedded alternation.
1		Siltstone, gray.
1		Carbonaceous shale, coaly.
6	6	Siltstone, gray, clayey.
	4	Shale, light gray.
	2	Coal.
	6	Carbonaceous shale.
2		Sandstone, gray, fine-grained, ripple-laminated, rooted.
15		Covered, probably interbedded sandstone and shale.

1	6	Sandstone, gray, medium-grained, ripple-laminated, rooted.
5		Covered.
10		Sandstone and shale, in thin-bedded alternation.
5		Sandstone, gray, fine-grained, thin bedded, ripple-laminated, rooted.
2		Shale, gray.
3		Covered.
2	6	Shale, gray, silty.
2	6	Sandstone, gray, fine-grained, ripple-laminated.
5		Covered, probably interbedded shale and siltstone.
20		Covered.
15		Covered, probably interbedded siltstone and shale.
3		Shale, gray, carbonaceous.
7		Shale, gray, silty.
2	6	Sandstone, gray, fine-grained, ripple-laminated, rooted.
	1	Carbonaceous shale.
25		Covered.
43		Sandstone, gray, weathering buff, medium-grained, crossbedded, parallel-laminated, convoluted, erosional base.
1		Shale, gray.

STAR POINT SANDSTONE (Upper part; measured from base to top)

10		Sandstone, light gray, weathered bleached, medium-grained, crossbedded.
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SECTION WM-36

Measured in NE1/4SW1/4 Sec. 26, T. 21 S., R. 5 E.

Thickness		<u>Lithology</u>
<u>Feet</u>	<u>Inches</u>	
BLACKHAWK FORMATION (Lower part; measured from base to top)		
1	6	Siltstone, dark gray, carbonaceous.
4		Covered.
1		Sandstone, gray, fine-grained, ripple-laminated.
4		Coal.
2		Siltstone, gray, carbonaceous.
43		Sandstone, weathering buff, medium-grained, crossbedded, burrowed, rooted, erosional base.
4	6	Shale, gray.
	6	Coal.
3	6	Covered, probably interbedded siltstone and shale.
	6	Sandstone, gray, fine-grained, ripple-laminated.
10	6	Siltstone and shale, in thin-bedded alternation.
2		Sandstone, gray, medium-grained, ripple-laminated, rooted.
	6	Carbonaceous shale.
	6	Coal.
1		Shale, gray.
9	6	Covered, probably interbedded sandstone, siltstone, and shale.
	4	Carbonaceous shale.
1	6	Siltstone and shale, in thin-bedded alternation.
	6	Carbonaceous shale.
	10	Coal.
1		Shale, dark gray, carbonaceous.
	6	Coal.
7		Shale, burned.

	3	Coal.
3	6	Covered, probably shale.
3	6	Sandstone, light gray, weathered bleached, medium-grained, thin- to thick-bedded.
	6	Carbonaceous shale.
12		Covered, probably interbedded sandstone, siltstone, and shale.
5		Sandstone, gray, weathered bleached, medium-grained, crossbedded.
3		Shale, gray.
3	6	Sandstone, gray, medium-grained, ripple-laminated.
1	6	Shale, gray.
	1	Carbonaceous shale.
5		Sandstone, gray, medium-grained, thin bedded, ripple-laminated, rooted.
1		Shale, gray.
16		Sandstone, gray, weathering buff, medium-grained, crossbedded, ripple-laminated, erosional base.

SECTION WM-37

Measured in NE1/4SW1/4 and SE1/4SW1/4 Sec. 26, T. 21 S., R. 5 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

3		Carbonaceous shale and siltstone, in thin-bedded alternation.
	6	Coal.
	3	Carbonaceous shale.
2		Sandstone, gray, fine- to medium-grained, ripple-laminated, rooted.
1		Carbonaceous shale.
2		Shale, gray.
1		Sandstone, gray, fine-grained, ripple-laminated, rooted.
1		Siltstone, gray, carbonaceous.
1		Shale, gray.
1	6	Sandstone, gray, medium-grained, ripple-laminated, rooted.
1		Sandstone and carbonaceous siltstone, in thin-bedded alternation.
	6	Coal.
	6	Coal and sandstone, in thin-bedded alternation.
4	6	Sandstone, gray, medium-grained, thin bedded, ripple-laminated, burrowed, rooted.
3		Covered.
2	6	Sandstone, gray, fine- to medium-grained, thin bedded, ripple-laminated.
13		Sandstone, gray, weathering buff, medium-grained, thin- to thick-bedded, ripple-laminated, rooted, erosional base.
5		Sandstone, gray, medium-grained, ripple-laminated.
6		Shale, gray to brown.
13	6	Covered, probably interbedded shale and siltstone.
1	6	Sandstone, gray, medium-grained, ripple-laminated, rooted.
6		Siltstone and shale, in thin-bedded alternation.

4		Sandstone, gray, medium-grained, ripple-laminated, rooted.
1	6	Siltstone and shale, in thin-bedded alternation.
1		Sandstone, burned.
6	6	Shale and siltstone, in thin-bedded alternation, burned.
2		Sandstone, burned, medium-grained, ripple-laminated, rooted.
	6	Siltstone, gray.
2	6	Siltstone, clayey.
8		Sandstone, weathering buff, medium-grained, ripple-laminated, convoluted, rooted, erosional base.
1		Siltstone, gray.
	8	Carbonaceous shale.
	4	Coal.
30		Sandstone, weathering buff, coarse-grained, crossbedded, convoluted, burrowed.
10		Sandstone, gray, medium-grained, crossbedded, convoluted, burrowed.
3		Sandstone, gray, fine- to medium-grained, thin bedded.
5		Shale, gray.
1		Sandstone, gray, fine-grained, non-bedded.
6		Shale and siltstone, in thin-bedded alternation.
1		Sandstone, gray, fine-grained, thin bedded, ripple-laminated, rooted.
5		Shale, gray.
1		Sandstone, gray, fine-grained, thin bedded, ripple-laminated, rooted.
2		Shale, gray.
1	6	Sandstone, gray, fine-grained, thin bedded, ripple-laminated, rooted.
7		Siltstone and shale, in thin-bedded alternation.
2		Sandstone, gray, medium-grained, parallel-laminated, ripple-laminated, convoluted, rooted.
7		Siltstone and shale, in thin-bedded alternation.
3		Sandstone, gray, medium-grained, thick bedded, ripple-laminated.
6	6	Covered.

5 Sandstone, gray, weathering buff, medium-grained, thin- to thick-bedded, ripple-laminated, rooted.

3 Shale, gray.

6 Sandstone, gray, fine-grained, ripple-laminated.

1 Siltstone, gray, clayey.

8 Coal.

6 Shale, gray, carbonaceous.

7 Sandstone, weathering buff, medium-grained, thin- to thick-bedded, convoluted, burrowed, erosional base.

8 Shale, gray.

5 6 Sandstone, gray, medium-grained, ripple-laminated, convoluted, burrowed, rooted.

1 6 Shale, gray, silty.

1 Carbonaceous shale.

1 Coal.

6 Shale, gray.

9 Sandstone, gray, weathering buff, medium-grained, thick bedded, convoluted, ripple-laminated, rooted.

7 Shale and siltstone, in thin-bedded alternation.

1 6 Sandstone, gray, medium-grained, ripple-laminated, parallel-laminated.

5 Shale and siltstone, in thin-bedded alternation.

3 Sandstone, gray, fine-grained, ripple-laminated.

4 6 Shale and siltstone, in thin-bedded alternation.

1 Sandstone, gray, fine-grained, ripple-laminated.

15 6 Siltstone and shale, in thin-bedded alternation.

1 6 Sandstone, gray, fine-grained, ripple-laminated, rooted.

7 Siltstone and shale, in thin-bedded alternation.

6 Carbonaceous shale.

30 Covered.

40 Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, burrowed, erosional base.

- 2 Sandstone, weathered bleached, medium-grained, thin bedded.
- 12 Covered, probably interbedded sandstone and shale.
- 9 Sandstone, gray, medium-grained, ripple-laminated.
- 7 6 Covered.
- 18 Sandstone, gray, medium-grained, thick bedded, convoluted, burrowed.

STAR POINT SANDSTONE (Lower, middle, and upper parts; measured from base to top)

- 13 6 Sandstone, gray, fine- to very fine-grained, parallel-laminated, ripple-laminated, burrowed; intercalated with siltstone and shale.
- 4 6 Sandstone, gray, fine-grained, parallel-laminated, burrowed; intercalated with siltstone and shale.
- 20 6 Sandstone, gray, fine-grained, parallel-laminated, ripple-laminated, burrowed; some thin siltstone intercalations.
- 42 Sandstone, gray, very fine grained, parallel-laminated, ripple-laminated, burrowed; intercalated with siltstone and shale.
- 36 6 Sandstone, gray, fine-grained, parallel-laminated, burrowed.
- 51 Sandstone, gray, medium- to coarse-grained, crossbedded, parallel-laminated, erosional base; with plant stems.

SECTION WM-38

Measured in SE1/4SW1/4 Sec. 26. T. 21 S., R. 5 E.

Thickness		Lithology
Feet	Inches	
BLACKHAWK FORMATION (Lower part; measured from base to top)		
5		Sandstone, gray, weathered bleached, medium-grained, crossbedded, burrowed, rooted.
10		Covered.
1		Sandstone, gray, very fine grained, convoluted.
3		Covered.
6	6	Shale, gray.
	4	Carbonaceous shale.
	1	Sandstone, gray, very fine grained, carbonaceous.
	6	Carbonaceous shale, coaly.
1	6	Carbonaceous shale and coal, in thin-bedded alternation.
	6	Sandstone, gray, fine- to medium-grained, carbonaceous.
6		Carbonaceous shale, coaly, sandy.
1	6	Shale, gray, silty.
4		Sandstone, gray, fine-grained, thin bedded, ripple-laminated, convoluted.
	6	Siltstone, dark gray, carbonaceous.
4		Coal.
5	6	Shale, gray, silty.
2		Siltstone, gray, clayey, carbonaceous.
1		Shale, gray, silty.
	6	Sandstone, gray, fine-grained, ripple-laminated, rooted.
	6	Carbonaceous shale.
5		Siltstone and shale, in thin-bedded alternation.
1	6	Sandstone and siltstone, in thin-bedded alternation.

1	6	Sandstone, gray, coarse-grained, thick bedded, fossiliferous (pelecypods).
1		Sandstone, gray, weathered bleached, medium-grained, rooted.
	6	Carbonaceous shale, silty.
	6	Coal.
2		Shale, gray, silty.
7		Sandstone, gray, fine- to medium-grained, thin bedded, ripple-laminated, convoluted.
5		Siltstone and shale, in thin-bedded alternation.
1		Shale, gray.
	6	Burned material.
5		Sandstone, gray, weathered bleached, very fine grained, rippled.
3	6	Sandstone, weathered bleached, fine-grained, parallel-laminated, ripple-laminated, rooted.
10		Covered.
	3	Coal.
4	6	Sandstone, gray, weathering buff, medium-grained, crossbedded, ripple-laminated, burrowed, rooted.
5		Burned material.
1	6	Sandstone, burned, very fine grained, ripple-laminated.
6		Covered, probably interbedded shale and siltstone.
1	6	Sandstone, gray, medium-grained, ripple-laminated, rooted.
	4	Carbonaceous shale.
1		Shale, gray.
5		Covered, probably interbedded siltstone and shale.
5		Sandstone, gray, medium-grained, thick bedded, convoluted, ripple-laminated, parallel-laminated.
5		Covered.
19		Sandstone, weathering buff, medium-grained, thick bedded, convoluted, crossbedded, burrowed.
	10	Shale, gray.

15		Sandstone, gray, weathering buff, medium- to coarse-grained, crossbedded, convoluted, erosional base.
5		Covered.
2		Sandstone, gray, very fine grained, rooted.
3	6	Covered, probably interbedded shale and siltstone.
13		Sandstone, burned, medium-grained, thin- to thick-bedded, crossbedded, ripple-laminated, erosional base.
3	6	Covered.
8		Sandstone, burned, medium-grained, convoluted, ripple-laminated.
1		Covered, probably interbedded shale and siltstone.
	6	Shale and siltstone, in thin-bedded alternation.
6		Sandstone and siltstone, in thin-bedded alternation.
20		Covered.
1	6	Sandstone, gray, medium-grained, ripple-laminated.
20		Covered.
2	6	Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, erosional base.

SECTION WM-39

Measured in SE1/4SW1/4 Sec. 26, T. 21 S., R. 5 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

11		Sandstone, gray, weathering buff, medium-grained, thick bedded, convoluted, ripple-laminated.
6		Covered, probably interbedded shale and siltstone.
	2	Coal.
6		Covered.
4	11	Coal
6		Covered, probably interbedded shale and siltstone.
10		Sandstone, gray, medium-grained, thin bedded, ripple-laminated, burrowed.

SECTION WM-40

Measured in SW1/4SE1/4 Sec. 26, T. 21 S., R. 5 E.

Thickness		<u>Lithology</u>
<u>Feet</u>	<u>Inches</u>	
BLACKHAWK FORMATION (Lower part; measured from base to top)		
29		Sandstone, gray, weathering buff, medium-grained, thin- to thick-bedded, burrowed, rooted.
9	6	Shale and siltstone, in thin-bedded alternation; carbonaceous shale 4 feet above base.
1	6	Sandstone, gray, fine-grained, ripple-laminated, rooted.
3		Coal.
	6	Carbonaceous shale.
1	6	Shale, gray.
14		Shale, gray, silty.
4		Sandstone, gray, weathering buff, medium- to coarse-grained, ripple-laminated, rooted.
1		Shale and siltstone, in thin-bedded alternation.
	2	Coal.
1		Shale, gray, silty.
5		Sandstone, gray, fine- to medium-grained, thin bedded, ripple-laminated.
2		Shale and siltstone, in thin-bedded alternation.
6	6	Siltstone and sandstone, in thin-bedded alternation.
10		Covered, probably interbedded siltstone and shale.
	6	Sandstone, gray, fine-grained, ripple-laminated.
11	6	Covered.
4		Sandstone, gray, medium-grained, ripple-laminated, parallel-laminated, crossbedded, burrowed, rooted.
3	6	Sandstone, gray, medium-grained, ripple-laminated.
5	6	Sandstone, gray, medium-grained, convoluted, ripple-laminated, burrowed, rooted.
5		Covered.

- 3 Sandstone, gray, medium-grained, ripple-laminated, rooted.
- 6 Shale, gray.
- 6 Shale, gray, silty.
- 11 Covered, probably interbedded shale and siltstone.
- 3 6 Sandstone, gray, medium-grained, ripple-laminated, convoluted, rooted.

SECTION WM-41

Measured in SW1/4SE1/4 Sec. 26, T. 21 S., R. 5 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (lower part; measured from base to top)

14		Sandstone, gray, weathering buff, medium- to coarse-grained, thin- to thick-bedded, burrowed, rooted, erosional base.
11		Covered, probably shale.
	6	Carbonaceous shale.
3	6	Coal.
15	6	Partly covered, shale upper part.
1	6	Sandstone, gray, medium-grained, rooted.
5		Shale and siltstone, in thin-bedded alternation.
	8	Coal.
	4	Shale, gray.
5	6	Sandstone, gray, fine-grained, thin bedded, ripple-laminated, convoluted.
	4	Shale, gray.
	2	Carbonaceous shale.
10	6	Covered, probably interbedded shale and siltstone.
11		Sandstone, weathering buff, medium-grained, crossbedded, ripple-laminated, burrowed, rooted, erosional base.
	6	Shale, gray.
1	6	Sandstone, gray, medium-grained, ripple-laminated, rooted.
3	6	Shale, gray, silty.
	6	Carbonaceous shale.
3		Siltstone and shale, in thin-bedded alternation, burned.
1		Sandstone, gray, fine-grained, ripple-laminated, rooted.
	3	Shale, gray.
	3	Coal.

	6	Shale, gray, silty.
11		Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, ripple-laminated, rooted, erosional base.
4	6	Shale, gray.
	1	Carbonaceous shale.
10		Sandstone, gray, medium-grained, crossbedded, convoluted, rooted, erosional base.
6		Shale, gray.
7		Sandstone, gray, weathering buff, medium-grained, parallel-laminated, ripple-laminated, burrowed, rooted.
1		Shale, gray, silty.
2		Sandstone, gray, medium-grained, ripple-laminated.
3	6	Shale, gray.
2		Sandstone, gray, medium-grained, ripple-laminated.
3		Covered.
1		Sandstone, weathered bleached, fine-grained, ripple-laminated.
2		Sandstone, gray, medium-grained, ripple-laminated, rooted.
	3	Carbonaceous shale.
1	6	Sandstone, gray, medium-grained, ripple-laminated.
6	6	Covered, burned.
8		Sandstone, gray, fine-grained, thin- to thick-bedded, rooted.
7		Partly covered, interbedded shale and siltstone upper part.
1	6	Sandstone, gray, medium-grained, ripple-laminated.
9	6	Covered, probably interbedded shale and siltstone.
1		Sandstone, gray, medium-grained, ripple-laminated.
	6	Siltstone, gray.
	6	Carbonaceous shale.
6		Sandstone, gray, weathering buff, medium-grained, ripple-laminated, convoluted, rooted.
8		Covered, probably interbedded shale and siltstone.

1	6	Sandstone, gray, fine-grained, ripple-laminated.
25		Covered, probably interbedded sandstone, siltstone, and shale.
1	6	Sandstone, gray, medium-grained, parallel-laminated, ripple-laminated.
4	6	Sandstone, gray, fine-grained, thin bedded.
10		Covered.
8	6	Sandstone, gray, fine- to medium-grained, thin bedded, ripple-laminated.
4	6	Shale, gray.
2		Sandstone, gray, medium-grained, ripple-laminated.
4		Shale and siltstone, in thin-bedded alternation.
2		Sandstone, gray, medium-grained, ripple-laminated.
5		Covered, probably interbedded shale and siltstone.
	8	Sandstone, gray, fine-grained, ripple-laminated.
7	6	Covered, probably shale.
6		Sandstone, weathering buff, fine-grained, thin bedded.
38		Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, ripple-laminated.

SECTION WM-42

Measured in NW1/4NE1/4 Sec. 35, T. 21 S., R. 5 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

11	6	Sandstone, gray, weathered bleached, thin medium-grained, thin bedded, ripple-laminated.
11		Covered, probably interbedded shale and siltstone.
1		Sandstone, gray, medium-grained, ripple-laminated.
1		Covered.
1		Sandstone, gray, weathered bleached, fine-grained, ripple-laminated, rooted.
2	6	Coal.
10		Shale, gray.
2		Sandstone, gray, medium-grained, ripple-laminated.

SECTION WM-43

Measured in NE1/4NE1/4 Sec. 35, T. 21 S., R. 5 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

4		Sandstone and shale, in thin-bedded alternation.
2		Carbonaceous sandstone, siltstone, and shale, in thin-bedded alternation.
3	6	Siltstone, dark gray, carbonaceous, sandy.
5		Siltstone and shale, in thin-bedded alternation.
7		Sandstone, gray, medium-grained, ripple-laminated.
2		Sandstone, gray, fine-grained, ripple-laminated.
12		Covered, probably interbedded shale and siltstone.
5		Shale, gray, carbonaceous.
1		Shale, gray.
3	6	Sandstone, gray, fine-grained, ripple-laminated, rooted.
3	6	Shale, burned.
3		Sandstone, gray, weathered bleached, fine-grained, ripple-laminated, rooted.
2	6	Siltstone and shale, in thin-bedded alternation.
	6	Shale, dark gray.
	6	Coal.
3		Sandstone, gray, medium-grained, ripple-laminated.
5		Siltstone, gray.
	4	Shale, gray.
	2	Coal.
3	6	Sandstone, gray, medium-grained, convoluted, ripple-laminated.
2	6	Shale, gray.
1		Siltstone, gray.

- 3 Sandstone, gray, medium-grained, thick bedded, ripple-laminated, rooted.
- 2 Sandstone, weathered bleached, fine-grained, rooted.
- 2 6 Sandstone and siltstone, in thin-bedded alternation.
- 1 Shale, gray.
- 2 6 Sandstone, gray, medium-grained, ripple-laminated, rooted, erosional base.
- 8 Covered, probably interbedded siltstone and shale.
- 3 6 Sandstone, gray, medium-grained, ripple-laminated, rooted.
- 6 Covered.
- 15 Sandstone, gray, weathering buff, medium-grained, thick bedded, convoluted, erosional base.

SECTION WM-44

Measured in SE1/4SE1/4 Sec. 26, T. 21 S., R. 5 E.

Thickness		<u>Lithology</u>
<u>Feet</u>	<u>Inches</u>	
BLACKHAWK FORMATION (Lower part; measured from base to top)		
4	6	Covered, probably interbedded sandstone and shale.
1		Sandstone, gray, medium-grained, thin bedded, ripple-laminated.
8		Shale, gray.
1	6	Carbonaceous shale.
4		Shale, gray, silty.
4		Sandstone, gray, medium-grained, convoluted, ripple-laminated,
	6	Carbonaceous shale.
	1	Coal.
1		Sandstone, gray, fine-grained, ripple-laminated, rooted.
3	10	Coal.
3		Shale, gray.
	6	Carbonaceous shale.
5		Shale and siltstone, in thin-bedded alternation.
	8	Carbonaceous shale.
3	6	Shale and siltstone, in thin-bedded alternation.
	6	Siltstone, gray, clayey.
2	6	Sandstone, gray, medium-grained, thin- to thick-bedded.
	6	Carbonaceous shale.
10		Coal.
	6	Carbonaceous shale.
3	6	Shale and siltstone, in thin-bedded alternation.
2	6	Sandstone, weathered bleached, fine-grained, non-bedded.
7		Coal

	6	Shale, gray, silty.
3	6	Sandstone, gray, medium-grained, ripple-laminated.
1		Shale, gray.
10		Coal.
	2	Shale, gray.
3		Sandstone, gray, weathering buff, medium-grained, thin bedded, ripple-laminated.
2	6	Shale, gray, silty.
1		Sandstone, gray, medium-grained, ripple-laminated.
1		Shale and siltstone, in thin-bedded alternation.
4	6	Sandstone, gray, medium-grained, ripple-laminated, rooted.
	6	Coal.
	6	Carbonaceous shale.
3		Shale, gray, silty.
2		Sandstone, gray, medium-grained, ripple-laminated, rooted.
1	4	Coal
	2	Shale, gray.
1	6	Sandstone, gray, medium-grained, ripple-laminated, rooted.
4	6	Shale, gray, silty, rooted.
	6	Carbonaceous shale, coaly.
	5	Coal.
	4	Carbonaceous shale.
1	6	Shale, gray.
	6	Carbonaceous shale, coaly.
5		Shale, gray.
1		Sandstone, gray, fine-grained, ripple-laminated, rooted.
	6	Shale and siltstone, in thin-bedded alternation.
	6	Carbonaceous shale, coaly.
6		Sandstone, gray, medium-grained, crossbedded, ripple-laminated, erosional base.

