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Notes on Cloverly - eastward along Mid Fork of Powder River — 70
Begin the Morrison contact. Morrison
Here is a light greenish gray silty, matrix
claystone which grades downward into massive
finely grained gray sand. See text. 55.

10.0

Claystone. Light gray, grades to
silty and finely sandy clay
within 6". Upper 2.0 ft. in
with yellow sand.

Cleophas

15.0

Confining clay, blue-violet, hard & Textured
chert & pebble col. With
coarse well sized pebbles, Av. 5.0
1/2 inc. V. to 3/4" with gray
& black predom. & numerous brine.
Has loose of lentic 5 ft. 1
5.0 ft. shell, and has more
in basal part. Some sand:
least one in in upper
3.0, least 1 upper ci
coarse are more & water
f. 1. vicinity
Sandstone, coarse and equidistantly banded to silty and argillaceous at top. Irregularly bedded, X Lam., ledgy, becoming somewhat shaly in upper part. Grades to units above and below. Weathers gray to yellowish gray with some streaks of iron.

6.0 Clypstone silty, and argillaceous siltstone, dark gray, with thin beds of fine-grained gray sandstone, which weathers with yellow stem.

8.0 Sandstone, fine-grained, locally argillaceous, with some lepis-silts. Upper unit.

4.0 Siltstone, argillaceous, grade up to silt in argillaceous clyspstone. Green becoming brownish gray to black-gray. Silty basal phase of overlying unit.
12.0 Claystone, black, to carbunculous, with some carb. shale in lower 2 feet. Upper 1 to 1.5 claystone is light gray some yellow streaks

Bases of massive cliff-forming ejection? 85.

Thermopolis #3, an offset about 150 feet east of where black clay there at Thermopolis #2 were measured.

Morrison:

110 — ? Claystone: light greenish gray, silty, yellow powder film on fractures

Cloverly?

4.5† Inte bed: ) liquidic brown shale, silty marl, shale, and minor thin pints silt and lignite

11.0 Conglomerate, \( \frac{1}{2} \) to 1 cu. ft. grit and pebble with upper 6 solid cu. 16. Below about 4 ft 10 sq. cont. from 10 to 15.
0-3', then 3' ± ligniteitic siltstone
shale + local SS lenses, basal
1' ± yellow-stained calcs at top

(whole cal., unit thickens
eastward.)

0.5
Shale, silty, brown, somewhat
ligniteic

1.0
Siltstone, massive, sandy
forms gray-white weather ledge

8.5
Shale, brownish, ligniteic, silty
with some interbeds hard gray to
black siltslate, Upper 3' of
brown, ligniteic shale is
conglomeratic with scattered
grey chert pebbles.

7.0
Intermediate ligniteic brown silty
shale with light pings and light
gray wackes, gray siltslate
& silty hard sh.

6.5
Claystone, black, loc. silty carbon. up.
upper 1.5 becomes light gray.
3.0
Interbedded fine-gravel loam, silty light gray weather, SS and light gray silty to sandy shale. SS bed up to 0.8 ft + thicker.

65.0+
Sandstone, calcite, massive x bed to x 2cm, cliff forming, bed 2" is chert. Granule caly locally. Cal layer in x bed + stronger throughout. Mostly granule sign.

At top this unit has irregular intertongue in contact with variegated bed above.

6.5
Sandstone, locally sandy, clayey.
Soft, weak, some silty
Clay, light and some yellow in red area.
Some thin beds calcareous (2cm-gross). SS unit below intertongues laterally, locally with sharp upper surface with "round" tracks.

7.0
Sandstone, somewhat variegated, variegated, purple, salmon, green, and bluish gray. A very friable
unit of qtz & colored chl. in fine grains to granules with scattered polished pebbles (Sample bry full). Weathers like a claysite but relatively little clay in matrix. Becomes clayey at top. Grades to overlying unit.

4,0

Intermixed silty to sandy claysil, below 1.5 percent to friable, loc. claysil; calc. sand with granules. Saturated or born to orange born weather mass. Sheet grain to calcite, limestone hard weather in conch-like masses. Color varies to purple, gray, some red & yellow.

6,0

Chiefly claysite, with loc. silty to sandy parts, cor-eordinated white weather. Calc. concentrations up to 6' ± diam. Very, greenish gray with purple, some yellow spots. Silty claysite green, purple common & claysil.

6,0

Intemixed, fine sandy green andesite and silty claysite - reclamewax.
<table>
<thead>
<tr>
<th>Layer</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.0</td>
<td>Silty clays, clayey, or silty clays, scattered sand grains. A grey mudstone if you ignore it is a mixture of clay to sand. Size, chiefly maroon.</td>
</tr>
<tr>
<td>14.6</td>
<td>Silty claysmore and some clayey siltstone, soft, weathered to greyish &quot;popcorn&quot; surface. Upper 3' ± is grey, grading to black at top. Below becomes variegated, grey with chert red，则 red increased downward to underlying unit.</td>
</tr>
<tr>
<td>6.0</td>
<td>Sandstone, fine-grained, tabular in beds up to 1 ft., x 1 ft. In surface beech &quot;worn&quot; mud. Few of the contacts marked + some rippled, but better not well preserved. Weetua to prominent brown, belaying ledge. However, beds distinguish it from Rusty red ledge above.</td>
</tr>
<tr>
<td>7.0</td>
<td>Siltstone, locally argillaceous, carbonaceous, weathered grey white, platy Irregular, interbedded with grey silt, silt shales.</td>
</tr>
</tbody>
</table>
Saltstone, hard, greasy, weathers brown.

1.0 t
Saltstone, clayey. Early sets, weathers brick brown with orange red stains. Contact with 
C clay - 110.

1.6
Claystone, grey to black with pliny fissure. Slip clay in at top.
Slopes washed.

Probable contact with Rhtub beds.

Compare with Thurner's section 
H 1, 110.
Sharp Mountain - Greybull section

Starting at soil zone top of leading bluff or closely capped by Greybull, now where it plunges under alluvium to s.

5.50 - ? Sandstone, fine-grain very thin breccia with silt + clay partings. Shaly clays.

4.14 Claystone: Silty, massive, grey with 0.8 stained "veinlets", becomes siltier at base grades to unit below. Wets yellow-grey.