5	6	Sandstone, gray, medium-grained, ripple-laminated.
1		Shale and siltstone, in thin-bedded alternation.
2	6	Sandstone, gray, medium-grained, ripple-laminated, rooted.
	4	Carbonaceous shale.
	6	Coal.
4		Shale and siltstone, in thin-bedded alternation.
2		Sandstone, gray, medium-grained, ripple-laminated.
9	6	Covered, probably interbedded shale and siltstone.
1	4	Coal.
1		Carbonaceous shale, silty.
7		Sandstone, gray, weathering buff, medium-grained, thick bedded, convoluted, rooted, erosional base.
1		Shale, gray.
2		Sandstone, gray, medium-grained, thin bedded, ripple-laminated, rooted, erosional base.
1		Shale and siltstone, in thin-bedded alternation.
	6	Shale, gray.
	10	Coal.
6	6	Covered, probably interbedded shale and siltstone.
1	6	Sandstone, gray, medium-grained, burrowed.
	6	Shale, gray.
	6	Carbonaceous shale.
9		Shale, gray, silty.
2	6	Sandstone, gray, medium-grained, thin bedded, ripple-laminated.
	3	Shale.
1	6	Coal.
	3	Shale, gray.
2		Sandstone, gray, fine-grained, ripple-laminated.
10		Shale, gray.
1		Sandstone, gray, fine-grained, ripple-laminated.

4	6	Shale, gray.
	3	Shale, dark gray, carbonaceous.
1	6	Shale and siltstone, in thin-bedded alternation.
1		Sandstone, gray, fine-grained, ripple-laminated.
7		Sandstone and shale, in thin-bedded alternation.
5	6	Shale and siltstone, in thin-bedded alternation.
1	6	Sandstone, gray, medium-grained, ripple-laminated.
2		Shale and siltstone, in thin-bedded alternation.
2	6	Sandstone, gray, medium-grained, ripple-laminated.
4		Siltstone, weathering buff.
4		Shale, gray.
8		Sandstone, gray, weathering buff, medium-grained, crossbedded, ripple-laminated, rooted, erosional base.
18		Covered.
	4	Coal.
1		Shale, gray, carbonaceous.
8		Sandstone, gray, weathering buff, medium-grained, crossbedded, convolution, erosional base.
1		Covered.
	6	Coal.
	3	Shale, gray.
8	6	Sandstone, gray, medium-grained, crossbedded, thick bedded, erosional base.

SECTION WM-45

Measured in SW1/4SW1/4 Sec. 25, T. 21 S., R. 5 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

5		Shale, gray; interbedded with some thin sandstone units.
8		Shale, gray, carbonaceous.
1	6	Shale, gray.
1		Sandstone, gray, medium-grained, ripple-laminated.
	6	Shale, gray.
2	6	Sandstone, gray, medium-grained, ripple-laminated, rooted.
	6	Carbonaceous shale, coaly.
1		Sandstone, gray, very fine grained, ripple-laminated, rooted.
2	11	Coal.
9		Shale, gray, silty.
2		Carbonaceous shale, silty.
2		Siltstone and shale, in thin-bedded alternation.
4		Sandstone, gray, medium-grained, parallel-laminated, ripple-laminated, rooted.
2		Sandstone, gray, fine-grained, ripple-laminated, rooted.
1	6	Coal.
2		Covered.
7	6	Siltstone, weathered bleached, parallel-laminated.
	3	Burned material.
6		Shale and siltstone, in thin-bedded alternation.
11		Sandstone, gray, weathering buff, medium-grained, thin bedded, ripple-laminated, burrowed.
1		Carbonaceous shale.

SECTION WM-46

Measured in SW1/4SW1/4 and NW1/4SW1/4 Sec. 25, T. 21 S., R. 5 E.

Thickness		<u>Lithology</u>
<u>Feet</u>	<u>Inches</u>	
BLACKHAWK FORMATION (Lower part; measured from base to top)		
4		Coal.
1		Shale, gray, silty.
8	6	Sandstone and shale, in thin-bedded alternation.
	4	Coal.
	6	Sandstone, gray, weathered bleached, fine-grained, parallel-laminated, rooted.
2	8	Coal.
	6	Carbonaceous shale.
3	6	Shale, gray.
1		Carbonaceous shale.
6		Shale, gray, silty.
3		Shale, gray, carbonaceous.
	6	Siltstone and shale, in thin-bedded alternation.
5	6	Sandstone, gray, medium-grained, thin- to thick-bedded, ripple-laminated, rooted.
8	6	Coal.
1		Carbonaceous shale.
4		Shale, gray, silty
5		Siltstone, gray, parallel-laminated, ripple-laminated.
1	6	Covered, probably interbedded siltstone and shale.
1		Sandstone, gray, medium-grained, ripple-laminated, rooted.
5		Coal.
1	6	Shale, weathering buff.
2		Sandstone and shale, in thin-bedded alternation.

6	6	Shale, gray, sandy.
6	6	Sandstone and shale, in thin-bedded alternation.
1		Coal.
7		Sandstone, gray, medium-grained, convoluted, ripple-laminated, rooted.
	6	Shale, gray.
	3	Coal.
4		Sandstone, gray, medium-grained, convoluted, ripple-laminated, rooted.
6		Shale, gray.
1		Coal.
2		Shale, gray.
1	6	Sandstone, gray, medium-grained, ripple-laminated, rooted.
	6	Shale, brown.
1		Carbonaceous shale.
4		Shale and siltstone, in thin-bedded alternation.
	2	Carbonaceous shale.
2		Siltstone, gray, rooted.
	8	Carbonaceous shale.
	8	Shale, gray, silty.
	6	Coal.
3		Shale, gray, silty.
5		Sandstone, gray, medium-grained, ripple-laminated, rooted.
5		Siltstone and shale, in thin-bedded alternation.
2	6	Sandstone, gray, medium-grained, ripple-laminated, rooted.
	4	Shale, gray.
	8	Coal.
10		Shale, gray.
	6	Carbonaceous shale.
1		Siltstone and shale, in thin-bedded alternation.

	6	Carbonaceous shale.
1	6	Siltstone and shale, in thin-bedded alternation.
1		Sandstone, gray, fine-grained, ripple-laminated.
5		Siltstone and shale, in thin-bedded alternation.
	6	Sandstone, gray, fine-grained, ripple-laminated.
3	6	Siltstone and shale, in thin-bedded alternation.
	2	Carbonaceous shale.
1	4	Coal.
1		Sandstone, gray, medium-grained, ripple-laminated.
4	6	Shale, gray.
1		Siltstone, gray.
4	6	Shale, gray.
2		Sandstone, gray, medium-grained, ripple-laminated, rooted.
2		Shale, gray.
	3	Carbonaceous shale.
1	4	Coal.
2		Shale, gray, carbonaceous.
2		Sandstone, gray, medium-grained, convoluted, ripple-laminated, burrowed, rooted.
4	6	Shale and siltstone, in thin-bedded alternation.
8		Sandstone, gray, medium-grained, crossbedded, rooted, erosional base.
2	6	Coal.
2	6	Siltstone and shale, in thin-bedded alternation.
	8	Carbonaceous shale.
13	6	Shale and siltstone, in thin-bedded alternation.
1		Carbonaceous shale.
5		Siltstone and shale, in thin-bedded alternation.
1		Sandstone, gray, medium-grained, ripple-laminated, rooted.
3		Siltstone and shale, in thin-bedded alternation.

6	Coal.
3	Sandstone, gray, medium-grained, ripple-laminated, rooted.
3	6 Siltstone and shale, in thin-bedded alternation.
15	Sandstone, weathering buff, medium-grained, crossbedded, convoluted, erosional base.
6	Shale, gray.
1	Carbonaceous shale.
1	Shale, gray.
2	6 Sandstone, gray, medium-grained, ripple-laminated, rooted.
7	Shale and siltstone, in thin-bedded alternation.
1	6 Sandstone, gray, medium-grained, ripple-laminated, rooted.
	6 Shale, gray.
	6 Carbonaceous shale.
3	Covered.
3	Sandstone, gray, medium-grained, ripple-laminated, rooted.
4	Shale, gray.
22	6 Sandstone and shale, in thin-bedded alternation.
	9 Coal.
20	Sandstone, weathering buff, medium-grained, thick bedded, erosional base.
10	Sandstone, gray, fine- to medium-grained, crossbedded, ripple-laminated.

SECTION WM-47

Measured in NE1/4SW1/4 Sec. 25, T. 21 S., R. 5 E.

Thickness		<u>Lithology</u>
<u>Feet</u>	<u>Inches</u>	
BLACKHAWK FORMATION (lower part; measured from base to top)		
32		Sandstone, gray, weathered bleached, medium-grained, crossbedded, convoluted, parallel-laminated, erosional base.
5		Sandstone and shale, in thin-bedded alternation.
2	6	Siltstone and shale, in thin-bedded alternation.
1	6	Carbonaceous shale.
1		Carbonaceous siltstone.
1	6	Coal.
4	6	Siltstone and shale, in thin-bedded alternation.
1	6	Sandstone, gray, fine-grained, ripple-laminated, rooted.
1	6	Siltstone and shale, in thin-bedded alternation, rooted.
	3	Coal.
2		Siltstone, light gray, parallel-laminated.
3	6	Coal.
5		Siltstone and shale, in thin-bedded alternation.
1		Siltstone, gray, carbonaceous.
5	6	Shale and siltstone, in thin-bedded alternation.
	4	Coal.
5	6	Shale, gray.
3	6	Sandstone, gray, medium-grained, thin bedded, ripple-laminated, rooted.
5		Siltstone and shale, in thin-bedded alternation, rooted.
	3	Coal.
1	6	Siltstone, gray, carbonaceous, burrowed, sandy.
5		Coal.
5		Shale, gray, silty.

3		Sandstone, gray, very fine grained, ripple-laminated.
2		Shale and siltstone, in thin-bedded alternation.
2	6	Coal.
1	6	Sandstone, gray, fine-grained, ripple-laminated.
2		Shale, gray, silty.
3		Coal.
5		Covered, probably interbedded shale and siltstone.
5		Sandstone, gray, medium-grained, thin-bedded, convoluted, ripple-laminated.
1		Shale, gray.
	6	Carbonaceous shale, coaly.
	3	Coal.
16		Sandstone, gray, weathering buff, medium-grained, thick bedded, convoluted, rooted, erosional base.
3	6	Shale, gray.
	6	Sandstone, gray, fine-grained, rooted.
	4	Shale, dark gray.
	8	Coal.
	6	Shale, brown.
1		Sandstone, gray, medium-grained, ripple-laminated, rooted.
1		Shale and siltstone, in thin-bedded alternation.
1		Sandstone, gray, medium-grained, ripple-laminated, rooted.
	3	Carbonaceous shale, coaly.
6	6	Shale, gray.
	6	Siltstone, gray.
1		Carbonaceous shale.
18		Covered.
	3	Coal.
16		Sandstone, weathering buff, medium-grained, crossbedded, convoluted, erosional base.

2		Shale, gray.
1		Coal.
2	6	Shale, gray.
2	6	Sandstone, gray, medium-grained, ripple-laminated, rooted.
4		Shale and siltstone, in thin-bedded alternation.
1		Sandstone, gray, fine-grained, rooted.
1		Shale, gray.
2	6	Sandstone, gray, medium-grained, ripple-laminated.
16		Covered.
	6	Sandstone, gray, fine-grained, ripple-laminated.
2	6	Shale, silty.
2		Coal.
4		Sandstone, gray, medium-grained, ripple-laminated, burrowed, rooted.
5		Shale, gray, carbonaceous.
3	6	Shale, gray.
1		Sandstone, gray, fine-grained, ripple-laminated.
1	6	Shale, gray.
4		Sandstone, gray, medium-grained, ripple-laminated, burrowed, rooted.
5	6	Shale, gray, silty.
1	1	Coal.
1		Shale, gray, carbonaceous.
4	6	Siltstone and sandstone, in thin-bedded alternation.
	6	Siltstone, gray, carbonaceous.
1		Siltstone, gray, sandy.
35		Sandstone, gray weathering buff, medium-grained, thin- to thick-bedded, erosional base.

STAR POINT SANDSTONE (Upper part; measured from base to top)

5		Sandstone, gray, weathered bleached, medium-grained, crossbedded.
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SECTION WM-48

Measured in NE1/4SW1/4 Sec. 25, T. 21 S., R. 5 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (lower part; measured from base to top)

3		Covered, probably shale.
3		Siltstone, gray, clayey, carbonaceous.
1		Siltstone, dark gray, carbonaceous, burrowed.
	6	Coal, dirty.
1	4	Coal.
	6	Shale, gray.
2		Siltstone, gray.
2	6	Sandstone, gray, fine-grained, thin bedded, burrowed.
2		Sandstone, gray, medium-grained, crossbedded, ripple-laminated, rooted, erosional base.
1	4	Siltstone, carbonaceous, burrowed.
3		Coal.
2		Shale, gray.
4		Sandstone and shale, in thin-bedded alternation.
2	6	Siltstone, gray, burrowed, carbonaceous.
4		Shale, gray, carbonaceous, coaly, sandy.
2		Siltstone, gray, carbonaceous.
2		Shale, gray.
	6	Sandstone, gray, fine-grained, ripple-laminated.
3		Covered, probably interbedded shale and siltstone.
4		Sandstone and shale, in thin-bedded alternation.
2	6	Covered, probably interbedded shale and siltstone.
2		Sandstone, gray, medium-grained, ripple-laminated.
2		Covered, probably shale.

2		Siltstone, gray, carbonaceous.
2		Shale, brown.
2		Sandstone, gray, fine- to medium-grained, carbonaceous, intensely burrowed.
4	6	Coal.
2		Shale, gray.
2		Siltstone, gray, parallel-laminated.
	6	Shale and siltstone, in thin-bedded alternation.
1	6	Sandstone, gray, fine-grained, thin bedded parallel-laminated, ripple-laminated.
2		Shale, gray.
2		Coal.
3		Shale and siltstone, in thin bedded alternation.
8	6	Sandstone and shale, in thin-bedded alternation.
2	4	Coal.
	6	Shale, gray.
2	6	Siltstone, gray.
20		Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, erosional base.
15		Covered.
10		Siltstone and shale, in thin-bedded alternation, rooted.
44		Sandstone, weathering buff, medium-grained, crossbedded, convoluted, erosional base.
	8	Coal.
	6	Shale, gray.
1	6	Sandstone, gray, medium-grained, ripple-laminated.
9	6	Covered, probably interbedded shale and siltstone.
	6	Sandstone, gray, medium-grained, ripple-laminated.
2		Covered.
	6	Siltstone, gray, rooted.
2		Coal.

	6	Sandstone, gray, fine-grained, ripple-laminated, rooted.
1		Coal.
12	6	Covered, probably interbedded shale and siltstone.
2	6	Coal.
4		Sandstone, gray, medium-grained, ripple-laminated, rooted.
21		Covered.
	6	Coal.
26		Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, parallel-laminated, erosional base.

SECTION WM-49

Measured in NW1/4SE1/4 Sec. 25, T. 25 S., R. 5 E,

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

2		Sandstone, gray, weathered bleached, medium-grained, thin bedded.
1		Shale, gray, silty.
	3	Coal.
1		Sandstone, weathered bleached, medium grained, burrowed.
2	4	Coal.
3		Shale, gray.
1	6	Sandstone, gray, medium-grained, ripple-laminated.
1	6	Siltstone, gray, carbonaceous.
1	—	Covered.
4	6	Coal.
5	6	Shale, gray.
2		Siltstone, gray, carbonaceous.
5		Covered.
2		Shale, gray, fossiliferous (pelecypods).
2		Shale, gray, silty.
1	6	Sandstone, gray, medium-grained, ripple-laminated.
4		Covered.
	6	Sandstone, gray, fine-grained, ripple-laminated, rooted.
5	6	Coal.
1		Shale, gray.
3		Siltstone, gray, carbonaceous.
2		Shale, gray.
3		Sandstone and shale, in thin-bedded alternation.

5		Covered, probably shale.
2	4	Coal.
4		Shale, gray, silty.
3	6	Sandstone and shale, in thin-bedded alternation.
	8	Coal.
40		Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, rooted.

SECTION WM-50

Measured in NE1/4SE1/4 Sec. 25, T. 21 S., R. 5 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

3	6	Shale, gray.
1		Siltstone, gray, parallel-laminated, rooted.
1	6	Sandstone, gray, fine-grained, rooted.
	3	Coal.
1		Shale, gray, silty.
1		Siltstone, gray, rooted.
2	9	Coal.
12		Covered, probably interbedded shale and siltstone.
1		Shale, brown, silty, fossiliferous (pelecypods)
5		Covered, probably interbedded shale and siltstone.
2		Sandstone, gray, medium-grained, ripple-laminated, rooted.
2	6	Coal.
1	6	Carbonaceous shale.
3		Siltstone, gray, carbonaceous, burrowed.
5	2	Coal.
4		Shale, gray, carbonaceous, silty.
1		Siltstone, gray.
2	6	Sandstone, gray, medium-grained, ripple-laminated.
2		Covered, probably interbedded shale and siltstone.
6	2	Coal.
1		Shale, gray.
4		Sandstone, gray, fine- to medium-grained, thin bedded, ripple-laminated.
1		Siltstone and shale, in thin-bedded alternation.

8	Coal.
3	Sandstone, gray, medium-grained, crossbedded, ripple-laminated.
6	Shale, gray.
6	Sandstone, gray, weathering buff, medium-grained, thick bedded, ripple-laminated, erosional base.
4	Sandstone and shale, in thin-bedded alternation.
2	Siltstone and shale, in thin-bedded alternation.
1	6 Coal.
2	Shale, gray, silty.
2	Sandstone, gray, medium-grained, ripple-laminated, rooted.
	6 Shale, gray.
	3 Coal.
7	6 Covered, probably interbedded shale and siltstone.
3	Siltstone and sandstone, in thin-bedded alternation, rooted.
	6 Shale, gray.
2	Siltstone, gray, clayey.
1	Coal.
17	Sandstone, gray, weathering buff, medium-grained, crossbedded, erosional base.
8	Covered, probably interbedded shale and siltstone.
	6 Coal.
3	Sandstone, gray, weathered bleached, medium-grained, ripple-laminated, rooted.
	6 Coal.
5	Sandstone, gray, medium-grained, thin- to thick-bedded, rooted, erosional base.
2	6 Coal.
5	Covered, probably interbedded siltstone and shale.
1	Sandstone, gray, fine-grained, ripple-laminated.
4	6 Covered, probably interbedded siltstone and shale.

2		Sandstone, gray, medium-grained, ripple-laminated, rooted.
1	4	Coal.
3		Covered, probably interbedded shale and siltstone.
10	6	Sandstone, gray, medium-grained, thin- to thick-bedded , rooted.
3		Covered, probably interbedded shale and siltstone.
2		Sandstone, gray, medium-grained, ripple-laminated.
5	6	Covered.
	6	Coal.
3	6	Covered, probably interbedded shale and siltstone.
2	6	Sandstone, gray, medium-grained, thin- to thick-bedded, ripple-laminated.
1		Shale, gray.
1	6	Sandstone, gray, medium-grained, ripple-laminated.
10	6	Shale and siltstone, in thin-bedded alternation.
1		Sandstone, gray, fine-grained, ripple-laminated, rooted.
3	6	Shale, gray, silty.
	6	Coal.
10	6	Covered, probably interbedded shale and siltstone.
2	6	Sandstone, gray, medium-grained, ripple-laminated.
	6	Shale, gray.
1		Sandstone, gray, fine-grained, ripple-laminated.
7	6	Covered, probably interbedded shale, siltstone, and sandstone.
1	6	Sandstone, gray, medium-grained, ripple-laminated.
7		Covered.
1		Coal.
9	6	Covered.
6		Sandstone, gray, medium-grained, ripple-laminated.
2	6	Covered.
	6	Carbonaceous shale.

12		Covered.
	2	Carbonaceous shale.
6		Covered, probably interbedded shale and siltstone.
1	6	Sandstone, gray, medium-grained, ripple-laminated.
16		Covered, probably interbedded sandstone and siltstone.
50		Sandstone, gray, weathering buff, medium- to coarse-grained, crossbedded, erosional base.

SECTION WM-51

Measured in NW1/4NE1/4 Sec. 36, T. 21 S., R. 5 E.

Thickness		<u>Lithology</u>
<u>Feet</u>	<u>Inches</u>	
BLACKHAWK FORMATION (Lower part; measured from base to top)		
1	5	Coal.
12	6	Shale, gray.
2		Siltstone, gray, burrowed, sandy, carbonaceous.
	4	Coal, dirty.
	4	Sandstone, weathered bleached, fine- to medium-grained, burrowed, carbonaceous.
1		Coal, dirty
1	6	Siltstone, gray, carbonaceous.
1		Coal.
13		Shale, gray, silty, fossiliferous (pelecypods).
2		Shale and siltstone, in thin-bedded alternation.
2		Sandstone, gray, medium-grained, ripple-laminated, rooted.
2		Coal.
1	6	Shale and siltstone, in thin-bedded alternation.
1		Sandstone, gray, fine-grained, parallel-laminated, ripple-laminated, burrowed.
7		Shale, gray, silty.
	6	Siltstone, gray.
2		Sandstone and shale, in thin-bedded alternation.
1	6	Sandstone, gray, medium-grained, parallel-laminated, rooted.
2		Coal.
1	8	Shale, gray
	4	Sandstone, gray, fine-grained, rooted.
	6	Carbonaceous shale, coaly.

4		Shale and siltstone, in thin-bedded alternation.
	3	Carbonaceous shale.
21		Covered.
2		Sandstone, gray, fine-grained, ripple-laminated, burrowed, rooted.
10		Partly covered, upper 4 feet is shale.
10		Covered.
19		Sandstone, gray, weathering buff, medium-grained, crossbedded, ripple-laminated, erosional base.
4		Covered.
	4	Coal.
4		Covered.
3	6	Sandstone, gray, medium-grained, ripple-laminated.
2		Covered.
19		Sandstone, gray, weathering buff, medium- to coarse-grained, crossbedded, convoluted, erosional abse.
	6	Coal.
3	6	Sahle and siltstone, in thin-bedded alternation.
2	6	Sandstone, gray, fine-grained, ripple-laminated, rooted.
3		Covered, probably interbedded siltstone and shale.-
1		Sandstone, gray, fine-grained, ripple-laminated.
7		Covered.
5		Sandstone, gray, medium-grained, thin bedded, ripple-laminated.
	6	Shale, gray.
3		Covered.
9		Sandstone, burned, medium-grained, parallel-laminated, ripple-laminated, rooted.
28		Covered.
8		Sandstone, gray, medium-grained, thick bedded, crossbedded, convoluted, ripple-laminated, erosional base.
1	6	Shale, gray.
47		Covered.

25 Sandstone, gray, weathering buff, medium-grained, crossbedded,
 convoluted, erosional base.

STAR POINT SANDSTONE (Upper part; measured from base to top)

33 Sandstone, gray, weathered bleached, medium-grained, crossbedded,
 convoluted, burrowed, erosional base.

SECTION WM-52

Measured in SE1/4SE1/4 Sec. 25, T. 21 S., R. 5 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

6	6	Shale, gray to brown.
1		Siltstone, carbonaceous, coaly, burrowed.
1	4	Coal.
7	6	Partly covered, upper part is shale.
1	6	Carbonaceous shale.
3		Shale, gray.
3	6	Sandstone, gray, medium-grained, ripple-laminated, rooted.
	4	Carbonaceous shale.
	8	Coal.
1	6	Shale, gray.
	4	Coal.
2	6	Shale, gray.
2	7	Coal.
2		Shale, gray, carbonaceous.
7		Covered, probably shale.
	6	Carbonaceous shale.
11	6	Covered.
7	6	Sandstone, gray, medium-grained, thin bedded, ripple-laminated, rooted.
	8	Carbonaceous shale, coaly.
10	6	Covered, probably interbedded shale and siltstone.
10		Sandstone, gray, weathering buff, medium-grained, thin bedded, ripple-laminated.
6	6	Covered.

35		Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, burrowed, erosional base.
10	6	Covered.
2	6	Sandstone, gray, fine-grained, ripple-laminated.
2	6	Shale and siltstone, in thin-bedded alternation.
3		Sandstone, gray, medium-grained, thin bedded, ripple-laminated.
6	6	Shale and siltstone, in thin-bedded alternation.
1		Siltstone, gray, rippled-laminated.
2	6	Sandstone, gray, fine-grained, thin bedded, burrowed.
7	6	Covered.
2		Sandstone, gray, medium-grained, ripple-laminated, rooted.
9	6	Covered.
2	6	Sandstone, gray, fine-grained, ripple-laminated, rooted.
5		Covered.
2		Sandstone, gray, fine-grained, ripple-laminated, rooted.
2		Covered, probably interbedded shale and siltstone.
3		Sandstone, gray, medium-grained, convoluted, ripple-laminated.
7	6	Covered.
1		Sandstone, gray, fine-grained, ripple-laminated.
2		Shale, gray.
2		Sandstone, gray, fine-grained, thin bedded, ripple-laminated.
8		Covered, probably interbedded shale and siltstone.
3		Sandstone, gray, medium-grained, ripple-laminated, rooted.
6		Covered.
5		Sandstone, gray, weathering buff, medium-grained, ripple-laminated, rooted.
2		Covered, probably interbedded siltstone and shale.
3		Sandstone, gray, medium-grained, thin bedded, ripple-laminated
18		Covered.

4	6	Sandstone, gray, medium-grained, ripple-laminated.
9	6	Covered.
13		Sandstone, weathering buff, medium-grained, crossbedded, ripple-laminated, erosional base.
4	6	Covered.
	6	Carbonaceous shale.
70		Covered.
8		Sandstone, gray, coarse-grained, thick bedded, erosional base.
12		Sandstone, gray, medium-grained, crossbedded, erosional base.
STAR POINT SANDSTONE (Upper part; measured from base to top)		
12		Sandstone, gray, weathered bleached, medium-grained, crossbedded.

SECTION WM-53

Measured in NW1/4NE1/4 Sec. 36, T. 21 S., R. 5 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

2		Coal.
2		Shale, gray.
1		Sandstone, gray, medium-grained, ripple-laminated, burrowed.
1		Shale, gray.
1		Sandstone, gray, medium-grained, ripple-laminated, burrowed.
20		Covered.
3	6	Shale, gray.
1		Sandstone, gray, coarse-grained, rooted.
1	6	Siltstone, gray, carbonaceous, coaly.
1		Carbonaceous shale.
1	6	Coal, dirty.
5	6	Siltstone, gray, carbonaceous, burrowed.
37		Sandstone, gray, medium-grained, thin- to thick-bedded, erosional base.
4		Shale and siltstone, in thin-bedded alternation.
16	6	Sandstone and shale, in thin-bedded alternation.
4	6	Shale, gray, silty.
3		Sandstone, gray, medium- to coarse-grained, crossbedded, ripple-laminated.
1		Carbonaceous shale.
8		Sandstone, gray, weathering buff, ripple-laminated, burrowed, erosional base.
5	6	Covered, probably interbedded shale and siltstone.
11		Sandstone, gray, medium-grained, thin- to thick-bedded, rooted, erosional base.

1	6	Carbonaceous shale.
2	6	Shale and siltstone, in thin-bedded alternation.
1		Carbonaceous shale.
5		Shale and siltstone, in thin-bedded alternation.
2		Sandstone, gray, medium-grained, thin bedded, ripple-laminated.
14		Covered.
1		Sandstone, gray, medium-grained, ripple-laminated.
1		Shale, gray, weathering buff.
	6	Carbonaceous shale.
	4	Coal.
25		Sandstone, gray, medium-grained, crossbedded, burrowed, erosional base.
11		Shale, gray, silty.
10		Covered.
1		Carbonaceous shale.
	3	Carbonaceous shale, coaly.
2		Sandstone, gray, medium-grained, ripple-laminated, burrowed.
2	6	Shale and siltstone, in thin-bedded alternation.
5		Siltstone and shale, in thin-bedded alternation, carbonaceous.
1	6	Sandstone, gray, medium-grained, ripple-laminated.
1		Shale, gray.
2	6	Sandstone, gray, medium-grained, thin bedded, ripple-laminated.
4		Partly covered, upper 2 feet is shale.
6		Sandstone, gray, weathering buff, medium-grained, crossbedded, ripple-laminated, burrowed.
7		Covered.
1		Sandstone, gray, medium-grained, ripple-laminated.
1	6	Shale, gray.
13		Sandstone, gray, weathering buff, thin- to thick-bedded, convoluted, erosional base.

4		Partly covered, upper 1 foot is carbonaceous shale.
6		Sandstone, gray, medium-grained, crossbedded, convoluted, burrowed, erosional base.
6		Partly covered, lower part is shale.
	6	Carbonaceous shale.
15		Covered.
2	6	Sandstone, gray, fine-grained, ripple-laminated, burrowed, rooted.
13		Covered.
1		Sandstone, gray, fine-grained, ripple-laminated.
2	6	Shale, gray.
	6	Coal.
32		Sandstone, weathering buff, medium-grained, crossbedded, burrowed, erosional base.

STAR POINT SANDSTONE (Upper part; measured from base to top)

5		Sandstone, gray, medium-grained, parallel-laminated, burrowed.
3		Sandstone and shale, in thin-bedded alternation.
4		Sandstone, gray, coarse-grained, crossbedded, ripple-laminated, erosional base.
5	6	Sandstone and shale, in thin-bedded alternation
	6	Carbonaceous shale, coaly.
	8	Siltstone, gray, carbonaceous, burrowed.
1	6	Sandstone, gray, medium-grained, burrowed.

SECTION WM-54

Measured in NE1/4NE1/4 Sec. 36, T. 21 S., R. 5 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from the base to top)

19		Shale and siltstone, in thin-bedded alternation, intensely burrowed.
1	4	Coal.
1	8	Siltstone, gray, carbonaceous.
	6	Siltstone, dark gray, carbonaceous, burrowed.
	10	Siltstone, gray, carbonaceous.
	6	Siltstone, gray, carbonaceous, fossiliferous (pelecypods).
1	2	Siltstone, gray, fossiliferous (pelecypods).
2		Siltstone and sandstone, in thin-bedded alternation, fossiliferous (pelecypods).
1	8	Siltstone, gray, carbonaceous, burrowed.
1	6	Siltstone, gray, carbonaceous, burrowed, fossiliferous (pelecypods).
1	6	Carbonaceous shale, silty, fossiliferous (pelecypods).
7		Siltstone and sandstone, in thin-bedded alternation.
	6	Coal.
30		Sandstone, gray, weathering buff, medium-grained, crossbedded, erosional base.

STAR POINT SANDSTONE (Upper part; measured from base to top)

5		Sandstone, gray, medium-grained, intensely burrowed.
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SECTION WM-55

Measured in NW1/4NW1/4 Sec. 31, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

5		Sandstone, gray, weathered bleached, medium-grained, intensely burrowed.
10		Sandstone and shale, in thin-bedded alternation.
11		Shale, gray, silty, burrowed.
1		Coal.
7	6	Shale, gray, carbonaceous, silty.
2	6	Sandstone, gray, fine-grained, ripple-laminated, fossiliferous (pelecypods).
2		Carbonaceous shale.
5		Siltstone and sandstone, in thin-bedded alternation.
	6	Carbonaceous shale.
5		Shale, gray, carbonaceous, silty.
25		Sandstone, gray, weathering buff, medium-grained, crossbedded, erosional base.
7		Shale and siltstone, in thin-bedded alternation.
	8	Carbonaceous shale.
3	6	Shale, gray.
2		Sandstone and shale, in thin-bedded alternation.
1	8	Carbonaceous shale, coaly.
1		Shale, gray, silty.
4	6	Sandstone, gray, medium-grained, thin bedded, ripple-laminated.
2	6	Covered, probably shale.
5	6	Sandstone, gray, fine- to medium-grained, thick bedded, ripple-laminated, rooted.
1	6	Carbonaceous shale, silty.

3		Sandstone, gray, medium-grained, burrowed.
	6	Carbonaceous shale.
1	6	Shale, gray.
1		Sandstone, gray, medium-grained, rooted.
	6	Carbonaceous shale.
3		Siltstone, gray, clayey, rooted.
1		Shale, gray, silty.
19		Sandstone, gray, medium-grained, crossbedded, convoluted, erosional base.
	4	Shale, gray.
	6	Coal.
9		Sandstone and shale, in thin-bedded alternation.
3	6	Siltstone and shale, in thin-bedded alternation.
1		Shale, gray.
2		Sandstone, gray, fine-grained, thin bedded, ripple-laminated.
6		Siltstone and shale, in thin-bedded alternation.
1	6	Sandstone, gray, fine grained, thin bedded.
1		Covered.
2	6	Sandstone, gray, fine-grained, parallel-lamination, burrowed.
1		Shale, gray.
2		Sandstone, gray, medium-grained, rooted.
5		Shale, gray.
1		Sandstone, gray, fine-grained, ripple-laminated.
4		Covered, probably interbedded shale and siltstone.
	1	Carbonaceous shale.
1		Shale, gray.
2		Sandstone, gray, medium-grained, ripple-laminated.
4		Shale, gray.
5		Covered.

2		Sandstone and shale, in thin-bedded alternation.
10		Covered.
2	6	Sandstone, gray, medium-grained, ripple-laminated, rooted.
1		Covered.
1	6	Siltstone, gray.
1		Covered.
2		Sandstone, gray, medium-grained, thin bedded.
4		Siltstone, gray, sandy, rooted.
1		Shale, gray.
11	6	Sandstone, gray, medium-grained, convoluted, ripple-laminated, erosional base.
8		Covered.
2		Sandstone, gray, medium-grained, ripple-laminated, rooted.
3	6	Covered, probably interbedded siltstone and shale.
3	6	Sandstone, gray, medium-grained, ripple-laminated, rooted.
11		Covered.
2		Sandstone, gray, medium- to coarse-grained, ripple-laminated.
1	6	Shale and siltstone, in thin-bedded alternation.
1		Sandstone, gray, medium-grained, non-bedded.
4		Covered.
2		Sandstone, gray, medium-grained, ripple-laminated, rooted.
1	6	Carbonaceous shale.
12		Shale, gray.
1		Coal, dirty.
15	6	Covered.
10		Sandstone, gray, coarse-grained, crossbedded, convoluted, erosional base.
	6	Shale, gray.
6		Sandstone, gray, medium-grained, thin- to thick-bedded, ripple-laminated, erosional base.

SECTION WM-56

Measured in NW1/4NW1/4 Sec. 31, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

10		Sandstone, gray, weathered bleached, medium-grained, burrowed.
1		Sandstone and shale, in thin-bedded alternation.
16		Shale, gray, silty.
1	6	Sandstone, gray, fine-grained, ripple-laminated, rooted.
	6	Shale and siltstone, in thin-bedded alternation.
3		Sandstone, gray, medium-grained, rooted.
	8	Coal.
1	6	Shale, gray.
4		Shale, carbonaceous, silty.
3		Siltstone, gray, sandy, fossiliferous (pelecypods).
	6	Sandstone, gray, fine-grained, ripple-laminated.
2	6	Siltstone, gray, carbonaceous, burrowed, sandy.
2		Shale, gray.
1	6	Sandstone, gray, medium-grained, ripple-laminated, rooted.
1		Siltstone, gray, sandy, rooted.
1	6	Carbonaceous shale, coaly.
1	6	Shale, gray
19		Sandstone, gray, medium-grained, crossbedded, convoluted, erosional base.
	6	Carbonaceous shale.
3		Shale and siltstone, in thin-bedded alternation.
	3	Coal.
1		Shale, gray.
3	6	Sandstone, gray, medium-grained, ripple-laminated.

10		Sandstone and shale, in thin-bedded alternation.
	6	Siltstone, gray, rooted.
	3	Carbonaceous shale.
3		Shale, gray, sandy, rooted.
4		Shale and siltstone, in thin-bedded alternation.
5		Sandstone, gray, medium-grained, ripple-laminated, rooted.
5	6	Sandstone, gray, medium-grained, thin- to thick-bedded, crossbedded, ripple-laminated, erosional base.
20		Sandstone and shale, in thin-bedded alternation.
	3	Siltstone, gray, clayey, rooted.
	6	Shale, gray.
4		Siltstone, gray, rooted.
11		Sandstone, gray, fine- to medium-grained, ripple-laminated, rooted.
25		Siltstone and shale, in thin-bedded alternation.
	6	Carbonaceous shale.
	5	Shale, gray, sandy.
	2	6 Shale, gray, carbonaceous.
	3	6 Sandstone, gray, medium-grained, ripple-laminated.
	2	Shale, gray.
	7	Sandstone, gray, medium-grained, convoluted, ripple-laminated, rooted.
	5	Siltstone, gray, clayey, rooted.
10		Siltstone and shale, in thin-bedded alternation.
	2	Sandstone, gray, medium-grained, ripple-laminated.
	4	6 Siltstone and shale, in thin-bedded alternation.
	1	Carbonaceous shale.
	5	Siltstone and shale, in thin-bedded alternation.
	3	Carbonaceous shale.
3		Sandstone, gray, medium-grained, ripple-laminated.

8		Siltstone and shale, in thin-bedded alternation.
7		Sandstone, gray, fine-grained, ripple-laminated.
6		Siltstone and shale, in thin-bedded alternation.
2	6	Sandstone, gray, fine-grained, ripple-laminated, rooted.
5		Sandstone and shale, in thin-bedded alternation.
1		Sandstone, gray, fine-grained, ripple-laminated.
	6	Shale, gray.
1		Siltstone, gray, rooted.
4	6	Shale and siltstone, in thin-bedded alternation.
	6	Carbonaceous shale, coaly.
8		Siltstone and shale, in thin-bedded alternation, rooted
5		Sandstone, gray, medium-grained, thick bedded, rooted.
1		Shale, gray, sandy.
17		Sandstone, gray, coarse-grained, crossbedded, convoluted, erosional base.
3	6	Shale and siltstone, in thin-bedded alternation.
13		Covered.
10		Sandstone, gray, medium-grained, crossbedded, convoluted, erosional base.
34		Covered.
30		Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, erosional base.

SECTION WM-57

Measured in NE1/4NW1/4 Sec. 31, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

18		Shale, siltstone, and sandstone, in thin-bedded alternation, carbonaceous.
4		Shale, gray, carbonaceous, silty.
4		Shale, gray, sandy.
	10	Coal.
5		Shale, gray, silty, fossiliferous (pelecypods).
5		Carbonaceous shale, silty to sandy.
	6	Sandstone, gray, medium-grained, ripple-laminated.
2	6	Siltstone, gray, carbonaceous.
1		Siltstone, gray.
10		Sandstone and siltstone, in thin-bedded alternation.
2		Siltstone, gray, parallel-laminated.
5		Shale, gray, carbonaceous, silty, fossiliferous (pelecypods).
10		Sandstone and siltstone, in thin-bedded alternation.
	8	Carbonaceous shale, coaly.
5	6	Shale, siltstone, and sandstone, in thin-bedded alternation.
	6	Carbonaceous shale.
5	6	Partly covered, interbedded siltstone and shale lower part.
2	6	Sandstone, gray, fine-grained, ripple-laminated, parallel-laminated, rooted.
	6	Carbonaceous shale, silty.
5		Covered, probably interbedded siltstone and shale.
1		Carbonaceous shale, coaly.
3	6	Shale, siltstone, and sandstone, in thin-bedded alternation.

6	Carbonaceous shale, coaly.
2	Sandstone, gray, fine-grained, ripple-laminated, rooted.
1	Coal.
3	6 Sandstone, gray, medium-grained, crossbedded, convoluted, ripple-laminated, erosional base.
15	Sandstone, gray, medium-grained, thin- to thick-bedded, crossbedded, erosional base.
5	6 Covered, probably interbedded shale and siltstone.
1	Siltstone, gray, sandy, rooted, parallel-laminated.
28	Covered.
2	Sandstone, gray, medium-grained, intensely burrowed.
8	6 Covered.
13	Sandstone, weathering buff, coarse-grained, crossbedded, erosional base.
4	6 Partly covered, upper 2 feet is sandstone.
	3 Carbonaceous shale.
13	Covered.
2	Sandstone, gray, fine-grained, parallel-laminated, ripple-laminated, rooted.
14	Covered.
15	Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, ripple-laminated, erosional base.
4	Covered, probably interbedded shale and siltstone.
6	6 Sandstone, gray, medium-grained, thin bedded, erosional base.
10	6 Covered.
2	Sandstone, gray, medium-grained, ripple-laminated.
20	Covered.
8	Sandstone, gray, medium-grained, rooted, thick bedded, erosional base.
1	6 Shale, gray.
5	Sandstone, gray, medium-grained, ripple-laminated, rooted.

- 27 Shale, siltstone, and sandstone, in thin-to-thick-bedded alternation.
- 40 Sandstone, weathering buff, medium-grained, crossbedded, convoluted, erosional base.

STAR POINT SANDSTONE (Upper part; measured from base to top)

- 5 Sandstone, gray, weathered bleached, medium-grained, burrowed.
- 6 Shale, gray.
- 8 Sandstone, gray, medium-grained, crossbedded, parallel-laminated, burrowed, rooted, erosional base.

SECTION WM-58

Measured in NW1/4NE1/4 Sec. 31, T. 21 S., R. 6 E.

Thickness		<u>Lithology</u>
<u>Feet</u>	<u>Inches</u>	
BLACKHAWK FORMATION (lower part; measured from base to top)		
11		Sandstone, gray, fine- to medium-grained, crossbedded, erosional base.
1	6	Carbonaceous shale, silty.
	6	Coal.
5		Shale and siltstone, in thin-bedded alternation, carbonaceous, fossiliferous (pelecypods)
10		Sandstone, gray, fine-grained, burrowed, fossiliferous (pelecypods), rooted.
1		Carbonaceous shale.
1	6	Sandstone, gray, fine- to medium-grained, ripple-laminated, rooted.
	6	Shale, gray.
	3	Shale, gray, silty.
1		Carbonaceous shale, coaly.
6	6	Shale, gray, silty.
4	6	Siltstone and sandstone, in thin-bedded alternation, rooted.
40		Covered.
	6	Carbonaceous shale.
4		Partly covered, upper 2 feet is sandstone.
2	8	Coal.

STAR POINT SANDSTONE (Upper part; measured from base to top)

20		Sandstone, gray, medium-grained, crossbedded, burrowed.
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SECTION WM-59

Measured in SW1/4SE1/4 Sec. 30, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

7		Siltstone and shale, in thin-bedded alternation, carbonaceous, rooted.
4	6	Sandstone, gray, very fine grained, crossbedded, parallel-laminated.
4		Siltstone and shale, in thin-bedded alternation, carbonaceous.
	8	Coal.
5		Covered, probably shale.
	4	Carbonaceous shale.

STAR POINT SANDSTONE (Upper part; measured from base to top)

25		Sandstone, gray, weathered bleached, crossbedded, burrowed, erosional base.
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SECTION WM-60

Measured in NW1/4SE1/4 and NE1/4SW1/4 Sec. 30, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

5		Shale and siltstone, in thin-bedded alternation.
1	6	Siltstone, gray, convoluted, ripple-laminated.
6	6	Covered, probably interbedded shale and siltstone.
1		Sandstone, gray, fine-grained, ripple-laminated, rooted.
2		Covered, probably interbedded shale and siltstone.
4		Sandstone, gray, weathered bleached, fine-grained , thin bedded, ripple-laminated, rooted.
1	4	Coal.
8	6	Siltstone and shale, in thin-bedded alternation.
3		Siltstone, gray, sandy, burrowed, fossiliferous (pelecypods).
1	6	Carbonaceous shale, silty.
	8	Coal.
4		Siltstone and sandstone, in thin-bedded alternation.
	3	Carbonaceous shale, silty.
5	6	Covered, probably interbedded shale and siltstone.
1	6	Siltstone, gray.
1	6	Siltstone, gray, parallel-laminated.
1	6	Sandstone, gray, fine- to medium-grained, ripple-laminated.
3	6	Siltstone and shale, in thin-bedded alternation.
8		Siltstone, gray.
4		Covered.
3	6	Sandstone and siltstone, in thin-bedded alternation.
45		Covered.
2	6	Sandstone, gray, medium-grained, crossbedded, ripple-laminated.

12		Sandstone, gray, medium-grained, crossbedded, ripple-laminated, erosional base.
3	6	Covered, probably interbedded shale and siltstone.
3	6	Sandstone, gray, medium-grained, thin bedded, rooted.
6		Sandstone and shale, in thin-bedded alternation.
13		Covered.
	6	Siltstone, weathering buff, rooted.
1	6	Carbonaceous shale.
1	6	Shale, gray.
10		Sandstone, gray, coarse-grained, crossbedded, parallel-laminated, rooted, erosional base.
1	6	Carbonaceous shale.
	6	Siltstone, gray, rooted.
	2	Carbonaceous shale.
4	6	Covered.
3	6	Sandstone, gray, medium-grained, ripple-laminated, rooted.
1		Shale and sandstone, in thin-bedded alternation.
4		Sandstone, gray, medium-grained, ripple-laminated, rooted, erosional base.
6		Covered, probably interbedded shale and siltstone.
2	6	Sandstone, gray, medium-grained, parallel-laminated, ripple-laminated, erosional base.
5		Covered, probably interbedded shale and siltstone.
2	6	Sandstone, gray, fine-grained, ripple-laminated, rooted.
16		Covered.
4		Siltstone and sandstone, in thick-bedded alternation.
13		Sandstone, gray, weathering buff, medium- to coarse-grained, crossbedded, erosional base.
20	6	Covered.
7		Sandstone, gray, medium-grained, crossbedded.
20		Covered.

- 30 Sandstone, gray, weathering buff, coarse-grained, crossbedded, erosional base.
- 16 Covered.
- 24 Sandstone, gray, medium- to coarse-grained, crossbedded, convoluted, erosional base.

SECTION WM-61

Measured in NW1/4SE1/4 and SW1/4NE1/4 Sec. 30, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

4	6	Sandstone, gray, medium-grained, thin- to thick-bedded, ripple-laminated.
17	6	Siltstone, gray, carbonaceous, coaly.
5		Carbonaceous shale, silty.
1	6	Siltstone, gray.
2	6	Siltstone, gray, clayey, rooted.
	3	Coal, dirty.
	10	Coal.
7		Siltstone, gray, carbonaceous, burrowed, fossiliferous (pelecypods).
4		Siltstone, gray, sandy, fossiliferous (pelecypods).
	2	Coal, dirty.
	10	Coal.
2		Siltstone, gray, carbonaceous.
7		Siltstone, gray, carbonaceous, coaly, fossiliferous (pelecypods).
6		Siltstone, gray, carbonaceous, sandy, very fossiliferous (pelecypods).
1	7	Coal, dirty.
5		Siltstone and sandstone, in thin-bedded alternation.