2.7 Siltstone, massive, grey, clayey at top becoming fine-textured and grading to unit below. Wets yellow-grey.

2.8 Siltstone, massive hard, not clayey - wets a yellowish-brown, blocky some thin lenses clayey.

1.0 Cherty a brown shale, loc. Signitic, in lower 0.6, grading up to hard compact blue-grey silty clay.
Claystone, waxy, finely silty, gypsum plant (e.g.s), throughout, blocky to subconch fracture, upper 1 ft. light gray grading down to blocky unit. becomes shelly & more silty to base 1.5 ft. (Sampled - Eicher 17' 49)

Interbedded shelly siltstone and fine-grained sandstone, thin beds, weather bands gray & buff.

Cherty massive silts. Very fine soft massive gray silt at top becomes harder down ward. Weathered bands, ferruginous sand, some mixture of very fine go 35.

Siltstone, blocky when fresh, weathers splintery, grades to shale at base. Upper part (2/3) olive green with upper 0.5 stoned red. Lower half is a gray silty sand with plant debris, including scale, cuttle.

Clayey siltstone, blocky, dark gray, some plant frages. Locally where (e.g.s)?
plan: remains in overlying unit; sparse
This grades directly upward into
olive green siltstone.

\( \begin{array}{l}
6.5 \\
\text{discont.} \quad \text{②} \\
3.0 + \\
1.5 \\
0.45 \\
\end{array} \)

Siltstone, massive, blocky layers with
hard bands up to 1 in., weathered
but with local Fe stain.

Claystone, massive, waxy gray, with
veins, red, with scattered Fe specks
in upper few feet, not prolific but
definitely in.

Red variegated clay, silty to
3 clayey siltstone. No Fe specks.
Resume of Cloverly, Thermop to Red Vale

Thermopale to Hudsonic relatively uniform succession - summarized below for Thermop area.

Basal rusty beds, pebbly sand & silt.
Silty sh, some 1/2 ss at base (#1)
Fining cone, layers.

1. Silty zone - quartz arenite silt red bly
2. Platy, coarse silt.
3. Tabor, x-ray, fine ss
4. Some silt.

5. Discont
Cleaning, thalweg groove at top
becoming red clays & s.

6. Cleaning, thalweg groove at top
becoming red clays & s.

7. Closets, silt, band, veiny, limited in core.

8. Freibl., qltic, sand, variegated,
content polished pebbles.

9. Massive X-level qltic ss,
prominent unit & incised form.

10. Carboaceous shale & siltst,
char & green & pebbly qltc.
Tensleep.

At Tensleep, interval of units 1 & 4 is quite variable. Possibly only unit 4 is represented by lensing tabular SS. Unit 5 rep. (possibly) by their curv sh+ silts which is in sharp contact with waxy clays = to unit 6. Polished pebble begins with 2 ft. of coned.

Here units 1-4 prob = brecull.

Hylation

Probable eqiv of units 1-4 same sandy, lichen fairly massive SS holding hoqueck (check this -- see whether green silt in the interval) Unit 5 is quite thick, as at Tensleep, lies in slope. basal few feet platy silts. Unit 6 waxy clays. Units 6-8 fairly thick. Unit 9 present but broken by interbeds of siltsm + clayey silt. Commonly curbl.
Unit 10 present at least locally.

Unit 11 in locally as narrow thick channel still.

Section remarkably like Thermop. area at top, very unlike in lower part.

Unit 1, considerable SS, hold ledge.
Unit 2, definitely present. 3, 4, 5 also but 4 still silty. 5 very thin.

Unit 6 is weby with Fe pellets
has SS lenses near top, thin, then closer which apparently equal 6, 7, 8. 8 prob. =
Moberly's "lithic wecke."

Below this section encrusted clay to Morrison. Very local thin base calcite, but
a. "Cleary lense 20' above locally may approximate position of Unit 9 SS."
Addition to Sheep Mt. Section

Measuring up from top of hillback-forming sandstone.

4) 9.5
Shale, dk gray to bl., weals, light gray, interbedded with silt, + very silty shale. Intermittent Fe stain conc. zone about 3' above base. Basal 2' obscured, same very gray shale here.

3) 0.4+
Saltstone, Fe impreg. locally. Form platy brown-weathering little higher. Slope. Has more interbeds.

Saltstone, Fe impreglocally. Form platy brown-weathering little higher. Slope. Has more interbeds.

2/8.5 = 9
Shale, dk gray silty, interbedded with thin bas. platy, shale saltstone. Becomes saltier toward base.

1/0.6
Saltstone, Fe impreg, locally Fe stain, persistent low ridge. Copper weals purplish brown. Appears to be uppermost Fe stain bottom.
This is as far into rusty bed as this section went. Back to the bogmeadow forming SS, which could be the type Craigboll.

SS, have very irregular upper surface, and jacket pelagic interwoven could be in place structure, but probably not.

A

About 5'1 across x 1.2m. Loading etc. Tested up 0.9m to very fine 9'2 x 0.9

0.3' Senecio transect layer occurs in 1st base SS. Square 14.8" x 14.8" (1.4m)

11.0' Senecio, brown-white,platey silty to very fine-grss, calc (2nd layer?)

Below this about 5'1 slope with step or section in cut.
To South face SS layer out.
Following upper section is about 200 ft, s. of cut. Measuring clays

19.5
Interbedded shale & pebbly siltstone from pebbly Fe. impregnated siltstone (= 1/2 of preceding section). Festone
Layer 3' above base.

5.0
Sands, lenses, very fine-to fine-grained. It is interbedded gray shale. 1'0 thick 1/3 from top. Weighs 6 0.13 to buff

0.3
Festone, no. layer

3.4
Sands, lenses, very fine-grained, silt, weathered dark brownish gray platy, some silt & interbeds of Festone, bluish-purplish-black. Locally 3 or these, but letterly number varies + Festone obvious lenticular.

Form base this to top of unit 10 at section in cut is 14'
Near Crooked Creek—The ‘Heistak River’

Partial section across Clovenly anite + with Grey ill-Rusty. (E22 Crooked Creek)

Most of Clovenly exposed is a bedrock in soft, highly colored beds, upper part
broadly red and purple—like thin with popcorn—surface.

Clovenly, 1 ft. 5 in.

1 5 ft. 1
Cloverly, var. 100 ft. bizz. var. greenish gray, var. with red
beneath cloverly gray about
5' from top.

2 1 ft. 2
In the east, shelf, forms a low
around, and quite a round
step in slope nearly; South east
areas

3 4 ft. 8
In stone, massive very fine-gr., some
large, cren. str. var. Gray, augit. gen
greenish gray with upfe-erod
with orange butte. 18
7.0
Shale, gray, fissile, finely silty, becoming siltier in upper 2 ft with thin irregular interbeds and remnants of silt.

6.4
Sandsone, very fine grained, massive to tabular, cross laminated, weathers yellow brown. 1 ft thick with p. a. stem directly at top. Some silt in aggregates at top.

Connects with Eichers Crooked Creek #22.
3
5.5 - China sugar - p. 10 of 10 sheets
2
13.5 - 55 lbs. in a burlap bag
10.5 - 55 lbs. in a truck, brown weather
100 cases $100 p."
Addition to preceding section (base of Eicher, E22 Crooked Creek)

Shifting on top of Unit 1 sandstone of preceding section and measuring up

2.8 Sandstone, fine grained siltsand, intermixed with minor clayey silted, weathers white with Fe or to orange stain and some red splotches. Locally Fe specks in this zone.

3.0 Claystone, black to grayish at base becomes somewhat lighter as it gets grayer at lower downward.

6.0 Siltstone, massive to platy, very gray with some shaly laminas, weathers but to Fe brown becomes pleated upward. Locally at base is 0.2 ironstone with gypsum.

12.0 Sandstone platy with interbeds shaly silt and about 1 thin limestone on 1 base = top.
Crooked Creek area

Gypsum Cr- Stone quarry sections

1. On spur just N of fault to N stone quarry along E bluff Gypsum Cr.
   About 200 ft N of Sloan quarry Rel.

Top of ridge - Measuring down (Bruntum tape on floor
Rusty beds (in part)

14 7.0 ft - ?
Sendstone, very fine-grained, platy,
in thin hard, x-laminated, ripple
mark + "worn" trenched ledges
with interbeds of dk gray to black
silty shale + interlam silt, weather to tine brown to light brown

13 7.5
Shale, silty, dk gray, interstratified
and thinly interbedded with
siltstone and few thin beds of gray
shale. Weathers to brownish gray
slate with tine silt + ss chips.

12 12.0
As above but with numerous
interbedded, platy, fine-grained
ss layers up to 0.8 thick,
and thin beds dark red brown
weather ironstone.
Siltstone, massive and gray at base, with irreg., wavy & contorted bedding; above becomes irreg.,
plenty to locally shale, minor very
limy qr sandstone in thin beds, scattered. Christy gray-buff under
brown weather. Plants frns throughout-scat.
At base is Fe impres. Silt 0.7-
0.14 with gypsum inder, it, Locen Feston,

Cherty, black, siltly, becoming
very siltly in lower 0.7± and
lighter in color with yellow to
tan stein-grades to unit below

Siltstone, clayey and siltly;
claystone, blocky tough, Fe
stained red and tan, has
spherulites? (See sample #1)

Claystone. Wavy, silt, blocky,
olive gray, shikinaward, grades
into units above + below, acc. +
has Fe ve. sets - and pockets of
Fe specks (spherulite) which are
re-stained. Lateral?? (Fe silt)
This unit is re-arged with
red end is a more pure
claystone.
Siltstone, at top very clayey to a silty clstn, gradational with unit above; downward gets harder, siltier & blockier, more carbonaceous changes to a gray blocky silts, some Fe stain, but mottled gray & slight to very dark gray, some solid silty bodies, small irreg lenses.

Thickly
Interbedded siltstone, silty shale (no. 4) + sandstone, platy & fissile locally, shaley beds, dr gray, rest white, crumbly throughout.

Sandsone, fine-grained, platy, x1mm, numerous angular grains, lentilcular, has intercal. clay.
Shaly silt plain, vargs.

Shale, blocky, gray, silty with 3 or 4 zones Fe impreg. about 0.2 thick: upper foot+ is more of a cleystone. (Sample 2)

Thick + film: vargs

Shale, silty with interbeds of silts, gray to brown, local carbonaceous & liquefied parts, crussle, plant freqs throughout.

Sample 3
2.2

Shale, black, fissile, laminated, silty
Thin layer; grey at base

4.0 to ?

Claystone, massive, grey, weathered
Tan and red, upper 1.5 ft, shot
with Fe specks (spherulites) See
Sample 43 Spherulites thru upper
2' into grey, then at about
3.0 red mottling begins +
grades rapidly down into
prominent red weathering
clast.
Rainbow Canyon - Contact Zone

Rusty beds in part

Siltstone, weathered gray, some ironstone concretions in part.

Sandstone, fine grained, Feshmore locally be cropped, thin massive 2-3 cm bed. Local fos. Feshmore Conglomerate (Sample 1)

Siltstone in places interbedded with sandy layers. 3 zones of interbedding, one at top, others 1.7 and 8.0 from top. Weathered light gray with yellow stain.

Chertstone, gray, thin, at top grading rapidly downward within 2 ft to light green gray mottled with red Fe specks and spherulite-like black bluffs throughout rest of 1-2 ft at least, upper 5 ft. Shows light gray silty-cement (Sample 2)

2.0 obscured

? 10

5.0

11.0

2.0

10.0
<table>
<thead>
<tr>
<th>Depth</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.5</td>
<td>Shale, dark gray to black, clayey becoming silty at base.</td>
</tr>
<tr>
<td>3.0</td>
<td>Siltstone, massive, sandy, light gray to gray-white, locally a siltiness in upper part, grades abruptly to ooids above and below.</td>
</tr>
<tr>
<td>4:5</td>
<td>Siltstone, gray, marked with iron (venous), clayey, grading to grayish gray shale, cleavage with carb. frequency. Veined with part with Te violets and blebs.</td>
</tr>
<tr>
<td>3.0</td>
<td>Sandstone, very fine grained, qts with grains red and bits, stained yellow and yellow brown, twistable.</td>
</tr>
<tr>
<td>1.6</td>
<td>Shale, dark gray fissile, becoming silty upward. Carb. flecks.</td>
</tr>
<tr>
<td>3.5</td>
<td>Siltstone, massive, gray-white very fine.</td>
</tr>
<tr>
<td>2.0</td>
<td>Siltstone, massive as above but olive with local reddish tan.</td>
</tr>
<tr>
<td>1.1</td>
<td>Siltstone, as above but gray, possibly more slightly clayey.</td>
</tr>
</tbody>
</table>
6.0
Cleystone, silty, massive dkr gray becoming red-veinjegated downward

5.0-?
Cleystone silty, var. red and light gray weathered to big red and merness (fluted face).
Cloverly
area - sections through contact zone

#1.2

Off NE end of frontier scarp in bedrock sw e r d:

Measuring down from crest of badland butte

1.0±

Top of butte cap. 1 or 2 thin layers of hard purple-brown weathered silt, probably no more than few inches thick. May be intermittent.