STAR POINT SANDSTONE (Upper part; measured from base to top)

7		Sandstone, gray, weathered bleached, medium-grained, crossbedded, erosional base.
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SECTION WM-62

Measured in SE1/4NE1/4 Sec. 30, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

3		Siltstone and shale, in thin-bedded alternation, carbonaceous.
1	6	Sandstone, gray, medium-grained, crossbedded, parallel-laminated, rooted.
5		Covered.
8		Sandstone, gray, medium-grained, crossbedded, convoluted, rooted, erosional base.
10		Siltstone and shale, in thin-bedded alternation, carbonaceous, sandy.
3		Sandstone, gray, medium-grained, erosional base, fossiliferous (pelecypods).
3		Covered.
1	6	Sandstone, gray, medium-grained, ripple-laminated.
4		Covered, probably interbedded shale and siltstone.
	6	Carbonaceous shale.
4	6	Covered.
1		Carbonaceous shale.
9	6	Partly covered, upper 1 foot is sandstone.
	6	Carbonaceous shale, coaly.
15		Partly covered, upper 2 feet is sandstone.
5	6	Covered.
10		Sandstone, gray, medium-grained, convoluted, crossbedded, erosional base.
2	6	Covered.
	3	Carbonaceous shale.
9		Sandstone, gray, coarse-grained, ripple-laminated, erosional base.
14		Covered.

4	6	Sandstone, gray, fine- to medium-grained, ripple-laminated.
20		Covered.
8		Sandstone, gray, medium-grained, thick bedded, convoluted.
8		Covered.
11		Sandstone, gray, medium-grained, convoluted, ripple-laminated, erosional base.
25		Covered.
1	6	Sandstone, gray, fine-grained, parallel-laminated.
14	6	Sandstone, gray, weathering buff, thick bedded, convoluted, erosional base.
7	6	Covered.
5	6	Sandstone, gray, medium-grained, ripple-laminated.
5	6	Covered.
3	6	Sandstone, gray, fine- to medium-grained, crossbedded, convoluted, ripple-laminated.
6	6	Covered.
1	6	Sandstone, gray, fine-grained, ripple-laminated, rooted.
	6	Shale, gray.
1		Sandstone, gray, fine-grained, ripple-laminated, rooted.
7	6	Covered.
	6	Carbonaceous shale, coaly.
26	6	Covered.
1		Sandstone, gray, very fine grained, rooted.
10	6	Covered.
20		Sandstone, gray, weathering buff, convoluted, parallel-laminated, ripple-laminated, erosional base.
STAR POINT SANDSTONE (Upper part; measured from base to top)		
10		Sandstone, gray, medium-grained, crossbedded, burrowed.

SECTION WM-63

Measured in SE1/4NE1/4 Sec. 30, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

7		Shale, gray, silty.
1		Siltstone, gray, carbonaceous.
	6	Coal, dirty.
1	5	Coal.
2	4	Shale and siltstone, in thin-bedded alternation.
1		Siltstone, dark gray, carbonaceous.
	1	Coal.
4		Shale, gray, sandy.
1	4	Carbonaceous shale, coaly.
1	8	Coal.
1		Sandstone, gray, fine- to medium-grained, intensely burrowed.
1	8	Shale, gray, silty.
1	4	Coal, silty.
2	6	Shale, gray, carbonaceous, fossiliferous (pelecypods).
3		Siltstone and sandstone, in thin-bedded alternation, fossiliferous (pelecypods)
12		Sandstone, gray, fine- to medium-grained, non-bedded, burrowed.
9		Sandstone, gray, medium-grained, ripple-laminated, rooted, erosional base.
3	6	Carbonaceous shale, coaly.
6		Shale, gray.

SECTION WM-64

Measured in SW1/4NW1/4 Sec. 29, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

2	-	Siltstone and shale, in thin-bedded alternation.
	5	Coal.
5	6	Siltstone and shale, in thin-bedded alternation.
1		Coal, dirty.
	4	Coal.
	10	Siltstone, carbonaceous.
	6	Coal.
9	6	Sandstone, gray, medium-grained, crossbedded, erosional base.
2		Covered.
2	6	Sandstone, gray, medium-grained, burrowed, rooted.
1		Shale and siltstone, in thin-bedded alternation.
18		Sandstone, gray, weathering buff, medium- to coarse-grained, non-bedded, burrowed.
	6	Carbonaceous shale.
2	1	Coal.
2		Carbonaceous shale, coaly.
3	3	Coal.
8		Shale, gray.
3		Sandstone, gray, fine- to medium-grained, thin bedded, ripple-laminated, rooted.
	6	Shale, gray.
2		Covered, probably interbedded shale and siltstone.
1		Siltstone, gray, ripple-laminated.
5		Sandstone, gray, fine-grained, ripple-laminated, rooted.

61		Covered.
11		Sandstone, gray, medium-grained, crossbedded, convoluted, erosional base.
6	6	Shale, gray.
4	6	Sandstone, gray, medium-grained, ripple-laminated.
5	6	Covered, probably interbedded shale and siltstone.
1	3	Coal.
5		Covered.
2	5	Coal.
10	6	Covered.
14	6	Sandstone, gray, fine- to medium-grained, parallel-laminated, convoluted, ripple-laminated, erosional base.
12	6	Covered.
	10	Coal.
3		Sandstone, gray, fine grained, thin bedded, ripple-laminated, rooted.
20		Covered.
9		Sandstone, gray, medium- to coarse-grained, crossbedded, erosional base.
	8	Carbonaceous shale.
3		Sandstone, gray, medium-grained, ripple-laminated, rooted, erosional base.
10		Covered.
1	1	Coal.
1		Siltstone, gray, carbonaceous.
6		Sandstone, gray, medium-grained, ripple-laminated, rooted, erosional base.
1	6	Carbonaceous shale.
11	6	Covered.
11		Sandstone, gray, medium- to coarse-grained, thick bedded, convoluted, erosional base.
17	6	Covered.

- 1 Sandstone, gray, fine-grained, ripple-laminated, rooted.
 - 7 Shale, gray.
 - 11 Sandstone, gray, weathering buff, medium- to coarse-grained, crossbedded, ripple-laminated, convoluted, erosional base.
- STAR POINT SANDSTONE (Upper part; measured from base to top)
- 12 Sandstone, gray, weathered bleached, medium-grained, crossbedded, burrowed.

SECTION WM-65

Measured in NW1/4NW1/4 Sec. 29, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

6	6	Sandstone, gray, medium-grained, crossbedded, rooted.
5		Covered, probably interbedded siltstone and shale.
	3	Carbonaceous shale, coaly.
7	6	Sandstone, gray, medium-grained, non-bedded, burrowed.
1		Shale, gray, silty.
32		Sandstone, gray, medium-grained, crossbedded, erosional base.

STAR POINT SANDSTONE (Upper part; measured from base to top)

10		Sandstone, gray, weathered bleached, medium-grained, crossbedded, burrowed.
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SECTION WM-66

Measured in NW1/4NW1/4 Sec. 29, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (lower part; measured from base to top)

3 Covered.

38 Sandstone, gray, medium-grained, crossbedded, convoluted, erosional base.

STAR POINT SANDSTONE (Upper part; measured from base to top)

10 Sandstone, gray, weathered bleached, medium-grained, crossbedded, burrowed.

SECTION WM-67

Measured in NE1/4NW1/4 Sec. 29, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

4	6	Shale, gray, silty, carbonaceous.
1	3	Coal, dirty.
	3	Sandstone, gray, fine-grained, rooted.
1	6	Shale, gray.
3		Sandstone, gray, fine-grained, thin bedded , ripple-laminated, rooted.
	6	Shale, gray, silty.
50		Sandstone, gray, medium-grained, crossbedded, erosional base.

STAR POINT SANDSTONE (Upper part; measured from base to top)

10		Sandstone, gray, weathered bleached, medium-grained, crossbedded, burrowed.
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SECTION WM-68

Measured in NW1/4NW1/4 Sec. 29, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

1		Sandstone, gray, fine-grained, burrowed.
1		Covered.
9		Sandstone, gray, medium-grained, crossbedded, parallel-laminated, burrowed, erosional base.
2		Covered.
2		Shale, gray, silty.
1		Sandstone, gray, fine-grained, intensely burrowed.
27		Sandstone, gray, weathering buff, medium-grained, crossbedded.
24		Covered.
1	6	Siltstone, gray, clayey.
7		Siltstone and sandstone, in thin-bedded alternation.
1		Shale, gray.
43		Covered.
11	6	Sandstone, gray, medium-grained, parallel-laminated, ripple-laminated.
9	6	Partly covered, lower part is silty shale.
8		Sandstone, gray, fine-grained, ripple-laminated, rooted.
1		Siltstone, gray, ripple-laminated.
	6	Shale, gray.
5	6	Sandstone, gray, medium-grained, thick bedded, ripple-laminated.
31		Covered.
5	6	Sandstone, gray, fine-grained, ripple-laminated, rooted.
	4	Shale, gray.
12		Sandstone, gray, coarse-grained, thick bedded, crossbedded, erosional base.

10		Covered.
6		Sandstone, gray, fine-grained, parallel-laminated, ripple-laminated, rooted.
12	6	Covered.
5	6	Sandstone, siltstone, and shale, in thin-bedded alternation.
5		Sandstone, gray, fine-grained, ripple-laminated, erosional base.
14		Covered.
12		Sandstone, gray, weathering buff, coarse-grained, crossbedded, ripple-laminated, erosional base.
15		Covered.
	6	Carbonaceous shale.
5		Shale, gray.
2		Siltstone, weathering buff.
23		Sandstone, gray, weathering buff, coarse-grained, crossbedded, erosional base.
5		Covered.
24		Sandstone, gray, medium-grained, crossbedded, erosional base.

SECTION WM-69

Measured in NW1/4SW1/4 Sec. 26, T. 21 S., R. 5 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

5 4 Carbonaceous shale.

STAR POINT SANDSTONE (Upper part; measured from base to top)

2		Sandstone, gray, fine- to medium-grained, thin bedded.
15		Sandstone, gray, medium-grained, crossbedded, parallel-laminated, erosional base.
2	6	Sandstone, gray, medium-grained, burrowed.
15		Sandstone, gray, medium-grained, crossbedded, parallel-laminated.
1		Sandstone, gray, fine-grained, burrowed.
9		Sandstone, gray, medium-grained, ripple-laminated, convoluted.
1		Shale, gray.
12		Sandstone, gray, medium-grained, crossbedded, parallel-laminated, ripple-laminated.

SECTION WM-70

Measured in NW1/4SW1/4 Sec. 26, T. 21 S., R. 5 E.

<u>Thickness</u>		<u>Lithology</u>
<u>Feet</u>	<u>Inches</u>	
BLACKHAWK FORMATION (Lower part; measured from base to top)		
7		Sandstone, gray, medium-grained, thin- to thick-bedded, ripple-laminated.
12		Shale, gray, silty.
	6	Siltstone, weathering buff, rooted.
5		Carbonaceous shale.
6	6	Shale and siltstone, in thin-bedded alternation.
	6	Sandstone, gray, fine-grained, ripple-laminated, rooted.
	6	Carbonaceous shale, coaly.
2	6	Shale, gray.
	6	Carbonaceous shale.
1	6	Sandstone, gray, medium-grained, ripple-laminated.
6		Siltstone and shale, in thin-bedded alternation.
4	6	Partly covered, lower part is silty shale.
1		Sandstone, gray, medium-grained, ripple-laminated.
5		Covered.
1		Carbonaceous shale.
4		Carbonaceous shale, coaly
3	4	Shale, gray.
	8	Coal.
10		Covered.
3	6	Sandstone, gray, fine-grained, ripple-laminated, rooted.
4		Covered, probably interbedded shale and siltstone.
1		Carbonaceous shale, coaly.
17		Covered.

5	6	Sandstone, gray, medium-grained, ripple-laminated, rooted.
9		Covered.
5	6	Sandstone, gray, medium-grained, thick bedded, ripple-laminated.
1	6	Shale, gray.
1		Sandstone, gray, medium-grained, ripple-laminated, rooted.
9		Covered.
23		Sandstone, gray, weathering buff, coarse-grained, crossbedded, ripple-laminated, convoluted, erosional base.
3	6	Shale, gray.
	6	Carbonaceous shale.
29		Covered.
1		Sandstone, gray, medium-grained, ripple-laminated.
2		Covered.
10		Sandstone, gray, medium-grained, ripple-laminated, rooted.
32		Covered.
1	6	Sandstone, gray, medium-grained, thick bedded, ripple-laminated.
4		Shale, gray.
7		Sandstone, gray, medium-grained, thin bedded, parallel-laminated.
9		Covered.
13	6	Sandstone, gray, weathering buff, medium-grained, crossbedded, erosional base.

SECTION WM-71

Measured in SE1/4SW1/4 Sec. 20, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

2	6	Shale, gray, carbonaceous.
2	9	Coal, dirty.
	11	Coal.
2		Shale, gray, silty.
1	6	Sandstone, gray, very fine grained, convoluted, parallel-laminated.
1	8	Sandstone, gray, fine-grained, intensely burrowed.
1	8	Siltstone, gray, sandy, burrowed.
55		Sandstone, gray, coarse-grained, crossbedded, parallel-laminated.

SECTION WM-72

Measured in SE1/4SW1/4 Sec. 20, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

2	6	Shale, gray.
60		Sandstone, gray, medium- to coarse-grained, crossbedded, parallel-laminated, erosional base, fossiliferous (pelecypods).

SECTION WM-73

Measured in NE1/4SW1/4 and SE1/4 NW1/4 Sec. 20, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

29		Sandstone, gray, fine- to medium-grained, crossbedded, burrowed, erosional base.
44	6	Sandstone, gray, weathered bleached, fine- to medium-grained, crossbedded, rooted.
1	6	Shale and siltstone, in thin-bedded alternation.
	6	Carbonaceous shale.
	8	Coal.
2	4	Shale, gray, carbonaceous.
1	4	Coal.

SECTION WM-74

Measured in NE1/4SW1/4 Sec. 20, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

11		Partly covered, upper 1 foot is burrowed sandy siltstone.
68		Sandstone, gray, coarse-grained, crossbedded, burrowed, erosional base.
1	6	Covered, probably shale.
	11	Coal.
12	6	Covered.
4		Sandstone, gray, fine-grained, thin bedded, ripple-laminated, crossbedded.
	9	Carbonaceous shale.
	3	Coal
6	6	Covered.
5	6	Sandstone, gray, fine-grained, ripple-laminated, rooted.
	6	Carbonaceous shale.
4	10	Coal.
3		Siltstone, gray, carbonaceous.
3		Covered.
1	2	Coal.
2	6	Covered.
1		Siltstone, gray, rooted.
	6	Coal.
2		Sandstone, gray, fine-grained, ripple-laminated, rooted.
	6	Shale, gray, silty.
2	6	Sandstone, gray, medium-grained, parallel-laminated, ripple-laminated, rooted.
	6	Carbonaceous shale, coaly.

10	6	Covered.
2		Sandstone, gray, fine-grained, thick bedded, rooted.
11		Siltstone and shale, in thin-bedded alternation.
	4	Coal.
17	6	Covered.
6	6	Sandstone, gray, medium-grained, thick bedded, rooted.
	6	Shale, gray.
5		Sandstone, gray, medium-grained, thick bedded, ripple-laminated, rooted.
9		Covered.
	11	Coal.
25		Covered.
1		Carbonaceous shale.
1	5	Coal.
	6	Siltstone and shale, in thin-bedded alternation.
1	6	Sandstone, gray, medium- to coarse-grained, crossbedded, rooted.
5		Siltstone and shale, in thin-bedded alternation, rooted.
	6	Shale, gray.
15		Sandstone, gray, medium-grained, convoluted, parallel-laminated, ripple-laminated.
7		Covered.
2		Sandstone, gray, fine-grained, ripple-laminated, rooted.
	6	Shale, gray.
4	6	Sandstone, gray, medium-grained, ripple-laminated.
27	6	Covered.
1	6	Sandstone, gray, fine-grained, ripple-laminated.
50		Covered.
13		Sandstone, gray, weathering buff, coarse-grained, crossbedded, erosional base.

SECTION WM-75

Measured in SE1/4SW1/4 Sec. 20, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

3		Shale, brown, carbonaceous.
	7	Coal.
3		Shale and siltstone, in thin-bedded alternation.
2	9	Coal.
	8	Carbonaceous shale, coaly.
3	6	Shale, gray, carbonaceous.
6	4	Siltstone and sandstone, in thin-bedded alternation.
2	6	Shale and siltstone, in thin-bedded alternation.
6	6	Siltstone, gray, sandy.
	5	Carbonaceous shale, coaly.
11		Covered.
8	6	Sandstone, gray, medium-grained, crossbedded, ripple-laminated, rooted.
28	6	Covered.
7	6	Sandstone, gray, medium-grained, thin bedded, ripple-laminated.
30		Covered.
16	6	Sandstone, gray, weathering buff, fine- to medium-grained, crossbedded, convoluted, erosional base.
17	6	Covered.
7		Sandstone, gray, fine-grained, crossbedded, rooted.
22	6	Covered.
2		Sandstone, gray, fine-grained, ripple-laminated.
24	6	Covered.
7		Sandstone, gray, medium-grained, ripple-laminated.
10		Covered.

- 3 Sandstone, gray, medium-grained, crossbedded, rooted.
- 1 Shale, gray.
- 18 Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, erosional base.

SECTION WM-76

Measured in SE1/4NW1/4 and NE1/4SW1/4 Sec. 17, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

2	3	Coal, dirty.
1	8	Coal.
	6	Coal, dirty.
2	8	Coal.
5		Siltstone, gray, carbonaceous, clayey.
5		Siltstone, gray, rooted.
	4	Coal.
22		Sandstone, gray, medium-grained, crossbedded, erosional base.
5		Siltstone and shale, in thin-bedded alternation.
1		Carbonaceous shale, silty, coaly.
2		Shale, gray.
	6	Carbonaceous shale.
2	4	Shale, gray, silty.
3	6	Sandstone, gray, fine-grained, ripple-laminated, convoluted, rooted.
	4	Carbonaceous shale, coaly.
2	4	Coal.
	5	Carbonaceous shale.
2		Shale and siltstone, in thin-bedded alternation.
	6	Carbonaceous shale.
5	6	Sandstone, gray, medium-grained, ripple-laminated, rooted.
3	6	Siltstone and shale, in thin-bedded alternation.
	8	Coal.
1	6	Siltstone and shale, in thin-bedded alternation.

	4	Coal, dirty.
	8	Coal.
2		Siltstone and shale, in thin-bedded alternation.
	3	Carbonaceous shale, coaly.
1	1	Coal.
10	6	Siltstone and shale, in thin-bedded alternation.
4	6	Sandstone, gray, fine- to medium-grained, ripple-laminated, rooted.
3	6	Siltstone and shale, in thin-bedded alternation.
	5	Coal, dirty.
	1	Coal.
1	6	Sandstone, gray, fine-grained, ripple-laminated, parallel-laminated.
2	6	Siltstone and shale, in thin-bedded alternation.
4	6	Sandstone, gray, fine-grained, convoluted, tipple-laminated, rooted.
1		Shale, gray.
1	6	Sandstone, gray, fine-grained, rooted.
1		Shale, gray.
2		Sandstone, gray, fine-grained, ripple-laminated, rooted.
	4	Shale, gray.
	4	Coal.
6		Siltstone and shale, in thin-bedded alternation, rooted.
2	6	Siltstone, gray, sandy.

SECTION WM-77

Measured in SW1/4NW1/4 Sec. 17, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

	6	Carbonaceous shale, silty.
6	3	Coal.
2		Shale, gray.
6	6	Sandstone, gray, medium-grained, crossbedded, parallel-laminated.
2		Covered, probably interbedded siltstone and shale.
5	6	Sandstone, gray, fine-grained, parallel-laminated, ripple-laminated, rooted.
5		Covered.
2		Sandstone, gray, fine-grained, ripple-laminated.
	4	Carbonaceous shale.
2	3	Coal.
5		Covered, probably interbedded siltstone and shale.
6	6	Sandstone, gray, weathering buff, fine- to medium-grained, thick bedded, ripple-laminated, rooted.
5		Shale, gray.
	4	Carbonaceous shale.
6		Covered.
	3	Coal.
5		Siltstone and shale, in thin-bedded alternation.
	3	Carbonaceous shale.
20		Covered.
1	6	Sandstone, gray, medium-grained, ripple-laminated.
22		Covered.
7		Sandstone, gray, medium-grained, ripple-laminated.

STAR POINT SANDSTONE (Upper part; measured from base to top)

65	Sandstone, gray, fine- to medium-grained, crossbedded, burrowed, erosional base.
5	Sandstone, gray, fine- to medium-grained, burrowed.
5	Covered.
5	Sandstone, gray, medium-grained, parallel-laminated, burrowed.
10	Sandstone, gray, medium-grained, crossbedded, burrowed.
45	Sandstone, gray, medium-grained, crossbedded.

SECTION WM-78

Measured in NE1/4NE1/4 Sec. 18, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

	8	Coal.
1	6	Coal, dirty.
	1	Coal.
1	8	Shale, brown, silty, carbonaceous.
2	3	Coal, dirty.
	6	Siltstone, gray, carbonaceous.
2		Siltstone, gray, sandy.
10		Sandstone, gray, weathering buff, fine-grained, thin bedded, ripple-laminated, rooted.
	7	Coal, dirty.
	6	Carbonaceous shale, coaly.
1		Shale, gray.
1		Siltstone, gray, carbonaceous, fossiliferous (pelecypods).
4	6	Siltstone, gray, sandy, rooted.
	4	Coal.
3	6	Sandstone, gray, fine-grained, convoluted, rooted.
2		Shale, gray.
	6	Siltstone, weathering buff.
2		Shale, gray, silty, carbonaceous.
4		Siltstone, gray, sandy.
	9	Shale, gray.
	9	Coal, dirty.
1		Coal.
2		Shale, gray, silty.

4		Carbonaceous shale.
8		Coal.
6		Covered.
5		Sandstone, gray, fine-grained, ripple-laminated, rooted.
3		Carbonaceous shale.
6		Shale, gray.
3		Sandstone, gray, fine-grained, ripple-laminated, rooted.
6		Carbonaceous shale.
6		Sandstone, gray, fine-grained, ripple-laminated.
1		Siltstone, gray, clayey, carbonaceous.
2	6	Sandstone, gray, fine-grained, ripple-laminated, rooted.
	6	Carbonaceous shale, silty, rooted.
	7	Coal.
5		Sandstone, gray, fine-grained, ripple-laminated, rooted.
3		Shale, gray, silty.
	6	Coal, silty.
	5	Coal.
3	6	Siltstone, gray, sandy.
1		Siltstone, gray, carbonaceous.
9		Sandstone, gray, weathering buff, fine-grained, rooted.
3		Shale and siltstone, in thin-bedded alternation.
3	6	Sandstone, gray, fine-grained, parallel-laminated, ripple-laminated, rooted.
2	6	Shale, gray, silty, rooted.
	6	Carbonaceous shale, silty.
	4	Coal.
3		Siltstone, gray, rooted.
2		Siltstone, gray, clayey.
6		Sandstone, gray, fine-grained, ripple-laminated.

1		Siltstone and shale, in thin-bedded alternation.
	10	Coal.
	6	Shale, gray.
10		Sandstone, weathering buff, very fine grained, ripple-laminated, rooted.
1	6	Siltstone and shale, in thin-bedded alternation.
11		Sandstone, gray, fine-grained, non-bedded.
	6	Carbonaceous shale.
1	5	Coal.
6		Shale, gray, silty.
6		Covered.
26		Sandstone, gray, weathering buff, fine- to medium-grained, convoluted, ripple-laminated, parallel-laminated.