2.5

Silt: thin, interlaminated gray + white, very little clay in it. Frizzly.

6.0


3.0

Similar shale, and salty to finely sand \ dry sand, loose (sandy, some Fe stained) silt layers. Cherty shale - to grey, locally some small fossils, purple weathered. Coarse in lower 2', may contain the fossil, iron.1.0 feet.
<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.2</td>
<td>Ironstone con. layer</td>
</tr>
<tr>
<td>2.6</td>
<td>Siltstone, blocky to shelly, and interbeds silty shale, gray to light gray, rusty + yellow stain.</td>
</tr>
<tr>
<td>1.1</td>
<td>Shale, paper, clay, purple + brown blotchy</td>
</tr>
<tr>
<td>2.5</td>
<td>Siltstone, gray to greenish gray massive yellow powdery stain</td>
</tr>
<tr>
<td>0.41</td>
<td>Ironstone con. layer</td>
</tr>
<tr>
<td>2.0</td>
<td>Siltstone, massive, gray, some fine sand</td>
</tr>
<tr>
<td>8.5</td>
<td>Claysite, gray -- olive brown with irregular blebs light gray throughout, latter has yellow powdery stain, some small areas red stain. Locally finely salty. Has spherulites throughout</td>
</tr>
</tbody>
</table>
| 2.3     | Claysite, silty, grading to siltstone dark gray + gray splattered with red and blue-black stain. Has
some spencerites

0.8
Sandstone, fine-grained, white, friable. Locally Fe-impregnated to form thin ledge. Laterally this ledge is an outcrop above rests directly on unit below.

5.0
Siltstone, clayey, a silty claystone in upper few inches. Massive mixed, with some sandy patches, light gray with bright red splatters in upper 3.0 of which color cut crop a mottled red + gray-white.

6.0
Claystone, firmly silty, gray, with light brownish cement on weathering surfaces.

3.0
Siltstone, clayey, gray-green to olive with red + orange-red splatters.

5.0
Siltstone, clayey, gray, softer above, below an harder at base. Ivory brown vein is, Perpendicular yellow-orange splatters in
<table>
<thead>
<tr>
<th>Depth</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.4</td>
<td>Sandstone, fine-grained, soft, light gray, grays to units above + below.</td>
</tr>
<tr>
<td>2.5</td>
<td>Siltstone, clayey, sandy at top, light gray + greenish gray splotched with bright red from Fe content.</td>
</tr>
<tr>
<td>5.0</td>
<td>Claystone, gradational with above, but darker. Is greenish gray with red splotches, silty, nearly a clayey siltstone.</td>
</tr>
<tr>
<td>2.0</td>
<td>Sandstone top of local channel. Fine grained, numerous dark mineral, light gray + gray - silt to pepper, sandy, greenish brown ledge, clayey.</td>
</tr>
<tr>
<td>3.0</td>
<td>Siltstone, carbonaceous, locally sandy, gray sandy, orange well layers - fairly soft.</td>
</tr>
<tr>
<td>1.6</td>
<td>Silty, gray clayey, massive, breaks in small pieces.</td>
</tr>
<tr>
<td>1.5</td>
<td>Claystone, silty + clayey silts, light gray with 0.5 weather.</td>
</tr>
</tbody>
</table>
spherulitic zones,

2.0-?

Cleavage, scaly, grey mottled with red.

Clouder Park

2

South of Clouder Park

Top of brown booth

0.3 ±

Siltstone, Fe-imregnated, platy.

6.0

Siltstone and silty shale, thinly interbedded to intercalated. Shale grey, highly silty-to silyy, silt st. micaceous, yellow; soft, friable. Lower 0.5 ± is plagioclase-green.
Fo-imprecatred siltst: Grizzles to unit below.

4.2
Shale, thinly interbedded & interlaminated with silt in upper 3.2, lower part chiefly dark grey finely sandy silt & clear shale. Silty part weathers yellowish.

5.2
Siltstone, grey, massive, some nod., blocky, yellowish stain locally.

1.3
Ironstone in beds to 0.3, siltstone interbeds. Fo. stone weathers bluish black, same brown.

2.0
Siltstone, weathers yellow on upper, massive 0.8 bed finely sandy siltstone at base some shaly grey siltstone in middle part.

2.5
Shale, dark grey to black, highly silty at top becoming less so downward, lower 0.6 black paperish with coal drags.
1.5  Saltstone, light gray, calc fragments partly at top with gypt seams and yellow efflorescence. Bzel 0.3 to 0.5. 2 hard ledge sandy saltstone.

1.2  Saltstone, massive, gray, some yellow veins.

0.6  Ironstone conc. zone, brownish purpl.

2.5  Saltstone, massive, gray, lower side is dark.

1.5  Saltstone, massive, with yellow powdery stain.

0.9  Sandstone, very fine-grained grading down to saltstone, locally brown then ledge. Some colored grains.

0.9  Saltstone, light gray, sandy in upper part, massive.

?  Cleysen, gray, local yellow and brown stain, spotly spherolitic, becomes increasingly silty downward and is a clayey silt at base.

2.3
1.2
Siltstone, sandy, massive, white; locally a silty-very fine-grained sandstone.

3.0
Claystone, gray with splotches of brick red and red brown, becoming silty downward and gray.

3.0
Shale, or shaly claystone, black-becoming gray at base, grades up and down, + Chert at base.

2.4
Claystone, light gray to light tan with brown Fe vein-like markings and splotches red-brown in lower half.

0.4
Siltstone, very fine-grained to sandy siltstone.

4.0 - ?
Claystone, silty gray to tannish gray with brown vein-like markings. At 1.5 from top begins to get red iron splotches. At 4' on crop - top of clumpy weathered splotches red zone.

On this crop the "gray band" thickens laterally - channel like - it goes from 3' thick down to 1.5 of 12' unit.
and its basal contact weathered sharp on red below, though in section it appears quadratic.
Hyattville area

+1

Ride just out of NoWood Canton (Secs Eich v Rust on scene, 1 mile 2 Min. H Road. Trail goes down slope and is easily followed. Trail up ridge, trail from Hyattville Rd.

0.41

Siltstone, Fe-impregnated, concretions, slightly weathered brown to purple. A discoloring of set of flat concretes. Need a local geologist.

56

Covered - spo not shown. Clay, siltstone, sand to clay, interfingering, and interbedded with silty great. Brown to green gray to brown. Green 3 Min.

5.0

Covered. Shows 2 minum. Clay, black paper over r. with about 0.4% of brown weathering. Siltstone at base.

3.5

Interbedded yellow-weathered siltstone and black paper silty shaly
0.2
Ironstone zone - previously reported as varying in color laterally with blue-black concentrations.

11.0
Covered - reddish-brown bluish bl
bl paper shale, no details

0.2
Ironstone zone - patches of impreg
siltstone alternating laterally with
blue-black zones here.

10.0
Covered. Upper 3.0m highly bl
fossiliferous with acritarchs, sil
lino 7.0+ acritarchs like sil
siltstone.

0.2
Ironstone zone - 2cm thick but non-
continuous

[From here down this section is unclear]

5.6
Shale - some very fine silt, which becomes more plentiful downward.

2.6
Shale-silty interbeds with thin
layers of silty shale, remain
unmessed.

Q: ?
2.5
Cleistone, dull grey to black, blocky and waxy at top becoming shelly locally. Salty at base.

2.2
Cleistone, silty grey, with local red to yellow Fe stained areas due to weathering of scattered accumulations of spherulites.

1.6
Cleistone, semi- and, locally, silicified sand, dull grey, becoming finely sandy at base. (Appears to be mixed layer.)

2.2
Cleistone, silty, grey, locally clayey. Silt and clay in nodules. Consists of red, yellow, and grey sandy silt. From spinous oyster beds. Fe accumulations.

1.0-2.0
Sandstone, fine-grained, cross beds to x-lam, massive,locally bicolored grey and red with odd hollow cores. Contain minor irregular and ripple-marked. A very irregular, distributed ss.-surficial ground as

[Note: The text seems to be a description of geological samples or formations, possibly from a field notebook or a report, but contains some typographical errors and is difficult to interpret in full. The content suggests the analysis of different types of rock samples, their characteristics, and their distribution within a certain area.]
4.0+  
Siltstone, sandy, platy beds, forms ledge & hard rock with SS above, into which it grades. Thinly X-beded. Weath. light gray w. yellow & brown stain.

4.0  
Siltstone, thinly interbedded & interlaminated with silty shale & silt, silt, silt.

3.2  
Silt, dark gray, mucky, fine, silt, scat. beds, zones.

1.2  
Sandstone, very fine-grained, friable, with thin interbeds & partly silty shale. Spaned orange, brown, red.

3.3  
Shale, gray to black, thin with some carb. flecks... few thin silt layers.

3.2  
Siltstone, massive, finely sandy, light gray weathers powdery yellow gray.

6.0  
Siltstone, 2 hard ledgy, gray-white weath. Siltst with silty blt. shalv.
parting. Upper siltstone 3.6. grades to unit above; shale 1.4. lower siltstone 1.0.

2.0 - ?

Claystone, finely silty, gray mottled with red

Hyzhvil 0 - Offset A. Measuring up from thin ss in mid-Cloverly to base of preceding section. Spot check through crust - not reached.

5.0 +

Sandstone, massive, grey, medium-grained with numerous colored grains becomes clayey (intermediate) in upper part.

4.0 +

Sandstone. Clayey, white, grading upward to sandy claystone, yellow and red Fe concentrations - concretion like.

Both these units lens laterally upward to thin pella white zone about 16 ft thick within 100 feet. 16.0 feet beneath Ynis. Then lateral extension is dark weather ss which caps next rise to E + is top unit of Offset B. Between are the brick to dark red beds of siltstone. With 10 of very fine ss in lower 3.
parting. Upper siltstone 3/4 grade to
unit above, shale 1/4, breccia siltstone.
19.3

10.0

Claystone, silty to finely sandy,
upper limit polished pebbles
most local in this unit. A
purple to purplish-red band 2 ft
of overlying gray sand slope.

11.0

Claystone, weather gray with
splotches bright red stain;
upper 2 ft is fine clayey silt
+ upper limit of polished
pebble part. Sand is tan
to gray on face, clasts below
matted together, very thin.

59.0

Claystone, gray with purple-gray
mottled cars 3 to 6 ft thick.
Then dark gray streaks
everywhere and gray above to
contact. No upper part shown
covered.

of section #1
Hypovol E 1, offset B,

Measuring down from the wet line SS noted bottom of page — 14 offset
A description first page.

110-410
Sandstone, very fine-grained to medium grained. Weatis clark.
gray, locally mod qr part frieble
white with pink stain. Some
local spots chertification

9.0
Claysone, clty, brick red becoming
purple downward + gray + highly
silty at base.

2.0
Siltstone, gray, massive, some
yellowish stain

11.0
Claystone, very gray, waxy, becoming
silty downward. Lower 5 is
silty clay with interbedded-or
lensed thin silts. Gray to ten
weats here light blue grey much blue
yellow silt in float.

28.0
Sandstone, massive, fine-to coars
grained, locally calcite, with
Lenses of faintly silty shale, sediment seems largely silty. Unit highly lithified. May be a gross regressive with lower massive ss above 6', then 8-10 ft of limy shale, then upper ss, but cannot tell for sure.

1.0 to 4.0

Charted sandstone - dark gray, very hard, some lycops shot with tubules.

17.0:

(a) Shell, silt, with interbeds of lime and brownish-white weathering silts. ss with plant fronds.

(b) Sandstone, massive, fine to medium grained and conformable. x-beaded, weather grayish with red stain.

5.5

The ss is a irregular channel-like bodies which finally as at crest of unit (6), occupies the entire section. Elsewhere it is all carb surfaces due from chart down to unit below.
Camplglomurate and calcite SS, chiefly
former of granule size, clay, gray
and bleached chert. Weathers elec-ruish brown, locally red stain.
Is in well defined channel which
thins out leading into brown
chlorite gray ill. shale.