SECTION WM-79

Measured in NW1/4NW1/4 Sec. 17, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

5	4	Coal.
25		Sandstone, gray, weathering buff, crossbedded, convoluted, erosional base.
5		Covered, probably interbedded siltstone and shale.
3		Sandstone, gray, fine-grained, ripple-laminated, rooted.
1	8	Coal.
6		Covered.
5	6	Sandstone, gray, medium-grained, thick bedded, rooted, ripple-laminated.
1	6	Covered, probably interbedded siltstone and shale.
4		Sandstone, gray, fine-grained, ripple-laminated, rooted.
2	6	Covered.
3		Sandstone, gray, fine-grained, ripple-laminated, rooted.
	6	Shale, gray.
	6	Coal.
10	6	Covered, probably interbedded shale and siltstone.
	4	Coal
4	6	Covered.
2	6	Sandstone, gray, fine-grained, ripple-laminated, burrowed.
27		Covered.
4		Sandstone, gray, medium-grained, ripple-laminated, rooted.
5	6	Covered.
5	6	Sandstone, gray, medium-grained, thick bedded, ripple-laminated.

SECTION WM-80

Measured in SE1/4SE1/4 Sec. 7, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

STAR POINT SANDSTONE (Upper part; measured from base to top)

37	Sandstone, gray, medium-grained, crossbedded.
20	Sandstone, gray, fine- to medium-grained, crossbedded, ripple-laminated, burrowed,
61	Sandstone, gray, weathered bleached, medium-grained, crossbedded, burrowed, rooted.

SECTION WM-81

Measured in NW1/4NW1/4 Sec. 18, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

3	5	Coal.
2		Shale, gray, silty, rooted.
1	3	Carbonaceous shale.
3	6	Shale, gray, silty.
	3	Coal, dirty.
1		Coal.
5		Sandstone, gray, medium-grained, crossbedded, convoluted, rooted, erosional base.
	6	Carbonaceous shale.
	6	Coal.
3	6	Shale, gray, silty.
	6	Siltstone, gray, carbonaceous.
	3	Coal.
2		Shale, gray, sandy, rooted.
	5	Coal.
1	2	Shale, gray, silty.
	7	Carbonaceous shale.
1	2	Coal.
	1	Coal, silty.
	6	Coal.
	2	Coal, silty.
	7	Coal.
10		Carbonaceous shale, silty.

- 12 Sandstone, gray, weathering buff, fine-grained, thin bedded, rooted, erosional base.
- 3 Carbonaceous shale.
- 2 6 Siltstone and shale, in thin-bedded alternation.
- 2 Carbonaceous shale, coaly.
- 7 Siltstone and shale, in thin-bedded alternation.
- 6 Carbonaceous shale.
- 6 Covered.
- 6 Carbonaceous shale, coaly.
- 9 Sandstone, gray, medium-grained, ripple-laminated, rooted, erosional base.

SECTION WM-82

Measured in SE1/4NE1/4 Sec. 13, T. 21 S., R. 5 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

3		Siltstone and shale, in thin-bedded alternation.
1		Coal.
1		Carbonaceous shale, silty.
1		Coal, dirty.
4	6	Siltstone, gray, carbonaceous, sandy.
	6	Coal.
5		Sandstone, gray, medium-grained, burrowed.
6		Shale and siltstone, in thin-bedded alternation.
7	6	Siltstone, gray, carbonaceous, sandy, burrowed.
17		Sandstone, gray, fine- to medium-grained, thin bedded, ripple-laminated.
1		Coal.
1	6	Carbonaceous shale, silty.
2	5	Coal.
	10	Coal, dirty.
2	6	Carbonaceous shale.
	7	Coal, dirty.
1	7	Coal.
5		Siltstone, gray, parallel-laminated, rooted.
	8	Carbonaceous shale, coaly.
3	6	Siltstone and shale, in thin-bedded alternation.
2	11	Coal.
	8	Coal, dirty.
4		Sandstone, gray, fine-grained, ripple-laminated, rooted.

1	10	Siltstone and shale, in thin-bedded alternation.
1		Carbonaceous shale.
1	6	Shale, gray.
1	6	Sandstone, gray, fine-grained, ripple-laminated.
2	6	Siltstone, gray, sandy, rooted.
3	6	Covered, probably interbedded siltstone and shale.
1	7	Carbonaceous shale.
3	5	Siltstone, gray, rooted.
	6	Carbonaceous shale, silty.
	7	Coal.
4		Sandstone, gray, fine-grained, ripple-laminated.
5	6	Siltstone and shale, in thin-bedded alternation.
1	6	Sandstone, gray, fine-grained, ripple-laminated, rooted.
2		Siltstone and shale, in thin-bedded alternation.
	6	Coal.
2	6	Shale, gray, silty, rooted.
	3	Carbonaceous shale.
7		Covered.
1	6	Sandstone, gray, fine-grained, ripple-laminated, rooted.
2	6	Shale, gray.
4		Sandstone, gray, fine-grained, thick bedded, ripple-laminated, rooted..
1	4	Shale, gray.
	2	Coal.
2	6	Covered, probably siltstone.
4		Sandstone, gray, fine-grained, ripple-laminated, rooted.
1	6	Shale, gray, carbonaceous.
23		Covered.
12	6	Sandstone, gray, medium-grained, crossbedded, parallel-laminated, ripple-laminated, convoluted, erosional base.

6	Carbonaceous shale, coaly.
22	Covered.
2	Sandstone, gray, fine- to medium-grained, ripple-laminated.
2	6 Siltstone and shale, in thin-bedded alternation.
11	Coal.
5	6 Covered, probably interbedded shale and siltstone.
	6 Sandstone, gray, fine-grained, ripple-laminated, rooted.
	7 Carbonaceous shale.
16	Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, rooted, erosional base.
2	6 Shale, gray, carbonaceous.
1	Coal, dirty.
	8 Coal.
1	Sandstone, gray, fine-grained, ripple-laminated.
10	Covered.
	8 Siltstone, gray, carbonaceous.
	6 Coal.
2	6 Siltstone, gray, carbonaceous, parallel-laminated.
14	Sandstone, gray, coarse-grained, crossbedded, parallel-laminated, erosional base.
3	Shale, gray.
13	6 Sandstone, gray, weathering buff, medium- to coarse-grained, crossbedded, convoluted, erosional base.
1	Shale, gray.
2	Sandstone, gray, medium-grained, non-bedded, rooted.
3	1 Coal.
1	Shale, gray.
2	6 Sandstone, gray, fine-grained, ripple-laminated, rooted.
1	Shale, gray.

SECTION WM-83

Measured in SW1/4SW1/4 Sec. 7, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

1	10	Carbonaceous shale, coaly.
1	8	Coal.
5		Sandstone, siltstone, and shale, in thin-bedded alternation.
2	1	Coal.
5	6	Siltstone, gray, clayey, carbonaceous.
	9	Coal, dirty.
5		Siltstone, gray, carbonaceous.
1		Coal, silty.
	10	Sandstone, gray, fine-grained, parallel-laminated.
1		Siltstone, gray, carbonaceous.
1		Siltstone, gray, carbonaceous, clayey, fossiliferous (pelecypods).
3		Siltstone, gray, sandy.
	8	Coal.
20		Sandstone, gray, weathering buff, medium- to coarse-grained, crossbedded, ripple-laminated, erosional base.
	10	Siltstone, gray, carbonaceous.
	4	Coal.
4		Carbonaceous shale, silty.
14		Sandstone, gray, medium-grained, thick bedded, burrowed, rooted.
1	6	Carbonaceous shale.
1	2	Coal.
	10	Coal, dirty.
	10	Coal.
5	3	Covered.

1		Carbonaceous shale.
3		Siltstone and shale, in thin-bedded alternation.
1	2	Coal.
1	9	Siltstone, gray, rooted.
	3	Coal.
3		Siltstone, gray, carbonaceous, rooted.
	2	Carbonaceous shale.
	1	Coal.
5		Sandstone, gray, fine-grained, ripple-laminated, rooted.
	11	Coal.
1	6	Shale, gray.
2		Sandstone, gray, fine-grained, ripple-laminated, rooted.
1	8	Coal.
10		Sandstone, gray, fine, grained, thick bedded, ripple-laminated, convoluted.

SECTION WM-84

Measured in NE1/4SW1/4 Sec. 7, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

6		Siltstone, gray, rooted.
4		Coal, dirty.
4		Siltstone and shale, in thin-bedded alternation.
2	2	Carbonaceous shale.
2	10	Sandstone, gray, very fine grained, ripple-laminated, rooted.
	6	Coal.
2	4	Carbonaceous shale, silty.
5	6	Siltstone, gray, carbonaceous, rooted, sandy.
	6	Siltstone, gray, carbonaceous.
	6	Coal, dirty.
3	6	Sandstone, gray, fine-grained, ripple-laminated, rooted.
5		Covered.
1	7	Coal.
1	1	Siltstone, gray, carbonaceous, rooted.
	2	Coal.
	8	Siltstone, gray, carbonaceous.
4		Sandstone, gray, fine-grained, ripple-laminated, rooted.
1	6	Shale, gray.
	6	Carbonaceous shale.
1		Siltstone, gray, rooted.
1		Siltstone and shale, in thin-bedded alternation.
	3	Coal.
3	4	Siltstone, weathering buff, rooted.

	6	Carbonaceous shale.
2		Shale, gray.
1	6	Sandstone, gray, fine-grained, ripple-laminated, rooted.
1	6	Siltstone and shale, in thin-bedded alternation.
	6	Coal.
6	6	Sandstone, gray, fine-grained, ripple-laminated, rooted.
	3	Carbonaceous shale.
	6	Shale, gray, silty.
2		Sandstone, gray, fine-grained, ripple-laminated.
1	6	Shale, gray.
1	2	Shale, gray, carbonaceous.
4		Siltstone, shale, and sandstone, in thin-bedded alternation, rooted.
	3	Coal.
2	6	Siltstone, gray, rooted.
2		Carbonaceous shale, silty.
26		Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, erosional base.
	10	Siltstone, gray, clayey.
1	4	Coal.
2		Siltstone and shale, in thin-bedded alternation.
	8	Coal.
5		Shale, gray, silty, rooted.
5		Sandstone, gray, fine- to medium-grained, convoluted, ripple-laminated, rooted.
1	1	Coal.
5		Siltstone and shale, in thin-bedded alternation.
15		Sandstone, gray, medium-grained, crossbedded, convoluted, parallel-laminated, erosional base.
16		Covered.
3	6	Sandstone, gray, medium-grained, parallel-laminated, ripple-laminated, rooted.

9		Covered.
2	6	Sandstone, gray, fine-grained, ripple-laminated, rooted.
1	6	Shale, gray.
9		Sandstone, gray, coarse-grained, crossbedded, convoluted, erosional base.
1	6	Shale, gray.
	3	Carbonaceous shale.
	8	Shale, gray.
	6	Carbonaceous shale.
3		Siltstone, gray, clayey.
26		Sandstone, gray, weathering buff, medium- to coarse-grained, crossbedded, parallel-laminated, ripple-laminated, erosional base.
10		Covered.
18		Sandstone, gray, coarse-grained, crossbedded, ripple-laminated, erosional base.
25		Covered.
1		Coal.
1		Shale, gray.

SECTION WM-85

Measured in SE1/4NW1/4 Sec. 7, T. 21 S., R. 6 E.

<u>Thickness</u>		<u>Lithology</u>
<u>Feet</u>	<u>Inches</u>	
BLACKHAWK FORMATION (Lower part; measured from base to top)		
21		Shale, gray, silty, carbonaceous.
35		Sandstone, gray, weathering buff, fine- to coarse-grained, crossbedded, erosional base.
2	6	Sandstone, gray, fine-grained, ripple-laminated.
32		Covered.
53		Sandstone, gray, weathering buff, fine- to medium-grained,
3		Shale, gray.
	6	Carbonaceous shale, coaly.
	6	Sandstone, gray, fine-grained, rooted.
4	6	Siltstone and shale, in thin-bedded alternation, carbonaceous.
1		Carbonaceous shale.
1	6	Coal.
1		Carbonaceous shale.
2		Siltstone and shale, in thin-bedded alternation.
	3	Carbonaceous shale.
25		Siltstone and shale, in thin-bedded alternation.
15		Covered.
21		Sandstone, gray, weathering buff, medium-grained, crossbedded, erosional base.
	2	Coal.
	6	Shale and siltstone, in thin-bedded alternation.
3	6	Sandstone, gray, fine-grained, ripple-laminated, rooted.
5		Covered, probably interbedded shale and siltstone.
5	6	Sandstone, gray, fine-grained, ripple-laminated, rooted.

1		Siltstone and shale, in thin-bedded alternation.
2	11	Coal.
10		Siltstone and shale, in thin-bedded alternation.

SECTION WM-86

Measured in NE1/4NE1/4 Sec.12, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

3		Shale, gray, carbonaceous.
	8	Coal.
1		Coal, dirty.
1		Carbonaceous shale, silty.
4	6	Sandstone, gray, fine-grained, ripple-laminated.
2	6	Siltstone, gray, rooted.
1	7	Coal, dirty.
7		Siltstone, gray, clayey, carbonaceous, burrowed, fossiliferous (pelecypod).
	4	Coal.
7		Sandstone, gray, medium-grained, thin bedded, burrowed.
2	6	Carbonaceous shale.
3		Sandstone, gray, fine-grained, intensely burrowed.
1	6	Carbonaceous shale, silty.
1		Sandstone, gray, fine-grained, parallel-laminated, rooted.
	7	Coal, dirty.
28		Sandstone, weathering buff, medium-grained, crossbedded, burrowed, rooted.
1	3	Coal.
2		Shale, gray, silty.
3	6	Carbonaceous shale.
15		Sandstone and shale, in thin- to thick-bedded alternation.
1	6	Carbonaceous shale.
1		Coal, dirty.

4		Siltstone, gray.
3	8	Siltstone, gray, carbonaceous.
	5	Coal.
24		Sandstone, gray, weathering buff, medium-grained, crossbedded, ripple-laminated, erosional base.
2	6	Siltstone and shale, in thin-bedded alternation.
4	5	Coal.
2		Shale, gray, silty.
	5	Carbonaceous shale, coaly.
3		Sandstone, gray, fine-grained, ripple-laminated, rooted.
4		Covered.
3		Sandstone, gray, fine-grained, ripple-laminated.
1		Shale, gray.
4		Sandstone, gray, fine-grained, ripple-laminated, rooted.
	4	Coal.
3	7	Shale and siltstone, in thin-bedded alternation.
	5	Carbonaceous shale.
10		Covered, probably interbedded siltstone and shale.
3	6	Sandstone, gray, fine-grained, ripple-laminated.
10		Covered.
2		Sandstone, gray, fine-grained, ripple-laminated, burrowed.
18		Covered, probably interbedded sandstone, siltstone, and shale.
1		Sandstone, gray, fine-grained, ripple-laminated.
2	6	Siltstone and shale, in thin-bedded alternation.
	6	Coal.
1		Shale, gray.
	7	Carbonaceous shale.
10		Siltstone and shale, in thin-bedded alternation.
3		Sandstone, gray, fine-grained, ripple-laminated, rooted.

	6	Carbonaceous shale.
	8	Coal.
3	6	Covered, probably interbedded siltstone and shale.
13		Sandstone, gray, medium-grained, ripple-laminated, convoluted, rooted.
2		Shale, gray.
2	6	Sandstone, gray, fine-grained, ripple-laminated, rooted.
37		Covered.
2	6	Carbonaceous shale.
26		Sandstone, gray, weathering buff, medium- to coarse-grained, crossbedded, erosional base.

SECTION WM-87

Measured in SE1/4SE1/4 Sec. 1, T. 21 S., R. 5 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

1		Shale, gray, carbonaceous.
1	9	Coal.
5	4	Shale, gray, silty.
	6	Carbonaceous shale.
	5	Coal.
11	4	Sandstone, gray, medium-grained, thick bedded, burrowed, rooted.
1	6	Sandstone and shale, in thin-bedded alternation, rooted.
	9	Coal.
3		Sandstone, gray, fine-grained, burrowed.
4		Sandstone, gray, medium- to coarse-grained, thick bedded, rooted, fossiliferous (pelecypod).
2	6	Sandstone, gray, medium-grained, parallel-laminated, rooted, erosional base.
2	4	Coal.
2	4	Shale, gray.
1	11	Carbonaceous shale.
1	7	Coal.
2	3	Carbonaceous shale.
1	6	Coal.
2	6	Shale, gray, carbonaceous.
4		Siltstone and shale, in thin-bedded alternation.
6	6	Sandstone, gray, medium-grained, ripple-laminated.
3	6	Covered.
1	2	Carbonaceous shale.

- | | | |
|----|---|--|
| 1 | 8 | Coal. |
| 7 | 6 | Covered, probably interbedded siltstone and shale. |
| 10 | | Coal. |

SECTION WM-88

Measured in SE1/4SE1/4 Sec. 1, T. 21 S., R. 5 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

10		Covered.
9		Sandstone, gray, medium-grained, thick bedded, burrowed.
5	6	Covered.
3		Sandstone, gray, fine- to medium-grained, thin bedded, burrowed.
6		Sandstone, gray, weathered bleached, fine- to medium-grained, thick bedded, rooted.
36		Covered.
5	5	Coal.
41		Sandstone, gray, weathering buff, crossbedded, convoluted, erosional base.

SECTION WM-89

Measured in SW1/4SE1/4 Sec. 1, T. 21 S., R. 5 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (lower part; measured from base to top)

2	6	Sandstone, gray, fine-grained, ripple-laminated.
2	8	Coal.
2		Sandstone, gray, medium-grained, thin bedded, rooted.
2		Covered.
5	6	Sandstone, gray, medium-grained, thin- to thick-bedded, burrowed.
1	7	Coal.
3	3	Covered.
1		Siltstone and shale, in thin-bedded alternation.
11		Sandstone, gray, weathered bleached, medium-grained, thick bedded, rooted.
5	6	Sandstone, gray, medium-grained, crossbedded.
1	6	Coal, bony.
2	8	Shale, gray.
2		Coal, bony.
1	1	Coal.
	10	Coal, bony.
	9	Coal.
	10	Coal, bony.
	2	Coal.
	10	Shale, gray.
4		Covered.
1		Carbonaceous shale.
15		Sandstone, gray, weathering buff, fine- to medium-grained, thin bedded, ripple-laminated, erosional base.

3		Shale, dark gray.
9		Covered.
5		Sandstone, gray, fine-grained, ripple-laminated, rooted.
13		Covered.
2		Sandstone, gray, fine-grained, ripple-laminated, rooted.
6	6	Covered.
3		Sandstone, gray, fine-grained, ripple-laminated, rooted.
8		Covered.
5		Sandstone, gray, fine- to medium-grained, thin bedded, ripple-laminated, rooted.
10		Covered.
3	6	Sandstone, gray, fine-grained, thin bedded, ripple-laminated, rooted.
5		Covered.
7		Sandstone, gray, weathering buff, fine-grained, ripple-laminated, rooted.
5	6	Covered.
3		Sandstone, gray, fine-grained, ripple-laminated, parallel-laminated.
10		Covered.
5		Sandstone and siltstone, in thin-bedded alternation.
13		Sandstone, gray, medium-grained, thin- to thick-bedded, convoluted, erosional base.
5		Covered.
19		Sandstone, gray, fine- to medium-grained, ripple-laminated.
1	7	Coal.
2		Sandstone, gray, fine-grained, ripple-laminated.
1		Shale, gray.
18		Sandstone, gray, weathering buff, medium-grained, crossbedded, rooted, erosional base.

SECTION WM-90

Measured in SE1/4SW1/4 Sec. 36, T. 20 S., R. 5 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

1	6	Shale, gray, carbonaceous.
2	2	Coal.
4		Sandstone, gray, fine- to medium-grained, non-bedded, burrowed.

STAR POINT SANDSTONE (Upper part; measured from base to top)

20		Sandstone, gray, fine-grained, parallel-laminated, burrowed.
58		Sandstone, gray, fine-grained, ripple-laminated, parallel-laminated, burrowed.
10		Sandstone, gray, fine- to coarse-grained, parallel-laminated, ripple-laminated, burrowed.
37		Sandstone, gray, medium-grained, crossbedded, parallel-laminated, erosional base.

SECTION WM-91

Measured in SE1/4SW1/4 Sec. 36, T. 20 S., R. 5 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

4		Partly covered, upper 1 foot is carbonaceous shale.
2	6	Coal.
4	6	Sandstone, gray, fine- to medium-grained, thick bedded, burrowed.
6	6	Sandstone, gray, medium-grained, ripple-laminated, rooted, erosional base.
	9	Coal.
1		Shale, gray, silty.
2		Sandstone, gray, medium-grained, non-bedded, burrowed, fossiliferous (pelecypod).
4		Sandstone, gray, fine-grained, burrowed, rooted.
	5	Carbonaceous shale.
	5	Coal.
4		Sandstone, gray, very fine grained, rooted, fossiliferous (pelecypod).
	8	Shale, gray.
1		Coal.
1	6	Shale, gray.
3		Sandstone and shale, in thin-bedded alternation, rooted.
1	9	Siltstone, gray, rooted, carbonaceous.
5	7	Coal.
	6	Carbonaceous shale.
3	6	Siltstone, weathering buff, rooted.
1	6	Carbonaceous shale.
1	7	Coal.
4		Shale and siltstone, in thin-bedded alternation.

2		Covered.
3		Sandstone, gray, very fine grained, ripple-laminated, rooted.
2		Covered.
1		Carbonaceous shale.
1.		Coal.
1		Shale, gray.
20		Covered.
4	6	Sandstone, gray, fine-grained, ripple-laminated.
30		Covered.
3	6	Sandstone, gray medium-grained, ripple-laminated.
10		Covered.
2		Sandstone, gray, fine-grained, rooted.
7		Siltstone, gray clayey, rooted.
20		Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, erosional base.
4		Siltstone and shale, in thin-bedded alternation.
24		Sandstone, gray, medium-grained, crossbedded, convoluted, erosional base.
2		Covered.
16		Sandstone, gray, medium-grained, crossbedded, erosional base.

SECTION WM-92

Measured in NW1/4SW1/4 and SW1/4SW1/4 Sec. 36, T. 20 S., R. 5 E.

Thickness		<u>Lithology</u>
<u>Feet</u>	<u>Inches</u>	
BLACKHAWK FROMATION (Lower part; measured from base to top).		
1	6	Sandstone, gray, fine-grained, thin bedded, ripple-laminated, rooted.
1		Coal.
6	6	Covered.
3		Sandstone, gray, medium-grained, ripple-laminated, rooted.
1		Coal.
	10	Siltstone, gray, carbonaceous, sandy, burrowed, fossiliferous (pelecypod).
4		Covered.
	6	Carbonaceous shale.
	6	Coal.
2	4	Shale, gray.
	10	Sandstone, gray, fine-grained, ripple-laminated, rooted.
16		Covered.
9		Sandstone, gray, weathering buff, fine-grained, thin bedded, ripple-laminated, rooted.
1	2	Shale, gray.
3	3	Coal.
3	6	Sandstone, gray, fine-grained, ripple-laminated, rooted.
	9	Carbonaceous shale.
1	2	Coal.
	11	Carbonaceous shale, coaly.
1	6	Coal.
	4	Coal, dirty.
2	5	Coal.