Shale, brown, salty light brown and
other chert weathering to a
in slope to greenish gray Morrison
like chert/foss.

Where channel calcite absent it
is about 6 ft. from chert bed
into Morrison-like chert with
apparent truncation.

Morrison has upper greenish
gray part then yellowish
Sand, then lower half
banded red and gray.
<table>
<thead>
<tr>
<th>Layer</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.2</td>
<td>Ironstone, scattered purplish brown to blue-black concretions.</td>
</tr>
<tr>
<td>1.2+</td>
<td>Siltstone, locally some shaly interbeds, Fe-stained</td>
</tr>
<tr>
<td>0.2-0.5</td>
<td>Ironstone, as above, locally it is a continuous layer</td>
</tr>
<tr>
<td>1.7</td>
<td>Siltstone, grey, massive, with some yellowish brown weathering, plenty interbeds, locally a single 1&quot; interval here</td>
</tr>
<tr>
<td>0.5</td>
<td>Siltstone, grey, coarse-grained, weathered yellow brown</td>
</tr>
<tr>
<td>1.41</td>
<td>Siltstone, shaly, become of silty shale downward, grey to black</td>
</tr>
<tr>
<td>1.0</td>
<td>Shale, black, papery, finely silty clay</td>
</tr>
</tbody>
</table>
0 - 0.5

Transstone, later cemented conc. cap of purplehorn Fossatum on underlying sand. Discontinuous.

3.0+

Sandstone, very fine grained & silty, varying, some places at sand, silt. Commonly forms a thin layer, but locally

Siltstone, semihard, gray, blocky to poorly slilzy on weather surface. Has some finely flaked, coal, matter some yellow from.

5.2

Claystone, very soft plastic to semi-plastic. Light gray to gray with orange-brown to red brown streaking in spars and paid on a few veins of lime

Claystone, continuous with above dark gray, less plastic, finely

1.5

Silty, becoming darker gray more silty downward.
Cleaveland, silty, tan, olive grey to brown, continuous with above. Highly
sphæroïdite zone.

Clestone Silty. To Clestone Silstone
at base. Clestone gray with red
+ purple red veination. This is
top red fluted unit. As cleavage
has odd division of red splashes
as follows

\[
\begin{align*}
2.8 & \left\{ \begin{array}{l}
\text{Globular gray ash with brown}
\text{brick to vermilion splashes}
\end{array} \right. \\
2.1 & \left\{ \begin{array}{l}
\text{Gray silty clay -}
\text{few if any spattering same brown}
\text{Si± clay & clay silty, gray to}
\text{greenish, purple red mottling &}
\text{brownish veined like Te stone}
\end{array} \right.
\end{align*}
\]

Deeper, in this about another 6 feet is
silty, I.9. graptolitic lime band then
steep cliff (fluted vermilion stuff)
resting at base on the ten sug clay
clay (clay weathered). As few plants
then process layers come in about halfway
in red mottling - clay clays.

Later a some very local mazzard
clay he sands in like that in
County 1. One such is about 200 yards NW of road in bed and scarp.

Roughness on slump block:

- Contact
- Spherical 3 cm
- 22°
- 6.5
- 8.6

Removal at thickest sand channel, measuring up from top of channel to sandstone.

5.0

Small black fissile, becoming silty in lower half 4 grading into gray weathering, plagi silt at base. Upper part grades to gray cleistone containing with vees in it.

Lateral to 5° to 15° this thickens to a light gray.
Clays with plant remains (Simple-Lowell Channel plants (Cloverly 2 3), thin lignites, silty clay, silt and thin lignite sand beds.)

11.0
Claystone, mottled light & darker gray in our greenish gray, mottled with red. Red mottling increases downward from spotty zone which of purplish red Fe Sphatites + concretion. Unit concretion makes a sharp top contact with green unit overlying. This unit encompasses bright red & light brick red.

6.0
Claystone, gray, jasper, locally semi-plastic, slicked cloth with brownish yellow to Fe stained iron "occum" and some iron purplish sphatites. West light purplish to pinkish - gray with - vertical fluted

4.5
Claystone, dark gray tendency silty in lower 2 & lesser gray.
Tough, semiflexible, finely silty, slicked, minor brownish stain in lower part. Weathers to light grey bend.

10.5

Claystone, grey mottled with purplish red, finely silty, soft at top becoming tougher + semi-plastic downward. Gradual to unknown above, end below. Most red + purple variation is in upper 30-40 ft, which else has greenish cast.

0.5

Claystone, olive to dark reddish grey weathers to yellow + red, has some greenish grey areas. Zone of concentrated spherulite.

7.4

Claystone, chiefly dark grey in lower 2.0, becoming lighter grey above. Soft, plastic, with local Fe red + yellow splashes from weathered spherulite accumulations. Top in sharp contact with carbonaceous silt + siltstone - about 3' of it to snug ledge but grades with 55 + 18 with it.
Add to this the SS channel at base

6.0 + S足迹 e. fine-grained massive v. 1 cm. top is platy + graded to overlying silt. Marine is some deg. silts at base texturally.

4.0 z Szaudstone, greyish brown light green at top grading to claysilt purple with red brown + sandy.

2.0 z Szaudstone, clear, minor sandy clasts purple to redish purple. Weathered more to brown + red.

Ten to 2.0 m. SS (likely’llitic weathered)
Lower part of Morrison red walled, then
local channel SS up to 15', then
upper greenish gray part, locally
with SS channels.

Section Siends in upper part of
greenish gray

Section A
Morrison (in part.) Measuring up

10.0 - ?
Cherty brown, greenish gray, silty, tough,
weathered to light greenish gray fine
granular. Grades to overlying unit
within about a few feet.

8.0+
Claystone, gray to dark gray semi-hard
with some silt, much siltier
locally. At top is a silty zone
clayey silty about 1/2 thick,
weathered light gray locally brown.

14.0
Claystone, locally siltly, chiefly
plastic, black, carbonaceous
silty in about upper 2'.
a popcorn crust. Varies from black to brownish black with much plant debris.

0 - 2.0

Sandstone, local lenses very fine grained, grades locally to siltstone. Forms small channels beneath overlying platy beds. White weathers butt, O-B or grayish white.

16.0

Shale, black, interbedded with shaly, calc, siltstone and lutite brown shale. Lower 5.0 cm a pale ol gray siltstone. weath. shelly bluish gray. Same black calcites here. Locally bi- quickly a shell grade. Fine green grey green color change to unit above.

2.8

Shale, silty, green + green grey, grading to blocky clayey siltstone uppered

10.0

Silt, ... clay, hard masses - mottled grey and tan. Weathers to tan to OlB cuticle, has few thin beds resistant.

55
massive yellow weathered siltstone
Upper 2' becomes carbonaceous
with coaly streaks and is
locally somewhat shiny

20.0

Sandstone, medium-grained, suapy
firebrick, weathers to hoodoo
degraded - light gray to white;
massive, X-fine, locally
with granules + small pebbles
in lower part.

0.8 - 0.8

Conglomerate, large angular blocks
gray chert, some rounded cobbles
of same type, also sub-rounded
SS. May be local

8.3

Sandstone, med.-grained, becoming
caliche upperwa, basal 1.0 ft
beach with 1/2 X-fine, above this
friable caliche, poorly sorted
caliche sand, white with about
0.6% yellow to rusty
stein at top. 75% chert (gray)
pebbles, surrounded some +
many quartz + argillite of
various shades gray or white.
No glaucous seen in it, they in thin or brown at top.
10.0'  Partly weathered, lower 3' is "lithic weak" - a sandy clastite, claystone, mottled red, purple & greenish gray. Grains vary in from this 3' zone. Becomes more clayey upward, mottled purple; gray to top - silty.

2.0'  Claystone, hard, green, silty.

3.5  Claystone: gray, hard & sandy at base with large rounded quartz grains, becomes greenish gray lessening upward through upper half variegated with purple

4.0  Claystone: hard to sandy, as below, purple gray to bluish gray

1.5  Claystone, soft, greenish gray, irregularly interbedded with medium coarse layers sand, some up to medium, or short grains, locally red clayey 50 - sand dominates - should precede

1.3  Claystone sand, olive, probably bentonitic flakes of orange-red.
7.5
Claystone, gray, scattered silt and sand grains of quartz and feldspar. Minor red, black, and pink stained areas. Chiefly a soft clay.

0.6
Siltstone, hard, irregularly laminated, seams gypsum. Forms local small ledge.

2.8
Siltstone, massive gray, yellow powdery stain in lower part. Weathers gray-white. Becomes clayey at top and grades to unit above.

5/8.5
Claystone, gray, wax-like, becoming light gray, prob bentonitic in lower 210. Has some oysters with what appear to be sparse oyster spines. Has hard dark gray silty zones. Unit spot-exposed only.

4/25.0
Interbedded pty siltstone, shale, and silty shell. Black to gray and brown local in lignitic. Lower 210, chiefly siltstone, upper black silty Sh + sand. Close to fossiliferous, calcareous massive bed from bench silt in base 1/2. The 58
clean loss: (Simple) comes from the lower 4 feet of the unit. Plent freq thruout.

3) 6.0

Sed. stone, fine grain, upper 3 to 4' massive, hard, ledge forming, lower part becoming silty, intermix. with grey silt, less resistant.

Shale clm-qng to 
weather gray some brownish gray. Finny smr with some thin interbeds and laminae of silt.

Chiefly ironstone, locally interbedded Fe oozy siltite, some ironstone, loc capped by cone-in-cone.

Note: In the section the "upper contact is present outer between ss of unit 3 and underlying beds of unit 4, or it is within poorly exposed unit 4.
Zone

Measuring down from base of SS of unit 3 of preceding section, which is here considerably more silty, platy + forms weal shelving ledge.

2.0 ft

Shale, black, liquitce, graded to silty above, tough, finely silty with many plant frqs at base. Grades upward into silts.

3.3

Cleistome, silty, light gray with reeds grading within about 0.4 to a light gray cleyey siltstone. Loc. Silty clst, masses with ter silts, stained avg & red spicles.

3.0

Siltstone and very fine-grained sandstone, irreg. bedded somewhat zygilasticus, with avg. Irreg sand + clieky slt. Loc. Contorted limestone. Grade in lower part to dk gray clieky slt. Plant frqs loc. abundant.
4.0  Show, black to brown, lime on the upper 1.0, grading to gray silty sh + siltstone.

9.4  Sandstone, fine-grained, massive beds up to 2.5 ft thick with plgs and beds slowly siltstone.

9.2  Siltstone, dk gray to brownish with some plgs. alternate silty shale, chert, & massive to soft plty with numerous plant fracs.

11.0 to ?  Claystone, soft, gray w/ iron
Gulley bottom - measuring up

25'

Wet on platy cobb silt str. light brownish sh + silt str, base 1/5 to 7/10 is black cobb sh+le.
Width about 10' below this it grades into green Morrison 25 of "Awake", Morrison well exposed, is bent a red + gray through.

10.0'

Sandstone, fine-grained massive, x-frame, white, weathers light + gray streaked friable.

170.0'

Observed spot at main show loc. Soil very fine silt in lower 8', base is silt + sh, gray, becoming closer at top.

16.0'

Shale, black, to brownish, fissile, finely silty, plant frays in lower 3, 4 ft, above this is ckt gray plastic then in upper 3' becomes tighter; gray silky sh.
115

Sandsone, fine-grained, sparkly, weathers to crumbly buff to Fe brown loam.

2

3.8

Sandsone, light gray claysly with orange splotches ferruginous stain. Darker gray at top appears to grade to quartz above, locally spherulitic.

3.3

Shaley claysly, tough, brecciated gray and black with plant rootlet-like impressions in lower 0.4, above plant-roots plentiful, loci carbonized, thin plaques of coal, grade into tissue black shale in upper 2 feet. Ponds: yellow stain on lig. part.

3.5

Sandsone, gray at base to greggian gray above, weathers sandy, is claysly in lower part, local orange and red stain from Fe—then locally spherulitic. 0.1 to 0.2 such zone at top is heavily spherulitic.
0.2 ft

Siltstone and local patches fine-grained sandstone. Platy and commonly Fe impregnated brown.

1.3 ft

Sandy, black, fissile, dark brownish gray, sandy, silty, with scattered thin beds and lenses of siltstone. Single 12 ft. thick intrusive core. 6 ft from base.

1.0 ft

Siltstone, platy, Fe impregnated forms 2 local 100 esp.