- 8 Siltstone and shale, in thin-bedded alternation.
- 12 Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, ripple-laminated, erosional base.
- 45 Covered.
- 16 Sandstone, gray, weathering buff, medium-grained, thick bedded, crossbedded, erosional base.

SECTION WM-93

Measured in NE1/4SE1/4 Sec. 35, T. 20 S., R. 5 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (lower part; measured from base to top)

3		Shale, gray, carbonaceous.
	6	Coal.
1	8	Carbonaceous shale, coaly.
1	2	Coal.
2		Siltstone, gray.
2	6	Sandstone, gray, fine-grained, ripple-laminated, rooted, fossiliferous (pelecypod).
3	10	Coal.
2		Coal, dirty.
14		Covered.
6		Sandstone, gray, medium- to coarse-grained, burrowed, fossiliferous (pelecypod).
4		Coal.
1	6	Shale, gray, silty.
5		Sandstone, gray, fine-grained, ripple-laminated, rooted.
	6	Carbonaceous shale.
5	1	Coal.
2	6	Shale, gray, sandy.
4		Partly covered, upper part is interbedded siltstone and shale.
	6	Carbonaceous shale.
	6	Carbonaceous shale, coaly.
3		Shale, gray, sandy, rooted.
15		Covered.
	6	Carbonaceous shale, coaly.

7		Partly covered, upper part is interbedded siltstone and shale.
1	6	Carbonaceous shale, coaly.
1	6	Siltstone, weathering buff, rooted.
3	6	Coal.
2		Coal, bony.
15	6	Covered.
8		Sandstone, gray, fine-grained, ripple-laminated, convoluted.
7		Covered.
	6	Carbonaceous shale.
	10	Coal.
1	6	Covered.
11	6	Sandstone and shale, in thick-bedded alternation.
12		Covered.
7		Sandstone, gray, medium-grained, ripple-laminated, rooted.
5		Covered.
22		Sandstone, gray, medium-grained, crossbedded, convoluted, erosional base.

STAR POINT SANDSTONE (Upper part; measured from base to top)

12		Sandstone, gray, fine- to medium-grained, parallel-laminated.
24		Sandstone, gray, medium-grained, crossbedded, parallel-laminated, ripple-laminated, erosional base.

SECTION WM-94

Measured in NW1/4NW1/4 Sec. 35, T. 20 S., R. 5 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

6	6	Sandstone and shale, in thin- to thickbedded alternation.
4		Shale, gray, silty.
3		Sandstone, gray, fine-grained, crossbedded, erosional base.
8	6	Covered.
4	6	Shale, gray, silty.
1		Sandstone, gray, medium-grained, ripple-laminated, rooted.
	7	Carbonaceous shale.
	10	Coal.
4		Shale, gray, silty to sandy, rooted.
6	6	Covered.
2	6	Siltstone, gray, carbonaceous, rooted.
10		Covered.
5		Sandstone, gray, medium-grained, thin bedded, ripple-laminated.
2	6	Partly covered, upper part is rooted sandstone.
	6	Carbonaceous shale.
3	5	Coal.
	8	Carbonaceous shale.
5		Sandstone, gray, fine-grained, ripple-laminated, crossbedded.
40		Sandstone, gray, weathering buff, medium- to coarse-grained, crossbedded, erosional base.
13		Covered.
1		Carbonaceous shale, coaly.
4		Sandstone, gray, fine-grained, ripple-laminated.
21		Covered.

- 7 Sandstone, gray, fine-grained, thin- to thick-bedded, rooted.
- 13 Siltstone and shale, in thin-bedded alternation.
- 25 Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, erosional base.

SECTION WM-95

Measured in NW1/4NW1/4 Sec. 2, T. 22 S., R. 5 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (lower part; measured from base to top)

	6	Carbonaceous shale, coaly.
14		Sandstone, gray, weathering buff, medium-grained, crossbedded, parallel-laminated.
4		Sandstone, gray, fine-grained, burrowed.
3		Sandstone, gray, fine-grained, parallel-laminated, burrowed.
3	5	Sandstone, gray, very fine grained, thin bedded, carbonaceous.
5		Siltstone, dark gray, carbonaceous.
	2	Coal.
1	8	Sandstone, gray, fine-grained, thin bedded, rooted.
1	9	Coal.
20		Siltstone, gray, sandy.
16	6	Sandstone and siltstone, in thin-bedded alternation.
6		Shale, dark gray.
	8	Carbonaceous shale, coaly.
3		Covered.
2		Siltstone, gray, rooted.
9		Covered.
5	6	Sandstone, gray, fine-grained, thick bedded, ripple-laminated.
22		Covered.
1		Carbonaceous shale.
10		Sandstone, gray, medium-grained, parallel-laminated, ripple-laminated, rooted, erosional base.
2		Shale, gray.
1	6	Sandstone, gray, fine-grained, ripple-laminated.

5		Covered.
2		Siltstone, gray, rooted.
2		Shale, gray.
3	5	Sandstone, gray, fine-grained, ripple-laminated.
13		Covered.
9		Sandstone, gray, fine-grained, thin bedded, convoluted, ripple-laminated.
4		Covered.
	6	Carbonaceous shale.
12	6	Covered.
7		Sandstone, gray, fine-grained, ripple-laminated.
7		Shale, gray, carbonaceous.
7	6	Sandstone, gray, medium-grained, crossbedded, convoluted, erosional base.

SECTION WM-96

Measured in SE1/4SW1/4 Sec.35, T. 21 S., R. 5 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

2	3	Coal.
3		Sandstone and siltstone, in thin-bedded alternation.
25		Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, erosional base.
1	6	Carbonaceous shale, coaly.
2	6	Siltstone and shale, in thin-bedded alternation.
2		Shale, gray, silty.
2	6	Shale, dark gray, carbonaceous.
	6	Carbonaceous shale.
5		Siltstone, gray, rooted.
5		Covered.
16		Sandstone, gray, weathering buff, medium-grained, thin- to thick-bedded, ripple-laminated, rooted.
1	6	Coal.
23		Sandstone, gray, medium-grained, crossbedded, convoluted.

SECTION WM-97

Measured in NE1/4NE1/4 Sec. 35 and SE1/4SE1/4 Sec. 26, T. 21 S., R. 5 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

18		Siltstone and shale, in thin-bedded alternation, sandy, burrowed.
21		Covered.
3	6	Siltstone, gray.
5		Shale and siltstone, in thin-bedded alternation, rooted.
	10	Sandstone, gray, fine-grained, ripple-laminated, burrowed.
7		Limestone, light gray, fossiliferous (pelecypod)
1	8	Siltstone, gray, rooted.
	6	Shale, gray.
6	6	Sandstone, gray, fine- to medium-grained, crossbedded, ripple-laminated, erosional base.
5		Covered.
3		Limestone, gray.
2	6	Covered.
10		Sandstone, siltstone, and shale, in thin- to thick-bedded alternation.

STAR POINT SANDSTONE (Upper part; measured from base to top)

55		Sandstone, siltstone, and shale, in thin- to thick-bedded alternation, burrowed.
37		Sandstone, gray, medium-grained, crossbedded, burrowed.
15		Sandstone, gray, medium-grained, crossbedded, erosional base.

SECTION WM-98

Measured in SE1/4SE1/4 Sec. 26, T. 21 S., R. 5 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

- | | |
|----|---|
| 49 | Partly covered, upper part is interbedded siltstone and shale. |
| 23 | Sandstone, gray, weathering buff, fine- to medium-grained, crossbedded, erosional base. |

STAR POINT SANDSTONE (Upper part; measured from base to top)

- | | |
|----|---|
| 28 | Sandstone, gray, fine-grained, crossbedded, parallel-laminated, burrowed. |
| 45 | Sandstone and siltstone, in thin- to thick-bedded alternation, burrowed. |
| 37 | Sandstone, gray, fine-grained, crossbedded, burrowed. |
| 23 | Sandstone, gray, fine- to medium-grained, crossbedded, erosional base, fossiliferous (pelecypod). |

SECTION WM-99

Measured in NW1/4SW1/4 Sec. 26, T. 21 S., R. 5 E.

Thickness

Feet

Inches

Lithology

STAR POINT SANDSTONE (Lower, middle, and upper parts; measured from base to top)

33	Sandstone, siltstone, and shale, in thin- to thick-bedded alternation, burrowed.
60	Sandstone and siltstone, in thick-bedded alternation, burrowed.
36	Sandstone, gray, fine-grained, crossbedded, parallel-laminated, ripple-laminated, burrowed.
46	Siltstone, shale, and sandstone, in thin-bedded alternation, burrowed.
63	Sandstone, gray, fine- to medium-grained, crossbedded, ripple-laminated, parallel-laminated, burrowed.

SECTION WM-100

Measured in SW1/4SW1/4 Sec. 33 and SE1/4SE1/4 Sec. 32, T. 21 S., R. 6 E.

Thickness		Lithology
Feet	Inches	
BLACKHAWK FORMATION (Lower part; measured from base to top)		
10		Partly covered, upper part is silty shale.
3		Sandstone, gray, medium-grained, ripple-laminated, fossiliferous (pelecypod)
1		Siltstone, gray.
	3	Carbonaceous shale, sandy.
	4	Coal.
	2	Sandstone, gray, fine-grained, ripple-laminated, coaly.
40		Sandstone, gray, weathering buff, medium-grained, crossbedded, rooted, erosional base.
20		Sandstone, gray, fine- to medium-grained, crossbedded, convoluted, burrowed, erosional base.
	6	Carbonaceous shale.
1		Sandstone, gray, medium-grained, ripple-laminated.
	6	Siltstone and shale, in thin-bedded alternation.
	6	Sandstone, gray, fine-grained, ripple-laminated.
	6	Carbonaceous shale.
1		Sandstone, gray, medium-grained, ripple-laminated, burrowed.
1	6	Carbonaceous shale.
	2	Coal.
2		Carbonaceous shale.
3		Shale, gray, silty.
2	6	Sandstone, gray, medium-grained, burrowed, ripple-laminated.
2		Siltstone, gray, clayey.
1		Carbonaceous shale.
4	6	Coal.

2		Carbonaceous shale, coaly.
1		Carbonaceous shale.
3	6	Shale, gray, silty.
6		Sandstone, gray, medium-grained, ripple-laminated, rooted, burrowed.
1		Shale, gray, silty.
	6	Carbonaceous shale.
2		Shale, gray.
20		Covered.
1		Sandstone, gray, fine-grained, ripple-laminated, rooted.
1		Coal.
	6	Carbonaceous shale.
5		Covered.
	6	Siltstone, gray, rooted.
	3	Coal.
	3	Carbonaceous shale.
5		Covered.
	3	Carbonaceous shale.
3	6	Covered.
	6	Carbonaceous shale.
	1	Coal.
	3	Carbonaceous shale.
5		Covered.
1	6	Sandstone, gray, medium-grained, ripple-laminated.
5		Covered.
	6	Carbonaceous shale, coaly.
4		Covered.
	6	Carbonaceous shale, coaly.
4		Shale, siltstone, and sandstone, in thin-bedded alternation.

1		Carbonaceous shale, coaly.
	6	Siltstone, gray.
1		Carbonaceous shale, coaly.
4		Covered.
	6	Carbonaceous shale.
	6	Coal.
	6	Shale, gray.
3		Covered.
1		Shale, gray.
	6	Carbonaceous shale.
	6	Shale, gray.
3		Sandstone, gray, medium-grained, thin bedded, ripple-laminated.
1		Shale, gray.
	6	Siltstone, gray.
	3	Coal.
1		Shale, gray.
2		Sandstone, gray, medium-grained, ripple-laminated.
	6	Carbonaceous shale.
12		Covered.
2		Sandstone, gray, medium-grained, ripple-laminated, rooted.
3		Shale, gray, silty.
2		Sandstone, gray, fine-grained, ripple-laminated.
9		Covered.
6	6	Sandstone, gray, medium-grained, thick bedded, rooted.
4		Covered.
	6	Carbonaceous shale.
6		Coal.
2		Carbonaceous shale.

- 4 Shale, gray.
- 7 Covered.
- 16 Sandstone, gray, weathering buff, medium-grained, crossbedded,
 rooted, erosional base.

STAR POINT SANDSTONE (Upper part; measured from base to top)

- 62 Sandstone, gray, medium-grained, crossbedded, convoluted, parallel-
 laminated, burrowed.

SECTION RF-1

Measured in NE1/4NE1/4 Sec. 17, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

1	7	Shale, gray, silty.
1		Shale, dark gray, carbonaceous.
6	5	Sandstone, gray, weathering buff, fine-grained, ripple-laminated, flasered, burrowed, rooted.
	5	Carbonaceous shale, coaly.
2		Sandstone, gray, fine- to medium-grained, non-bedded, burrowed, erosional base.
2	6	Covered.
	6	Carbonaceous shale.
	2	Coal.
4		Shale, gray, silty, fossiliferous (pelecypod)
	5	Carbonaceous shale.
	5	Coal.
1		Shale, gray.
5		Covered.
10		Sandstone, gray, weathering buff, medium-grained, crossbedded, erosional base.

STAR POINT SANDSTONE (Upper part; measured from base to top)

18		Sandstone, gray, fine- to medium-grained, thin- to thick-bedded, ripple-laminated, parallel-laminated, crossbedded, burrowed.
3	6	Sandstone, gray, medium-grained, convoluted, burrowed, erosional base; rafted coal spars at the base.
45		Sandstone, gray, medium-grained, crossbedded, ripple-laminated, convoluted, flasered, burrowed, erosional base.

SECTION RF-2

Measured in SW1/4NW1/4 Sec. 16, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

STAR POINT SANDSTONE (Lower part; measured from base to top)

9		Sandstone, gray, medium-grained, crossbedded, parallel-laminated, ripple-laminated.
2	3	Partly covered, upper part is interbedded siltstone and shale.
3		Sandstone, gray, fine- to medium-grained, crossbedded, parallel-laminated, burrowed.
8	8	Sandstone, siltstone, and shale in thin- to thick-bedded alternation.
7	2	Sandstone, gray, fine-grained, parallel-laminated, ripple-laminated, burrowed.
82		Sandstone, gray, weathered bleached, medium-grained, crossbedded, parallel-laminated, burrowed.

SECTION RF-3

Measured in SW1/4NW1/4 Sec. 16 and SE1/4NE1/4 Sec. 17, T. 21 S., R. 6 E.

Thickness		<u>Lithology</u>
<u>Feet</u>	<u>Inches</u>	
BLACKHAWK FORMATION (Lower part; measured from base to top)		
2		Partly covered, upper part is carbonaceous silty shale.
	3	Coal.
4	6	Partly covered, upper part is interbedded sandstone and shale.
	6	Shale, gray, silty.
	4	Coal.
3	6	Partly covered, lower part is silty shale.
	10	Carbonaceous shale.
4	3	Coal.
3	2	Shale, dark gray, silty, fossiliferous (pelecypod).
2	8	Shale, light gray, silty.
6	6	Sandstone, gray, medium-grained, convoluted, ripple-laminated, burrowed, erosional base.
3		Partly covered, lower part is interbedded sandstone, siltstone, and shale.
1		Sandstone, gray, fine-grained, ripple-laminated, burrowed.
	6	Siltstone, gray, sandy.
2		Shale, light gray to dark gray, carbonaceous.
	1	Carbonaceous shale, coaly.
4		Shale and siltstone, in thin-bedded alternation.
4		Sandstone, gray, fine- to medium-grained, ripple-laminated, parallel-laminated, burrowed.
	6	Shale, gray.
	4	Coal.
	6	Shale, dark gray, coaly.
	5	Coal.

	6	Shale, gray.
1	3	Sandstone, gray, fine-grained, ripple-laminated, burrowed.
2		Partly covered, upper part is interbedded siltstone and shale.
	11	Shale, gray, silty.
	4	Coal.
1		Covered.
3		Sandstone, gray, fine- to medium-grained, crossbedded, burrowed, erosional base.
2		Partly covered, lower part part is interbedded siltstone and shale.
6		Sandstone and siltstone, in thin-bedded alternation.
13		Covered.
2		Shale, gray, rooted.
1	8	Coal.
18		Covered.
	10	Shale, gray, carbonaceous.
1	9	Sandstone, gray, medium-grained, rooted.
	7	Shale, gray, silty, carbonaceous, coaly.
	2	Coal.
	9	Sandstone, gray, medium-grained, rooted.
1		Shale and siltstone, in thin-bedded alternation, coaly.
1	6	Sandstone, gray, medium-grained, rooted.
	4	Shale, gray, silty, coaly.
1	4	Sandstone, gray, fine- to medium-grained, rooted.
1	1	Coal.
102		Sandstone, gray, weathering buff, medium- to coarse-grained, multiple beds 10 to 15 feet thick, crossbedded, erosional base.

STAR POINT SANDSTONE (Upper part; measured from base to top)

10		Sandstone, gray, weathered bleached, medium-grained, crossbedded.
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SECTION RF-4

Measured in NW1/4SW1/4 Sec. 16, T. 21 S., R. 6 E.

Thickness

Feet

Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

3		Partly covered, upper part is shale, coaly.
3	6	Shale, siltstone, and sandstone, in thin-bedded alternation.
1		Shale, weathering buff, silty.
	5	Carbonaceous shale.
	4	Coal.
3		Sandstone, siltstone, and shale, in thin-bedded alternation.
35		Sandstone, gray, medium-grained, crossbedded, ripple-laminated, erosional base.

STAR POINT SANDSTONE (Upper part; measured from base to top)

10		Sandstone, gray, medium-grained, crossbedded.
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SECTION RF-5

Measured in NW1/4SW1/4 Sec. 16, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

2	2	Covered.
1	6	Sandstone, weathering buff, medium-grained, crossbedded, rooted.
3		Partly covered, upper part is silty shale.
1		Coal.
1		Shale, light gray to dark gray.
7		Covered.
25		Sandstone, gray, weathering buff, medium-grained, thin- to thick-bedded, crossbedded, parallel-laminated, ripple-laminated.
14		Covered.
10		Sandstone, gray, medium-grained, crossbedded, ripple-laminated, convoluted.
12		Covered.
12		Sandstone, gray, medium-grained, crossbedded, ripple-laminated.

STAR POINT SANDSTONE (Upper part; measured from base to top)

20		Sandstone, gray, medium-grained, thin- to thick-bedded, convoluted, crossbedded, ripple-laminated, burrowed.
10		Siltstone and sandstone, in thin-bedded alternation, burrowed.
39		Sandstone, gray, thin- to thick-bedded, medium-grained, parallel-laminated, ripple-laminated, burrowed, crossbedded.
16	6	Sandstone, gray, fine-grained, ripple-laminated, flasered.
72		Sandstone, gray, medium-grained, crossbedded, parallel-laminated, burrowed, convoluted.

SECTION RF-6

Measured in NE1/4SW1/4 and NW1/4SW1/4 Sec. 16, T. 21 S., R. 6 E.

Thickness		<u>Lithology</u>
<u>Feet</u>	<u>Inches</u>	
BLACKHAWK FORMATION (Lower part; measured from base to top)		
2	6	Partly covered, upper part is interbedded siltstone and sandstone.
	8	Shale, gray, rooted.
1		Coal.
3	2	Sandstone, siltstone, and shale, in thin-bedded alternation.
	3	Shale, dark gray, carbonaceous.
1		Coal.
3		Covered.
27		Sandstone, gray, weathering buff, medium-grained, thin- to thick-bedded, crossbedded, ripple-laminated, burrowed, erosional base.
5		Partly covered, lower part is interbedded sandstone and siltstone.
1		Shale, gray.
	2	Carbonaceous shale, coaly.
1		Sandstone, gray, fine-grained, ripple-laminated, burrowed.
1		Shale and siltstone, in thin-bedded alternation.
	2	Coal.
6		Sandstone, gray, fine- to coarse-grained, convoluted, ripple-laminated, burrowed, rooted.
4		Shale, gray, carbonaceous.
5		Sandstone, gray, fine-grained, ripple-laminated, convoluted, burrowed.
	4	Shale, weathering buff.
	4	Coal.
19	6	Covered.
20		Sandstone, weathering buff, fine-grained, ripple-laminated, convoluted, burrowed.

- 1 Shale, gray.
- 5 Coal.
- 6 Carbonaceous shale.
- 31 Sandstone, gray, weathering buff, crossbedded, convoluted, ripple-laminated, burrowed, erosional base.
- 4 Partly covered, upper part is silty shale.
- 5 Sandstone, gray, fine-grained, ripple-laminated.
- 3 Shale, dark gray.
- 2 Carbonaceous shale.
- 6 Sandstone, gray, fine-grained, ripple-laminated.
- 4 Sandstone, siltstone, and shale, in thin-bedded alternation.
- 2 6 Sandstone, gray, medium-grained, ripple-laminated.
- 1 3 Sandstone, gray, weathered bleached, fine- to medium-grained, non-bedded, rooted.
- 12 Partly covered, lower part is interbedded siltstone and shale.
- 4 Shale, dark gray, silty.
- 15 Partly covered, upper part is interbedded sandstone, siltstone, and shale.
- 1 Shale, dark gray.
- 15 Sandstone, siltstone, and shale, in thin- to thick-bedded alternation.
- 20 Sandstone, gray, medium-grained, crossbedded, convoluted, ripple-laminated, burrowed.
- 3 Shale, gray.
- 15 Sandstone, siltstone, and shale, in thin-bedded alternation.
- 35 Covered.
- 90 Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, ripple-laminated, erosional base.

STAR POINT SANDSTONE (Upper part; measured from base to top)

- 11 Sandstone, gray, medium-grained, crossbedded, burrowed.

SECTION RF-7

Measured in SW1/4SW1/4 and SE1/4SW1/4 Sec. 16, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower and middle parts; measured from base to top)

1	8	Shale, gray.
	7	Carbonaceous shale.
	2	Coal.
	1	Carbonaceous shale.
6		Partly covered, middle part is shale.
	5	Carbonaceous shale.
	2	Coal.
	5	Carbonaceous shale.
6		Covered.
1		Sandstone and shale, in thin-bedded alternation.
4		Sandstone, gray, medium-grained, ripple-laminated, rooted.
	8	Shale, gray.
2	4	Sandstone, gray, medium-grained, parallel-laminated.
2	8	Sandstone, siltstone, and shale, in thin-bedded alternation.
6	6	Sandstone, gray, medium-grained, ripple-laminated, convoluted.
2		Covered.
	1	Carbonaceous shale.
	4	Coal.
	1	Carbonaceous shale.
5		Sandstone, gray, weathering buff, medium-grained, ripple-laminated, rooted.
10		Covered.
1	2	Sandstone, gray, medium-grained, ripple-laminated, rooted.
	3	Shale, gray, silty.

	1	Shale, dark gray, carbonaceous.
	3	Coal.
	1	Carbonaceous shale.
9		Covered.
	2	Shale, gray.
	4	Carbonaceous shale.
	1	Carbonaceous shale, coaly.
8		Covered.
	4	Shale, gray.
	2	Shale, gray, carbonaceous.
	1	Carbonaceous shale, coaly.
2	6	Covered.
	3	Shale, gray.
	2	Carbonaceous shale.
3		Covered.
	4	Shale, gray.
	1	Carbonaceous shale.
2		Covered.
	4	Shale, gray.
	1	Carbonaceous shale, coaly.
2		Sandstone, gray, medium-grained, ripple-laminated, rooted.
	2	Carbonaceous shale.
	1	Carbonaceous shale, coaly.
3	11	Covered.
	4	Shale, gray.
	2	Carbonaceous shale.
29		Sandstone, gray, medium-grained, thin- thick-bedded, convoluted, ripple-laminated, erosional base.
2	6	Shale, gray, silty.