Above lies more interbedded black silt and platy siltstone with scattered Fe stained cores.
Wall Middle Fd. in Powder River #1, SW-1/4 sec. 30, T. 43 N, R. 88 W., NE dipping 55° due N of E.

First section roughly 400 feet N-Rd where top of SS obviously rises in section.

Slope wash.

4) 30.0

Sandstone, very coarse, gray, teeter-splintered, x-ray, loc. flinty, sliced, streaky pinkish brown to pink, 96° dark gray-white. Numerous flint bleached clasts up to green slate in lower 10.0 ft.

3) 2.5

Sandstone very fine-grained, grading upward to siltstone. Local thin cleavages contact with underlying marl, 65% slate at 100 ft. comes in between the two. Weithy gray white, yellowish to orange red.

2) 8.0±

Shale, black, fissile, some thin interbeds of fine silt, silty layers, very well-cemented, wet or olive gray.

1) 0.5±

Fissile, silt-st. with "warm" markings.

---

Date: 24th Sep

---

65
About 200 ft. S. of 41
Measuring up from top samefune unit of preceding section

8.5
Claystone, silty to sandy, light gray, grad. up to clayey wood var.
Fine gravel 55 to siltstone 60 in base 1.5 to 2.0. At top becomes sandy with local lenses from 55 up to 1.10 which includes lime polished p. whites. Under 55 yellow pol. p. float from clays to contact seems to be concentration of some of this contact.

The base 1.5 to 2.0 feet of sandy clays 55 here can be worked out into unit 3 of preceding section.

Top of this 8.5 unit of siltstone in upper 0.2 win. spermatites

5.52
Shell, black, fossil, with thin calc. and only slight +2 lenites. warm, marked.

A V. 130/40 was run west of p. 66
West Middle Ferric Powder Pile - #3

About 100 ft S of #2.

Measuring up from top of sands from unit 4, in section 1.

3.07
Sediment, silty + clayey, gradually
upward to silty claystone,
light gray, chiefly turbid
(= unit 3 Sect. 1)

7.0
Claystone, gray at base, silty,
becoming lighter gray mottled
with red above; some Fe yellow
stains.
Upper 1.0 is sandy, yellow sand-
classic, brown; living

1.6
Sediment, chiefly fine-grained
with sect. coarse grains, granules
diffuse. Gray w/lt., weather
0-1B + light r. o. w. with Brown
to light weather. Sect. r. cile,
sandy. Becomes clayey, fossil-
y + fossils, has locally large
sparite; pebbles up to 1 mm diam.

3.8
Sediment, fine sand, silty loc.
& sand, silty, light gray. With
local lenses fairly resistant
yellow-brown weather, for same
black streak. Ids very sparsulite
upper 0.3.

11.5

Shale, bluish, with 1/cm. more
than int., but, platy, wants
traces salt which weather closer.
Letter increase in upper half,
local Ironstone conc. that lens
in upper 0.5.

Observation. This section to lends at rear
where measurement down from top
of sandstone (unit 4f 8.12.21) abundance
the firm.

26.0 Sandstone, fine to.med. grained, with
massive thin with scattered layers
clay pellets, + coarse to calcite -
chert pieces & granules Basal 1.0 to
@ x less 1.0 to, rest of ledge chiefly
upper white.

13.0+ Claystone, black, upper 4 compact,
clean below this 30, Feelly silty
soft + slippery coated with pe
stain on side surfaces more
compact upper basal 5.0.
1.2  Clestone, olive gray to gray
wax, very prob. bentonitic

7.5  Clestone, dark gray, semi-hard.
Grades laterally in lower 5.5 to
light green hard, silty clestone
with thin irreg. white stringy, vitreous
flakes.

0.3  Bentonite

0.4 to ?  Clestone, black

Slopes out

Approx. 15' strat. below bentonite in thin
layer typical illuvial grey schistitic
Nature.
Notes on Cloverly along Middle Fork Powder River east of preceding sections.

Some relationship holds at Rusty-Cloverly contact, i.e. in local low areas on top of the "sparkly" SS, claystone beds come into the section between contact & the SS. Laterally the Rusty beds rest directly on the SS, or very close to it, and there is a 15y conglomerate layer of polished pebbles.

Because of apparent lack of continuous key layers the relation of Rusty bed detail stratag to the "highs" on the sparkly SS were not determined.

At Loc. reached by taking first right from end of pavement on Bertram road going about miles and walking W & NW along top of sparkly SS ridge into Sec 33 T 43 N R 83 W — Rusty beds chiefly on or very close to "sparkly" with amazing local accumulations of polished pebbles — either loose in silty clay beneath contact or incorporated in top layer of Fenspreeq. SS at contact. Locally a true rusty bed ironstone sits directly on contact — though elsewhere the first of these Fe-stones
do not appear lower than about 10' above contact. This could indicate overlapping by Rusty, but not enough is known locally about Pe-stone distribution to substantiate it.

Sparkly is about 30' most places but thing locally. Also has basal 2 to 5 feet of cut: granule cgl not unlike the "Pryor" type cgl of the Thermopolis group. Beneath Sparkly the usual gradation from black clast to greenish clast then more brightly colored, calcareous Morrison — with no visible bedding. Locally a fine-grained SS channel body comes in about 15 feet beneath the Sparkly. Includes cl gran + brownish shaly SS + silty sh interbeds in lower part, white bent & brown out is locally as much as 15 feet thick. Hard green silty clast layer between it and Sparkly locally. may = green cleat in preceding section. At least 15 feet in same position.

The Cloverly-Rusty bed contact is very sharp & clear-cut throughout the Middle Fork valley area, with black-shale and siltstones resting either directly
on sandstone with 179 cal. - or on clayey silt, a claystone of light gray to whitish color with f2 concentric and fairly persistent accumulations of spherulite molds.

Morrison contact - Nowhere in Mayoworth-Middle Fork area is there a clearest break. The Spurky overlies lignitic, carbonitic, gray and black claystones which grade to greenish gray then to green and purple without obvious break. In preceding section lines here first occurs only about 37' beneath base of Spurky. Elsewhere in Middle Fork area highest calc. beds more than 60' beneath in purplish clays. Apparently no consistent level calc. beds to appear. Nor is the thickness of black or dark gray calc. beds in Spurky consistent - though this criterion seems more useful map limit if one has to be drawn.