4	6	Sandstone, gray, fine-grained, ripple-laminated, convoluted, crossbedded, rooted, burrowed.
2	8	Shale, gray, weathering buff, silty.
	8	Shale, dark gray, carbonaceous.
	4	Carbonaceous shale, silty, coaly.
	3	Coal.
	1	Shale, gray, silty.
3		Sandstone, gray, medium-grained, convoluted, parallel-laminated, crossbedded, ripple-laminated.
2		Shale, gray, carbonaceous.
1	10	Sandstone, gray, medium-grained, ripple-laminated.
4	6	Shale, gray, silty.
2	8	Sandstone, gray, fine-grained, ripple-laminated.
	5	Shale, gray, silty.
	3	Coal.
	3	Shale, gray, silty.
5	3	Sandstone, gray, medium-grained, ripple-laminated, parallel-laminated, burrowed.
7	6	Shale, dark gray, sandy.
	7	Ironstone nodule.
	5	Shale, gray, carbonaceous.
	2	Coal.
	7	Shale, gray, silty.
1		Sandstone, gray, fine-grained, ripple-laminated, rooted.
4	6	Shale, gray, silty, carbonaceous.
	5	Coal.
2	6	Shale, gray, silty.
1		Sandstone, gray, fine-grained, parallel-laminated.
1		Shale, dark gray.
1	3	Sandstone, gray, fine-grained, ripple-laminated, burrowed.

	7	Shale, gray.
	4	Carbonaceous shale.
18		Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, ripple-laminated, burrowed, erosional base.
9	6	Shale, gray, silty.
2	5	Sandstone, gray, fine-grained, ripple-laminated, rooted.
4	5	Shale, dark gray, carbonaceous.
	1	Carbonaceous shale, coaly.
24	6	Sandstone, gray, weathering buff, fine- to medium-grained, convoluted, ripple-laminated, parallel-laminated, erosional base.
2	6	Sandstone, gray, weathered bleached, medium-grained, non-bedded.
3	6	Shale, gray, silty.
5		Shale and siltstone, in thin-bedded alternation.
1	6	Sandstone, gray, fine-grained, ripple-laminated.
1	6	Shale, gray, silty.
1	1	Sandstone, gray, fine-grained, ripple-laminated.
	6	Shale, dark gray, carbonaceous.
1		Carbonaceous shale, coaly.
25		Covered.
	6	Sandstone, gray, medium-grained, rooted.
	3	Coal.
	7	Shale, gray.
19	5	Covered.
40		Sandstone, weathering buff, medium-grained, crossbedded, convoluted, ripple-laminated, erosional base.

SECTION RF-8

Measured in NE1/4NW1/4 Sec. 21, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower and middle parts; measured from base to top)

	2	Carbonaceous shale.
	7	Coal.
2	6	Covered.
7		Sandstone, gray, medium-grained, thick bedded, crossbedded, ripple-laminated.
9		Covered.
8		Sandstone, gray, medium-grained, thin- to thick-bedded, rooted.
6	6	Covered.
11		Sandstone, weathering buff, medium-grained, crossbedded, ripple-laminated.
18		Covered.
2		Sandstone, gray, fine-grained, ripple-laminated, rooted.
1		Shale, gray, silty.
	1	Carbonaceous shale.
12		Covered.
	1	Sandstone, weathering buff, medium-grained, non-bedded.
	3	Shale, gray.
9		Covered.
2		Sandstone, gray, medium-grained, thin bedded, ripple-laminated, rooted.
	6	Shale, gray.
5	6	Covered.
2		Sandstone, gray, medium-grained, thin bedded, rooted.
12	6	Covered.
12		Sandstone, gray, medium-grained, convoluted, erosional base.

	3	Shale, gray, silty.
	3	Carbonaceous shale.
	2	Shale, gray.
15		Covered.
12		Sandstone, gray, medium-grained, crossbedded, erosional base.
4	6	Covered.
2		Shale, gray.
2	3	Sandstone, gray, fine- to medium-grained, ripple-laminated.
2	6	Shale, gray, silty.
2		Sandstone and siltstone, in thin-bedded alternation.
1	6	Shale, gray, silty.
2	8	Sandstone, gray, fine- to medium-grained, crossbedded, burrowed, erosional base.
1	2	Shale, gray, silty.
1	5	Sandstone, gray, fine-grained, ripple-laminated, burrowed.
1		Shale, gray, silty.
21		Sandstone, weathering buff, medium-grained, crossbedded, erosional base.
3	6	Shale, gray, silty.
1	6	Sandstone, gray, fine- to medium-grained, ripple-laminated, parallel-laminated, burrowed.
3	8	Shale, gray, silty.
1	7	Sandstone, gray, fine-grained, ripple-laminated, burrowed.
2	3	Shale, gray, silty.
3	10	Sandstone and siltstone, in thin- to thick-bedded alternation, burrowed.
1	6	Sandstone, gray, very fine grained, ripple-laminated.
2	7	Sandstone, gray, fine-grained, ripple-laminated, burrowed, crossbedded.
5		Sandstone, siltstone, and shale, in thin-bedded alternation.
4	6	Sandstone and siltstone in thin-bedded alternation.
10		Covered.

2	1	Sandstone, gray, fine-grained, ripple-laminated, crossbedded, convoluted, burrowed.
4	7	Sandstone, siltstone, and shale, in thin-bedded alternation.
1	2	Sandstone, gray, medium-grained, ripple-laminated, burrowed.
2	6	Sandstone, gray, fine-grained, ripple-laminated.
20		Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, ripple-laminated, burrowed, erosional base.
7	6	Shale and siltstone, in thin-bedded alternation.
1		Sandstone, gray, fine-grained, ripple-laminated, burrowed.
8		Sandstone, siltstone, and shale, in thin-bedded alternation.
2		Shale, gray, silty.
1		Sandstone, gray, fine-grained, ripple-laminated, burrowed.
1		Shale, gray, silty.
2	2	Sandstone, gray, fine- to medium-grained, ripple-laminated, burrowed.
1		Shale, dark gray, silty.
2		Sandstone, gray, fine-grained, crossbedded, ripple-laminated, burrowed.
5		Siltstone and sandstone, in thick-bedded alternation.
4		Shale, gray.
	6	Siltstone, gray.
8		Sandstone, gray, medium-grained, crossbedded, burrowed, erosional base.
5		Covered.
1	5	Sandstone, gray, fine-grained, ripple-laminated, burrowed.
9	6	Partly covered, upper part is interbedded siltstone and shale.
1	8	Sandstone, gray, fine- to medium-grained, ripple-laminated, burrowed.
4	6	Shale, dark gray, silty.
	2	Sandstone, gray, fine-grained, burrowed.
10		Covered.

- 32 Sandstone, gray, weathering buff, medium-grained, crossbedded,
ripple-laminated, erosional base.
- 20 Covered.
- 15 Sandstone, gray, weathering buff, medium-grained, crossbedded,
ripple-laminated, erosional base.

SECTION RF-9

Measured in NE1/4NW1/4 and SE1/4NW1/4 Sec. 16, T. 21 S., R. 6 E.

Thickness		<u>Lithology</u>
<u>Feet</u>	<u>Inches</u>	
BLACKHAWK FORMATION (Lower part; measured from base to top)		
1	6	Shale, gray, carbonaceous.
5	2	Sandstone and siltstone, in thin-bedded alternation, burrowed, rooted.
2	6	Shale, dark gray, silty.
	6	Shale, gray, silty, rooted.
	6	Coal.
4	6	Shale, dark gray, silty.
2	6	Sandstone, gray, fine-grained, ripple-laminated, burrowed.
1		Shale, gray, carbonaceous, coaly.
5		Shale, gray, silty.
10		Sandstone, gray, fine- to medium-grained, ripple-laminated, parallel-laminated, crossbedded.
3		Shale, dark gray, silty.
1	2	Sandstone, gray, fine-grained, rippled, burrowed.
1	4	Shale, dark gray.
	2	Carbonaceous shale, coaly.
5	7	Shale and siltstone, in thin-bedded alternation.
	4	Shale, gray, carbonaceous.
3		Shale, dark gray, silty.
	3	Siltstone, gray.
	2	Coal.
4		Sandstone, gray, fine-grained, ripple-laminated, convoluted, crossbedded, burrowed.
4	6	Shale, siltstone, and sandstone, in thin-bedded alternation.
	3	Shale, dark gray.

	3	Coal.
4	6	Sandstone, gray, fine-grained, crossbedded, convoluted, burrowed.
	8	Shale, gray.
	7	Coal.
2	3	Shale, gray, silty.
1	4	Sandstone, gray, medium-grained, ripple-laminated, convoluted, burrowed.
2		Shale and siltstone, in thin-bedded alternation.
	6	Sandstone, gray, medium-grained, ripple-laminated, parallel-laminated.
	5	Shale, gray, silty.
	7	Coal.
2	6	Shale, gray, silty.
3	4	Sandstone, gray, fine-grained, crossbedded, ripple-laminated, burrowed.
5	6	Shale and siltstone, in thin-bedded alternation.
3	6	Sandstone, gray, fine- to medium-grained, ripple-laminated, crossbedded
3	5	Siltstone and shale, in thin-bedded alternation.
	3	Sandstone, gray, very fine grained, ripple-laminated, rooted.
	2	coal.
	5	Siltstone gray, carbonaceous.
11		Sandstone, gray, weathering buff, medium-grained, crossbedded, erosional base.
14		Shale, siltstone, and sandstone, in thin-bedded alternation.
5		Siltstone and shale, in thin-bedded alternation.
1	6	Sandstone, gray, fine-grained, ripple-laminated, parallel-laminated, burrowed.
3	6	Sandstone, siltstone, and shale, in thin-bedded alternation.
2		Shale, dark gray.
13	2	Sandstone, gray, fine-grained, crossbedded, ripple-laminated, erosional base.

- 3 Siltstone, gray.
- 2 Coal.
- 2 Shale, gray.
- 10 Sandstone, gray, weathering buff, medium-grained, crossbedded, erosional base.
- 1 Sandstone and siltstone, in thin-bedded alternation.
- 7 Sandstone, gray medium-grained, parallel-laminated, ripple-laminated.
- 10 Sandstone, gray, fine- to medium-grained, crossbedded, convoluted, ripple-laminated.
- 10 Siltstone, shale, and sandstone, in thin-bedded alternation.
- 10 Sandstone, gray, fine-grained, ripple-laminated.
- 18 Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, erosional base.

SECTION RF-10

Measured in SE1/4NW1/4 Sec. 21, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

8		Sandstone, gray, medium-grained, thick bedded, burrowed.
1		Partly covered, upper part is carbonaceous shale.
1	10	Sandstone, gray, medium-grained, rooted.
	10	Coal.
7	6	Covered.
6		Sandstone, gray, fine- to medium-grained, thin- to thick-bedded, ripple-laminated, convoluted, burrowed.
8		Sandstone, gray, medium-grained, crossbedded, convoluted, ripple-laminated, burrowed, erosional base.
1	10	Shale, dark gray.
	1	Coal.
	8	Sandstone, gray, fine-grained, ripple-laminated, burrowed.
2	4	Covered.
5		Sandstone, gray, medium-grained, thin- to thick-bedded, ripple-laminated, burrowed.
	3	Shale, dark gray, rooted.
	9	Coal.
	3	Shale, dark gray.
1	3	Covered.
9	6	Sandstone, gray, medium-grained, crossbedded, convoluted, ripple-laminated, burrowed, erosional base.
	6	Siltstone, gray, sandy.
4		Sandstone, gray, medium-grained, crossbedded, convoluted, ripple-laminated.
1	8	Shale, gray, silty, carbonaceous.

5	4	Sandstone, gray, medium-grained, thin bedded, rippled, burrowed.
9		Covered.
2	1	Sandstone, gray, medium-grained, convoluted, burrowed.
1		Shale, gray, silty.
1	2	Sandstone, gray, medium-grained, ripple-laminated, convoluted.
4	5	Partly covered, upper part is interbedded siltstone and shale.
5	1	Sandstone, gray, medium-grained, ripple-laminated, burrowed.
2	2	Shale, gray, carbonaceous.
	4	Coal.
3		Siltstone and shale, in thin-bedded alternation.
3	4	Sandstone, gray, medium-grained, ripple-laminated, burrowed.
4	7	Shale, dark gray, silty.
	2	Coal.
	4	Shale, dark gray, carbonaceous, rooted.
	2	Coal.
	1	Shale, gray.
	4	Coal.
3		Shale, gray, silty.
1	10	Sandstone, gray, fine-grained, ripple-laminated, convoluted, burrowed.
3		Covered.
	5	Coal.
	2	Siltstone, gray.
1	4	Sandstone, gray, medium-grained, crossbedded, ripple-laminated, burrowed.
2	4	Shale, gray, silty.
2		Sandstone, gray, fine-grained, crossbedded, ripple-laminated, convoluted, burrowed.
4	5	Shale and siltstone, in thin-bedded alternation.
1	7	Sandstone, gray, medium-grained, crossbedded, ripple-laminated, burrowed, erosional base,

1	3	Shale, gray, silty.
2	8	Sandstone, gray, medium-grained, ripple-laminated, burrowed.
3	6	Shale, gray, silty.
	5	Shale and sandstone, in thin-bedded alternation, rooted.
	10	Coal.
7	10	Shale, gray, silty.
2	2	Sandstone, gray, medium-grained, crossbedded, burrowed.
1	6	Shale, gray, silty.
1	2	Sandstone, gray, fine-grained, ripple-laminated.
1		Shale, dark gray.
10		Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, burrowed, erosional base.
2		Shale, gray, carbonaceous.
11		Sandstone, gray, medium-grained, crossbedded, ripple-laminated, convoluted, burrowed.
	6	Siltstone, gray, sandy.
6		Sandstone, gray, medium-grained, ripple-laminated, flasered, convoluted, burrowed.
5		Shale, gray, silty.
7		Sandstone, gray, medium-grained, crossbedded, convoluted, ripple-laminated, burrowed, erosional base.
6	6	Sandstone, gray, medium grained, ripple-laminated, flasered, convoluted.
1	6	Shale, gray, silty.
2	6	Sandstone, gray, medium-grained, crossbedded, ripple-laminated, burrowed.
	3	Siltstone, gray.
6	6	Sandstone, gray, medium-grained, crossbedded, convoluted, burrowed.
10		Sandstone, siltstone, and shale, in thin-bedded alternation.
23		Sandstone, weathering buff, medium-grained, thin- to thick-bedded, crossbedded, convoluted, burrowed, erosional base.
9		Shale, gray, silty.

- 5 Sandstone, gray, medium-grained ripple-laminated, flasered, burrowed.
- 6 6 Shale, gray.
- 80 Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, erosional base.

SECTION RF-11

Measured in NW1/4SW1/4 Sec. 21, T. 21 S., R. 6 E.

<u>Thickness</u>		<u>Lithology</u>
<u>Feet</u>	<u>Inches</u>	
BLACKHAWK FORMATION (Lower part; measured from base to top)		
4	6	Shale, gray, carbonaceous, silty.
2	6	Sandstone, gray, medium-grained, ripple-laminated, rooted.
1	6	Coal.
2		Shale, dark gray, fossiliferous (pelecypod).
2	6	Partly covered, lower part is interbedded siltstone and shale.
3	9	Sandstone, gray, medium-grained, ripple-laminated, parallel-laminated, burrowed.
16		Sandstone, gray, medium-grained, crossbedded, convoluted, erosional base.
1		Shale and siltstone, in thin-bedded alternation.
	11	Coal.
9		Sandstone, gray, medium-grained, crossbedded, convoluted, erosional base.
	8	Shale, gray, silty.
3	2	Sandstone, gray, fine-grained, ripple-laminated, burrowed.
	3	Shale, dark gray.
	4	Coal.
5	4	Sandstone, gray, medium-grained, crossbedded, ripple-laminated, burrowed, erosional base.
5		Shale, gray, silty.
4		Sandstone, gray, fine-grained, ripple-laminated, burrowed.
9		Shale and siltstone, in thin-bedded alternation, carbonaceous.
1	6	Sandstone, gray, very fine grained, ripple-laminated.
5		Shale, dark gray, silty.
5		Sandstone, gray, medium-grained, ripple-laminated, convoluted, crossbedded.

1		Shale, dark gray, carbonaceous.
10		Sandstone, gray, medium-grained, crossbedded, convoluted, ripple-laminated, flasered, erosional base.
6	6	Shale, gray, silty, rooted.
	1	Coal.
	2	Siltstone, gray.
	1	Coal.
8	6	Sandstone, gray, medium-grained, crossbedded, convoluted, erosional base.
10		Shale, gray, silty.
1	8	Sandstone, gray, fine-grained, crossbedded, ripple-laminated.
5		Shale, dark gray, silty.
	7	Sandstone, gray, fine-grained, ferrugeneous, non-bedded.
6	6	Shale, gray, silty.
1	6	Sandstone, gray, medium-grained, non-bedded.
	6	Siltstone, gray, sandy.
11	6	Sandstone, gray, medium-grained, crossbedded, ripple-laminated, erosional base.
5		Shale, dark gray, silty.
7	6	Sandstone, gray, medium-grained, crossbedded, ripple-laminated, burrowed.
6		Shale, gray, silty
12		Partly covered, lower part is interbedded siltstone and shale.
	3	Shale, gray, silty, rooted.
	3	Coal.
3		Shale, gray, silty.
10		Sandstone, gray, medium-grained, crossbedded, convoluted, ripple-laminated, erosional base.
5		Shale and siltstone, in thin-bedded alternation, carbonaceous.
4	6	Sandstone, gray, medium-grained, crossbedded, ripple-laminated, erosional base.

5		Sandstone, siltstone, and shale, in thin-bedded alternation.
1		Shale, gray, silty.
6		Sandstone, gray, medium-grained, crossbedded, ripple-laminated, burrowed, erosional base.
4	6	Shale, dark gray.
	5	Sandstone, gray, medium-grained, ripple-laminated.
6	4	Shale and siltstone, in thin-bedded alternation.
2		Sandstone, gray, fine-grained, ripple-laminated.
2		Shale, gray, silty.
1		Sandstone, gray, fine-grained, ripple-laminated, burrowed.
1		Shale, gray, silty.
	8	Sandstone, gray, fine-grained, ripple-laminated, burrowed.
7		Shale, gray, silty.
12		Sandstone, siltstone, and shale, in thin-bedded alternation.
2	3	Sandstone, gray, medium-grained, crossbedded, ripple-laminated, erosional base.
2	6	Shale, gray, silty.
1	10	Sandstone, gray, medium-grained, ripple-laminated, burrowed, rooted.
9		Shale and siltstone, in thin-bedded alternation.
1	7	Sandstone, gray, medium-grained, ripple-laminated, burrowed.
5		Covered.
4		Sandstone, gray, medium-grained, ripple-laminated, burrowed.
10		Sandstone, gray, medium-grained, crossbedded, ripple-laminated, erosional base.
	11	Shale and siltstone, in thin-bedded alternation.
11	6	Sandstone, gray, medium-grained, crossbedded, convoluted, ripple-laminated, erosional base.
10		Covered.
14		Sandstone, gray, medium-grained, crossbedded, convoluted, ripple-laminated, erosional base.
8		Sandstone, siltstone, and shale, in thin-bedded alternation.

10		Sandstone, gray, fine-grained, ripple-laminated.
10		Shale, gray, silty.
	6	Sandstone, gray, fine-grained, ripple-laminated.
10		Covered.
2	6	Sandstone, gray, medium-grained, crossbedded.
	6	Shale and siltstones, in thin-bedded alternation.
12		Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, ripple-laminated.
5		Covered.
10		Sandstone, gray, medium-grained, crossbedded, ripple-laminated, convoluted, erosional base.

SECTION RF-12

Measured in NW1/4SW1/4 Sec. 21, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

2	3	Shale, dark gray, silty, fossiliferous (pelecypod)
5	10	Sandstone, gray, fine- to medium-grained, ripple-laminated, convoluted, burrowed.
1	3	Shale, gray, fossiliferous (pelecypod).
	3	Coal.
2		Siltstone and shale, in thin-bedded alternation.
9	4	Sandstone, gray, fine- to medium-grained, ripple-laminated, parallel-laminated, burrowed.
	6	Siltstone, gray.
	6	Shale, gray.
3		Sandstone, gray, fine-grained, intensely rooted.
	6	Shale, gray, carbonaceous.
1		Coal.
	6	Shale, gray, silty.
8		Sandstone, gray, medium-grained, crossbedded, convoluted, ripple-laminated, erosional base.

STAR POINT SANDSTONE (Upper part; measured from base to top)

25		Sandstone, gray, medium-grained, crossbedded, parallel-laminated.
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SECTION RF-13

Measured in SE1/4SW1/4 Sec. 21, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

7	2	Shale, gray, silty.
	4	Sandstone, gray, fine-grained, rooted.
2		Shale, gray, silty, rooted.
1	7	Coal.
5		Shale, gray, silty, fossiliferous (pelecypod)
4	2	Sandstone, gray, medium-grained, ripple-laminated, convoluted, burrowed.
1	8	Shale, gray, silty, carbonaceous.
2		Sandstone, gray, medium-grained, ripple-laminated, flasered.
5		Shale, dark gray, silty.
1	4	Sandstone, gray, fine-grained, ripple-laminated, burrowed.
	8	Sandstone, gray, weathered bleached, medium-grained, rooted.
	5	Shale, gray, carbonaceous, rooted.
1	11	Coal.
	1	Siltstone, gray, sandy.
1	1	Coal.
	8	Carbonaceous shale.
4	6	Shale, gray, coaly.
1	8	Sandstone, gray, medium-grained, ripple-laminated, flasered.
	5	Coal.
	7	Siltstone, gray, clayey.
25	5	Sandstone, gray, weathering buff, medium-grained, crossbedded, ripple-laminated, erosional base.
1	6	Shale, gray, carbonaceous.

6		Siltstone and shale, in thin-bedded alternation.
2	9	Sandstone, gray, fine-grained, ripple-laminated, rooted.
1	6	Shale, gray, silty.
9		Sandstone, gray, medium-grained, crossbedded, ripple-laminated, burrowed, erosional base.
3	8	Shale, dark gray, silty.
	6	Sandstone, gray, medium-grained, rooted.
6	4	Shale, gray, silty.
	4	Carbonaceous shale.
6		Sandstone, siltstone, and shale, in thin-bedded alternation.
	6	Shale and siltstone, in thin-bedded alternation.
2		Sandstone, gray, fine-grained, crossbedded.
	5	Sandstone and shale, in thin-bedded alternation, rooted.
1	2	Coal.
2	6	Sandstone, gray, medium-grained, ripple-laminated, burrowed.
10		Covered.
1		Shale, dark gray.
2	6	Sandstone, gray, medium-grained, non-bedded.
	6	Shale, dark gray.
5		Sandstone, siltstone, and shale, in thin-bedded alternation.
1		Shale and siltstone, in thin-bedded alternation.
3		Sandstone, gray, medium-grained, crossbedded, ripple-laminated.
1	4	Shale, weathering buff, silty.
	3	Coal.
6	6	Partly covered, upper part is silty shale.
15		Sandstone, gray, medium-grained, crossbedded, erosional base.
5	6	Shale, dark gray, silty.
5		Sandstone, gray, medium-grained, crossbedded, ripple-laminated.
	3	Shale, gray, silty.

	2	Coal.
3	5	Sandstone, gray, medium-grained, crossbedded, ripple-laminated, erosional.
1	6	Shale, gray.
1	5	Sandstone, gray, fine-grained, ripple-laminated.
3	6	Shale and siltstone, in thin-bedded alternation.
1	6	Sandstone, gray, fine-grained, crossbedded, burrowed.
20		Covered.
12		Sandstone, gray, weathering buff, medium-grained, crossbedded, erosional base.
38		Partly covered, upper part is interbedded sandstone and siltstone.
15		Sandstone, gray, medium-grained, crossbedded, ripple-laminated, erosional base.

SECTION RF-14

Measured in NW1/4NW1/4 and NE1/4NW1/4, Sec. 28, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

1	6	Shale, gray, silty.
	11	Shale, gray, carbonaceous.
1		Sandstone, gray, medium-grained, rooted.
3	8	Shale, gray, silty.
	5	Sandstone, gray, medium-grained, rooted.
3		Shale, gray, silty, rooted.
1	7	Coal.
6		Shale, gray, silty.
4		Sandstone, gray, medium-grained, ripple-laminated, burrowed.
	4	Shale, gray, silty, rooted.
	2	Coal.
4		Shale, gray, silty.
3	6	Sandstone, gray, medium-grained, ripple-laminated, burrowed, rooted.
	3	Siltstone, gray, sandy, rooted.
3	2	Coal.
2	2	Carbonaceous shale, silty.
2	1	Coal,
1	3	Sandstone, gray, fine-grained, ripple-laminated, erosional base.
3	4	Shale and siltstone, in thin-bedded alternation.
4	6	Sandstone, gray, fine-grained, ripple-laminated, convoluted, burrowed.
	6	Shale, gray, silty.
1	6	Sandstone, weathering buff, fine-grained, ripple-laminated, burrowed.

3	4	Shale and siltstone, in thin-bedded alternation.
32		Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, ripple-laminated, erosional base.
5	6	Siltstone and shale, in thin-bedded alternation.
2		Sandstone, gray, fine-grained, ripple-laminated, flasered.
1		Shale, dark gray.
	2	Coal.
5		Covered.
2	6	Sandstone, gray, fine-grained, ripple-laminated, flasered.
3		Shale and siltstone, in thin-bedded alternation.
3	4	Sandstone, gray, medium-grained, ripple-laminated, convoluted, burrowed.
	3	Carbonaceous shale.
	3	Coal.
10	5	Shale, gray, silty.
5	6	Sandstone, gray, medium-grained, crossbedded, ripple-laminated.
	6	Siltstone, gray, sandy.
3	6	Sandstone, gray, medium-grained, crossbedded, ripple-laminated.
1	7	Shale, dark gray.
1	7	Sandstone, gray, medium-grained, ripple-laminated, convoluted, burrowed.
7	6	Shale, dark gray, silty, rooted.
	4	Coal
	3	Shale, gray, silty.
45		Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, ripple-laminated, burrowed, erosional base.
5		Shale, gray, silty.
3	4	Sandstone, gray, fine-grained, ripple-laminated, flasered.
4		Shale, gray, silty.
1	6	Sandstone, gray, fine-grained, ripple-laminated, flasered.
2		Shale, gray, silty.

- 4 4 Sandstone, gray, fine- to medium-grained, crossbedded, ripple-laminated.
- 15 Sandstone, gray, weathering buff, medium-grained, crossbedded, erosional base.
- 1 Shale, gray, silty.
- 1 Sandstone, gray, fine-grained, ripple-laminated.
- 2 Shale, gray, silty.
- 11 Sandstone, gray, medium-grained, crossbedded, erosional base.
- 13 4 Sandstone, siltstone, and shale, in thin-bedded alternation.
- 24 Covered.
- 13 Sandstone, gray, weathering buff, medium-grained, crossbedded, ripple-laminated, erosional base.

SECTION RF-15

Measured in NW1/4SW1/4 Sec. 28, T. 21 S., R. 6 E.

Thickness		<u>Lithology</u>
<u>Feet</u>	<u>Inches</u>	
BLACKHAWK FORMATION (Lower part; measured from base to top)		
3	4	Shale, gray, silty, rooted.
	5	Coal.
	4	Carbonaceous shale.
3		Shale and siltstone, in thin-bedded alternation.
1	6	Sandstone, gray, medium-grained, rooted.
1		Siltstone, gray sandy, rooted.
2		Coal.
8	4	Shale, gray, carbonaceous, fossiliferous (pelecypod).
3	6	Sandstone, gray, medium-grained, ripple-laminated, burrowed.
4		Shale, gray, carbonaceous.
3	8	Sandstone, gray, medium-grained, ripple-laminated, crossbedded, burrowed.
	3	Siltstone, gray, carbonaceous, rooted.
	8	Coal.
	8	Shale, gray, silty, carbonaceous.
1	3	Coal
2	3	Carbonaceous shale.
9		Coal.
4	4	Sandstone, gray, medium-grained, crossbedded, ripple-laminated, burrowed.
2	3	Shale and siltstone, in thin-bedded alternation.
5		Shale, gray, silty.
1	4	Shale, dark gray, carbonaceous, rooted.
	3	Coal.

1	9	Shale, gray, silty.
1	6	Sandstone, gray, fine-grained, ripple-laminated, flasered.
6		Shale, gray, silty.
2	3	Sandstone, gray, medium-grained, ripple-laminated.
	6	Siltstone and shale, in thin-bedded alternation.
6		Sandstone, gray, medium-grained, crossbedded, convoluted, erosional base.
5		Siltstone and sandstone, in thin-bedded alternation.
	5	Siltstone, gray.
	3	Coal.
1		Sandstone, gray, medium-grained, rooted.
35		Sandstone, gray, weathering buff, medium- to coarse-grained, crossbedded, ripple-laminated, convoluted, burrowed, erosional base.
5		Sandstone, gray, fine-grained, ripple-laminated, flasered.
4	6	Siltstone and shale, in thin-bedded alternation.
2		Sandstone, gray, medium-grained, convoluted, ripple-laminated, rooted.
5	6	Shale, gray, silty.
3	6	Sandstone, gray, medium-grained, crossbedded, convoluted, ripple-laminated, burrowed.
5		Shale, gray, silty.
	3	Carbonaceous shale.
1	3	Coal.
3	8	Shale, gray, silty.
	8	Sandstone, gray, medium-grained, non-bedded.
5		Shale, gray, silty.
9		Partly covered, upper part is interbedded shale and siltstone.
2	6	Sandstone, weathering buff, medium-grained, ripple-laminated, flasered.
1		Siltstone, dark gray, carbonaceous.
5		Sandstone, gray, medium-grained, crossbedded, convoluted, ripple-laminated, erosional base.

10		Covered.
	9	Coal.
3		Shale and siltstone, in thin-bedded alternation.
3	8	Sandstone, gray, fine-grained, ripple-laminated, burrowed.
2		Shale, gray, rooted.
	2	Coal.
8	6	Covered.
13		Sandstone, gray, weathering buff, medium-grained, crossbedded, ripple-laminated, erosional base.
1		Sandstone and siltstone, in thin-bedded alternation.
11		Sandstone, gray, fine-grained, crossbedded, convoluted, ripple-laminated, rooted.
12		Shale, gray, silty.
5		Covered.
12	6	Sandstone, weathering buff, fine-grained, ripple-laminated, flasered.
8	6	Shale, gray, silty.
3	6	Sandstone, gray, fine-grained, ripple-laminated, flasered.
4	2	Shale, gray, silty.
	3	Sandstone, weathering buff, medium-grained, rooted.
	3	Coal.
7		Sandstone, gray, medium-grained, crossbedded, erosional base.

SECTION RF-16

Measured in NW1/4SW1/4 Sec. 33, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

	7	Sandstone, gray, fine-grained, carbonaceous, rooted.
	6	Coal.
1		Sandstone, gray, medium-grained, parallel-laminated, rooted.
	10	Siltstone, gray, carbonaceous, sandy, rooted.
4	3	Coal.
	9	Carbonaceous shale.
10	8	Shale, gray, silty, fossiliferous (pelecypod).
4	3	Sandstone, gray, medium-grained, ripple-laminated, burrowed.
	3	Siltstone, gray, clayey, rooted.
1		Coal
2	6	Sandstone, gray, weathered bleached, medium-grained, intensely rooted.
	9	Coal.
	4	Carbonaceous shale.
6		Coal.
	5	Shale, light gray.
2		Coal.
	9	Shale, light gray.
2	6	Coal
8		Partly covered, upper part is interbedded shale and siltstone.
12	6	Sandstone, gray, fine-grained, ripple-laminated, convoluted, burrowed.
5		Shale, gray, silty.
2	3	Sandstone, gray, fine-grained, ripple-laminated, burrowed.
2		Shale, gray, silty.

	6	Coal, bony.
5	5	Coal.
3		Sandstone, gray, fine-grained, ripple-laminated, convoluted, rooted.
	5	Shale, gray, silty, rooted.
	6	Coal.
10	2	Shale, gray, silty.
1	10	Sandstone, gray, medium-grained, ripple-laminated, rooted.
	7	Shale, gray, silty, rooted.
2		Coal.
7	6	Shale, gray, silty.
	5	Sandstone, gray, fine-grained, rooted.
4	7	Coal.
7		Shale, gray, silty.
2	10	Sandstone, gray, fine-grained, ripple-laminated, burrowed.
1	8	Shale, gray, silty.
1	6	Sandstone, gray, fine-grained, ripple-laminated, burrowed.
3	4	Shale, gray, silty.
4	3	Sandstone, gray, fine-grained, ripple-laminated, burrowed, convoluted, crossbedded.
3		Shale, gray, silty.
2		Sandstone, gray, fine-grained, ripple-laminated, convoluted, burrowed.
	10	Shale, gray, rooted.
	10	Coal.
	6	Shale, gray, silty, carbonaceous.
4	6	Sandstone, gray, medium-grained, crossbedded, burrowed, erosional base.
8	6	Shale, gray, silty.
	6	Carbonaceous shale, rooted.
	10	Coal.

- 6 Shale, gray.
- 13 Sandstone, gray, weathering buff, medium-grained, crossbedded, erosional base.
- 2 Siltstone, gray, sandy, rooted.
- 1 Coal.
- 2 3 Siltstone and shale, in thin-bedded alternation.
- 4 Sandstone and siltstone, in thin-bedded alternation.
- 25 Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, ripple-laminated, rooted, erosional base.
- 4 Shale, gray, silty, rooted.
- 2 8. Coal.
- 35 Sandstone, gray, weathering buff, medium-grained, crossbedded, ripple-laminated, erosional base.

STAR POINT SANDSTONE (Upper part; measured from base to top)

- 8 Coal, silty.
- 4 Siltstone and shale, in thin-bedded alternation.
- 61 Sandstone, gray, weathered bleached, medium-grained, crossbedded, parallel-laminated, burrowed.

SECTION RF-17

Measured in NW1/4SW1/4 Sec. 33, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

2	6	Sandstone, gray, medium-grained, ripple-laminated, convoluted.
1		Shale, gray, silty.
1		Sandstone, gray, fine-grained, ripple-laminated, ripple-laminated, flasered.
1		Shale, gray, silty.
4		Sandstone, gray, fine- to medium-grained, ripple-laminated, parallel-laminated, burrowed.
2	6	Shale and siltstone, in thin-bedded alternation, carbonaceous.
1	9	Shale, gray, carbonaceous, rooted.
	4	Coal.
1	4	Siltstone, gray, rooted.
1	6	Coal.
	6	Shale, gray.
35		Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, ripple-laminated, erosional base.
25		Sandstone, siltstone, and shale, in thin- to thick-bedded alternation, carbonaceous.
25	6	Sandstone, gray, fine-grained, ripple-laminated, crossbedded, convoluted, erosional base.

SECTION RF-18

Measured in NW1/4SW1/4 Sec. 33 and NE1/4SE1/4 Sec. 32, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

6		Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, ripple-laminated, erosional base.
8	6	Shale and siltstone, in thin-bedded alternation, rooted.
	8	Coal.
3	6	Sandstone, gray, fine- to medium-grained, ripple-laminated, convoluted, burrowed.
2		Sandstone, gray, very fine grained, ripple-laminated, parallel-laminated.
20		Sandstone and siltstone, in thin- to thick-bedded alternation.
5		Shale, gray, silty.
4	3	Coal.
2	6	Shale, gray, silty, rooted
1		Coal.
6		Sandstone, siltstone, and shale, in thin-bedded alternation.
3		Shale, gray, silty, rooted.
	6	Coal.
2	6	Shale, gray, silty, carbonaceous.
5		Sandstone, gray, medium-grained, ripple-laminated, convoluted, rooted.
1	6	Carbonaceous shale.

SECTION RF-19

Measured in SW1/4SW1/4 Sec. 33 and SE1/4SE1/4 Sec. 32, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

4		Sandstone, gray, medium-grained, thin- to thick-bedded, rooted.
	3	Coal.
22		Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, erosional base.
1	4	Siltstone, gray, sandy, rooted.
1	9	Shale, gray, rooted.
1	2	Coal.
1	6	Shale, gray, silty.
	6	Sandstone, gray, fine-grained, rooted.
2		Coal.
1		Carbonaceous shale.
2	4	Shale, gray, silty.
1		Sandstone, gray, fine-grained, ripple-laminated, rooted.
	4	Siltstone, gray, carbonaceous, rooted.
3		Coal.
5	6	Shale, gray, silty, fossiliferous (pelecypod)
6		Sandstone and siltstone, in thin-bedded alternation, rooted.
10		Coal.
	3	Carbonaceous shale.
5		Shale, gray, silty, carbonaceous.
15		Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, rooted, erosional base.
	3	Shale, gray.
	5	Coal.

10		Covered.
7	6	Shale, gray, silty.
3		Sandstone, gray, medium-grained, ripple-laminated.
15		Shale and siltstone, in thin-bedded alternation.
1		Siltstone, gray.
15		Sandstone, gray, weathering buff, medium-grained, crossbedded.

SECTION RF-20

Measured in SW1/4SW1/4 Sec. 33 and SE1/4SE1/4 Sec. 32, T. 21 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

10		Coal.
	6	Shale, gray.
15	6	Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, ripple-laminated, erosional base.
	6	Shale, gray, silty, rooted.
	3	Coal.
	3	Shale, gray, silty.
17		Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, ripple-laminated, erosional base.
9		Shale and siltstone, in thin-bedded alternation.
6		Sandstone, gray, fine- to medium-grained, crossbedded, ripple-laminated, erosional base.
3		Siltstone and sandstone, in thin-bedded alternation.

SECTION RF-21

Measured in SE1/4SE1/4 Sec. 32, T. 21 S., R. 6 E. and NE1/4NE1/4 Sec. 5, T. 22 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

	6	Shale, gray, silty, rooted.
	6	Coal.
4	6	Sandstone, gray, medium-grained, thin- to thick-bedded, rooted.
	3	Coal.
	3	Siltstone, gray.
18		Sandstone, weathering buff, medium-grained, crossbedded, burrowed, erosional base.
28		Sandstone, weathering buff, medium-grained, crossbedded, parallel-laminated, burrowed, erosional base.
3		Shale, gray, silty.
	6	Sandstone, gray, fine-grained, rooted.
	8	Coal.
5		Shale, gray, silty, rooted.
	10	Coal.
	4	Shale, light gray.
1	6	Coal.
2	8	Shale, gray.
30		Sandstone, gray, weathering buff, medium-grained, crossbedded, ripple-laminated, erosional base.
8	6	Shale, gray, silty.
4	4	Sandstone, gray, medium-grained, ripple-laminated, burrowed, rooted.
	5	Carbonaceous shale.
5	6	Coal.
10		Shale and siltstone, in thin-bedded alternation.
4		Sandstone, gray, fine-grained, ripple-laminated, flasered.

STAR POINT SANDSTONE (Upper part; measured from base to top)

- 5 Shale, gray, silty.
- 17 Sandstone, gray, medium-grained, thin- to thick-bedded,
crossbedded, parallel-laminated, erosional base.

SECTION RF-22

Measured in NE1/4NE1/4 Sec. 5, T. 22 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

10		Sandstone, gray, medium-grained, thin- to thick-bedded, crossbedded, ripple-laminated, burrowed.
22		Sandstone, gray, weathering buff, medium- to coarse-grained, crossbedded, convoluted, burrowed, erosional base.
30		Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, burrowed, erosional base.
2	6	Shale and siltstone, in thin-bedded alternation.
	6	Sandstone, gray, medium-grained, rooted.
2		Coal.
5		Siltstone and shale, in thin-bedded alternation.
5		Sandstone, gray, weathered bleached, fine-grained, rooted.
	4	Coal.
37		Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, erosional base.
1		Shale, gray, silty.
7		Sandstone, siltstone, and shale, in thin-bedded alternation.
5		Shale, dark gray.
2	6	Sandstone, gray, medium-grained, rooted.
2		Coal.
1		Carbonaceous shale.
1		Coal.
3		Shale and siltstone, in thin-bedded alternation.

SECTION RF-23

Measured in NE1/4NE1/4 Sec. 5, T. 22 S., R. 6 E.

Thickness

Feet InchesLithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

3		Coal.
7		Shale, gray, silty, fossiliferous (pelecypod)
2	10	Sandstone, gray, medium-grained, ripple-laminated, burrowed, rooted.
	3	Shale, gray, silty, rooted.
	2	Coal.
	2	Shale, gray, silty.
16	6	Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, burrowed, erosional base.
20		Sandstone, gray, weathering buff, fine- to medium-grained, crossbedded, convoluted, burrowed, erosional base.
5		Partly covered, upper part is silty shale.
	3	Carbonaceous shale, coaly.
9		Covered.
7	6	Sandstone, gray, medium-grained, crossbedded, erosional base.
10		Shale, gray, silty.
10		Covered.
2		Sandstone, gray, medium-grained, crossbedded, ripple-laminated, burrowed.
82		Covered.
1		Carbonaceous shale, coaly.
5		Shale, gray.
1		Sandstone, weathering buff, medium-grained, ripple-laminated.
55		Covered.
2		Shale, dark gray.

60		Covered.
2		Shale, gray.
	4	Coal.
3	6	Shale, gray, silty.
2	4	Sandstone, gray, medium-grained, ripple-laminated, burrowed.
	5	Sandstone, gray, weathered bleached, rooted.
	4	Coal.
	2	Carbonaceous shale.
15		Sandstone, gray, weathering buff, medium-grained, crossbedded, erosional base.
5		Shale and siltstone, in thin-bedded alternation.
1	6	Sandstone, gray, medium-grained, ripple-laminated, rooted.
	3	Carbonaceous shale, coaly.
15		Sandstone, gray, weathering buff, medium-grained, crossbedded, erosional base.
1		Shale, gray.
	2	Carbonaceous shale, coaly.
15		Sandstone, siltstone, and shale, in thin-bedded alternation.
20		Partly covered, lower part is interbedded sandstone and siltstone.
2	6	Sandstone, gray, medium-grained, ripple-laminated.
17		Covered.
20		Sandstone, gray, weathering buff, medium-grained, crossbedded, erosional base.

SECTION RF-24

Measured in SW1/4NE1/4 Sec. 5, T. 22 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

2		Sandstone, gray, weathered bleached, medium-grained, rooted.
1		Coal.
8	6	Shale, gray, silty, fossiliferous (pelecypod)
5	4	Sandstone, gray, fine-grained, ripple-laminated, burrowed, rooted.
	4	Carbonaceous shale, rooted.
	7	Coal.
10		Sandstone, gray, weathering buff, medium-grained, crossbedded, burrowed, erosional base.
9		Sandstone, gray, medium-grained, crossbedded, burrowed, erosional base.
6		Shale, gray, carbonaceous, silty.
6		Sandstone, gray, medium-grained, burrowed, fossiliferous (pelecypod) ripple-laminated, erosional base.
6		Sandstone, gray, medium-grained, ripple-laminated, burrowed, erosional base.
2	4	Shale, gray, silty.
3		Sandstone, gray, medium-grained, ripple-laminated, burrowed, rooted.
	3	Shale, gray, silty, rooted.
	4	Coal, bony.
12		Covered.
5	6	Shale and siltstone, in thin-bedded alternation.
	3	Shale, dark gray, carbonaceous.
	6	Coal.
36		Covered.
45		Partly covered, upper and lower parts are interbedded siltstone and sandstone.

124		Covered.
7	6	Sandstone, gray, medium-grained, crossbedded, ripple-laminated, erosional base.
1		Shale, gray, silty.
	6	Shale, dark gray, carbonaceous.
1		Carbonaceous shale, coaly.
10	6	Covered.
5	4	Sandstone, gray, fine-grained, ripple-laminated.
3	6	Covered.
	4	Sandstone, weathered bleached, medium-grained, rooted.
	2	Coal.
8	6	Sandstone, gray, medium-grained, ripple-laminated, rooted, erosional base.
2	10	Sandstone, gray, fine-grained, ripple-laminated, rooted.
1	6	Sandstone, gray, medium-grained, rooted.
2		Shale, gray.
6		Sandstone, gray, medium-grained, thin- to thick-bedded, ripple-laminated, crossbedded.
9		Shale, gray, silty.
5	6	Sandstone, gray, medium-grained, ripple-laminated, burrowed.

SECTION RF-25

Measured in SW1/4NE1/4 Sec. 5, T. 22 S., R. 6 E.

Thickness

Feet Inches

Lithology

BLACKHAWK FORMATION (Lower part; measured from base to top)

2	Coal.
6	4 Shale, gray, silty, fossiliferous (pelecypod)
3	Sandstone, gray, fine-grained, ripple-laminated, burrowed, rooted.
1	Shale, silty, rooted.
2	3 Coal.
10	Shale and siltstone, in thin-bedded alternation.
1	Sandstone, gray, weathered bleached, medium-grained, rooted.
2	Shale, gray, rooted.
2	10 Coal.
	3 Carbonaceous shale.
	4 Coal.
5	6 Covered.
4	8 Sandstone, gray, fine-grained, ripple-laminated, burrowed.
2	Sandstone, gray, weathered bleached, medium-grained, rooted.
2	6 Siltstone, gray, sandy, rooted.
2	6 Coal.
10	Covered.
	2 Coal.
1	6 Shale, gray.
15	Partly covered, upper part is silty sandstone.
	6 Carbonaceous shale, coaly.
1	Shale, gray.
27	Covered.

1		Sandstone, gray, weathered bleached, medium-grained, rooted.
	3	Coal.
7	6	Sandstone, gray, medium-grained, crossbedded, convoluted, erosional base.
2		Sandstone, weathered bleached, fine-grained, rooted.
2	4	Coal.
6		Shale and siltstone, in thin-bedded alternation.
2	5	Sandstone, gray, fine-grained, ripple-laminated.
10		Shale, gray, silty.
2	8	Sandstone, gray, fine-grained, convoluted, ripple-laminated, rooted.
	9	Siltstone, gray.
6		Sandstone, gray, medium-grained, crossbedded, convoluted, ripple-laminated, erosional base.
	8	Shale, gray, silty, rooted.
	2	Coal.
12		Sandstone, gray, weathering buff, medium-grained, crossbedded, convoluted, ripple-laminated, erosional base.
6		Sandstone, gray, fine-grained, crossbedded, convoluted, ripple-laminated, erosional base.
3	4	Sandstone, weathered bleached, medium-grained, rooted.