

Family Motto Sapiens dominabitur astris.
A wise man can rule the stars.

County 4 and 5-1-45 Block Wells

[Abstract](#)

The report updates maps for the B Formation wells based on data provided by John, the Oil Survey Company, LLC, and the Geological Survey.

Cartographer and
KY Registered Professional Geologist #
@aol.com
(123) 456-3925
2525 Dr.

OBJECTIVE

The objective of this report is to update the much earlier contour maps, including data on tops, bottoms, and thicknesses of the [redacted] formation in [redacted] County 4 and 5- 1- 45 [redacted] blocks.

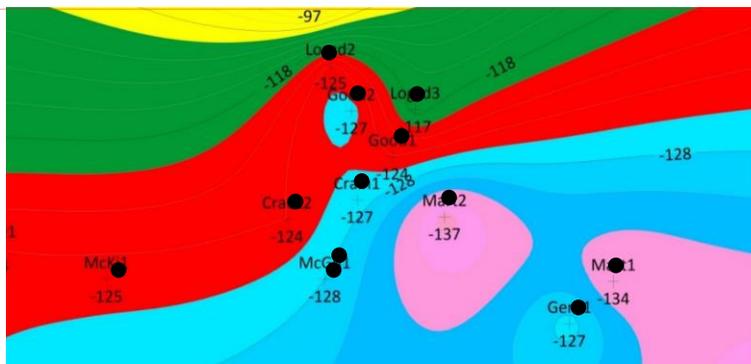
EXECUTIVE SUMMARY

This report includes 14 wells and associated data provided by John [redacted], [redacted] Oil Company, LLC, and the [redacted] Geological Survey database web pages. The [redacted] formation immediately below the [redacted] is the main directive of this research.

DEFINITION

The [redacted] Creek formation, referred to by local well drillers as the [redacted] formation, is immediately under [redacted] Shale, sometimes referred to as [redacted] Shale. Logs do not show a high porosity in the [redacted] formation and logs rarely indicate it as a possible oil and gas producing formation. However, a wider view of this region of [redacted] shows the [redacted] formation may be highly commercial.

Any new wells drilled in this area must be closely monitored for oil and gas bearing samples, showing commercial potential for the [redacted] and [redacted] formations. [redacted] one and [redacted] three logs may indicate these two wells had a productive [redacted] pay zone.



Commented [YHO1]: For the purpose of redaction formatting and data of headers and numbers removed

CONTOUR DEFINITION

The contour map above is of the [REDACTED] formation top for wells in this region. The yellow contour is the area where there is a higher [REDACTED] formation well, the best well possible for gas injection. But this well is not owned and not centrally located. The green area has in it the next highest well, the [REDACTED] number three, a good candidate for gas injection but not centrally located. The next owned well in elevation is the [REDACTED] one in the red contoured area which seems a good location for a gas injection well and centrally located.

Additionally, contour maps later in this report show the [REDACTED] formation bottom where the clear lime turns to shale and thickness where log reports went deep enough to indicate relevant information. (These maps are attached as both jpg and pdf files.) The thickest, deepest, and highest of the [REDACTED] formation indicated in logs determine where the best injection wells are.

The objective of water and gas injection systems is to squeeze the oil to the producing wells—the gas injection well from the top and the water injection well from the bottom. This process has been used for decades in the oil patch quite successfully and is called secondary recovery.

The map shows where the highest [REDACTED] formation wells are in this area and if there is a better candidate for gas injection than the injection well presently used by [REDACTED] Oil Company. It is also indicative of a potentially good location for future wells. Log data may be indicative of a location for water injection.

WELL DEPTH CRITERIA

A new well located north of the [REDACTED] three appears to be high in the [REDACTED] formation. A new well near the [REDACTED] two and [REDACTED] two are also promising. If the recorded data is accurate, there is little difference in [REDACTED] formation tops in the central core of the owned wells. This is not unusual in geology where sometimes the formation is in a basin or on top of a ridge. These wells also may have tagged a flank of an old reef or similar structure.

Of note is the highest [REDACTED] formation well, the [REDACTED], at 97 feet below sea level. The elevation for this well may be off as much as 34 feet which would put its [REDACTED] formation in the same ball park as the -127 feet average depth for these wells. The next highest well is the [REDACTED] three at -117 feet. However, it is prudent to verify these elevations in the field. These two wells may not be a good location for gas injection since they are not centrally located among wells owned by the company. On the other hand, these two wells might be a good location area for future drilling because the logs show a higher [REDACTED] formation compared to other wells nearby. Neither of these wells logged as the bottom of the [REDACTED].

The next cluster of five wells are either -124 or -125 below sea level. These wells are [REDACTED] one, [REDACTED] one, [REDACTED] two, [REDACTED] two, and [REDACTED] one. [REDACTED] one and [REDACTED] one are far from [REDACTED] wells, and, though logs indicate high formations, the wells are outside the area under consideration. The [REDACTED] one is high at -127 feet but it is also far from company owned wells.

██████ two, at -125 feet, is approximately the same elevation as ██████ one and ██████ two. The complete bottom of the ██████ formation ██████ was not logged, but what was logged points to a porosity break that may extend beyond the logged area. ██████ three is a possible gas injection well to push the oil down from its higher elevation.

The next two wells with -127 feet ██████ elevations are ██████ two and ██████ one, but the nearby ██████ one logged the ██████ at an advantageous 23 feet of break. These two wells are not among the lowest wells in this small region of area but they are centrally located company owned wells. The bottom of the formation is exposed for logging, and based on the formation thickness, ranging a respectable 12 to 20 feet, they are good candidates for a water injection disposal well or gas injection. These wells

██████ may indicate what the core of the field looks like. Of the ██████ and ██████ only the ██████ showed a nice porosity streak. It is hoped this porosity would be the same for both wells. A deepening of these wells and more extensive logging of them will provide a better handle on the formation's porosity.

The last four wells are the deepest wells in the area of the ██████ formation. Unfortunately, the company does not own them. They range between ██████ two, the deepest, at -137 feet, ██████ one at -135 feet, ██████ at -134 feet, and ██████ at -128 feet.

It would be nice to be able to put water into the ██████ one or the two ██████ wells but they are not near the owned wells but for the ██████ top they are considerably deeper.

It is problematic having wells in the area with deeper formation levels, as any water injected may not provide immediate results. Pushing on this deeper water filled formation is likely to uncover they are nothing but water carriers. Completion Reports for ██████ one and ██████ one say they found water only in the ██████ formation. The ██████ two without enough oil to produce is a dry hole. The higher formation wells when used for a water disposal well will push against this already present formation water squeezing the oil towards the oil producing wells.

LIMESTONE THICKNESS CRITERIA

Since there is not a great deal of difference in ██████ Formation top in any of the wells in the cluster of ██████ two, ██████ two, ██████ one, ██████ one, and even the outlying ██████ two, it is necessary to consider additional criteria for the best well for water disposal and gas injection.

The first criteria is finding the thickest clean lime formation available. The second criteria is good porosity on the right side density part of the log. If these criteria are met it has potential as an injection well.

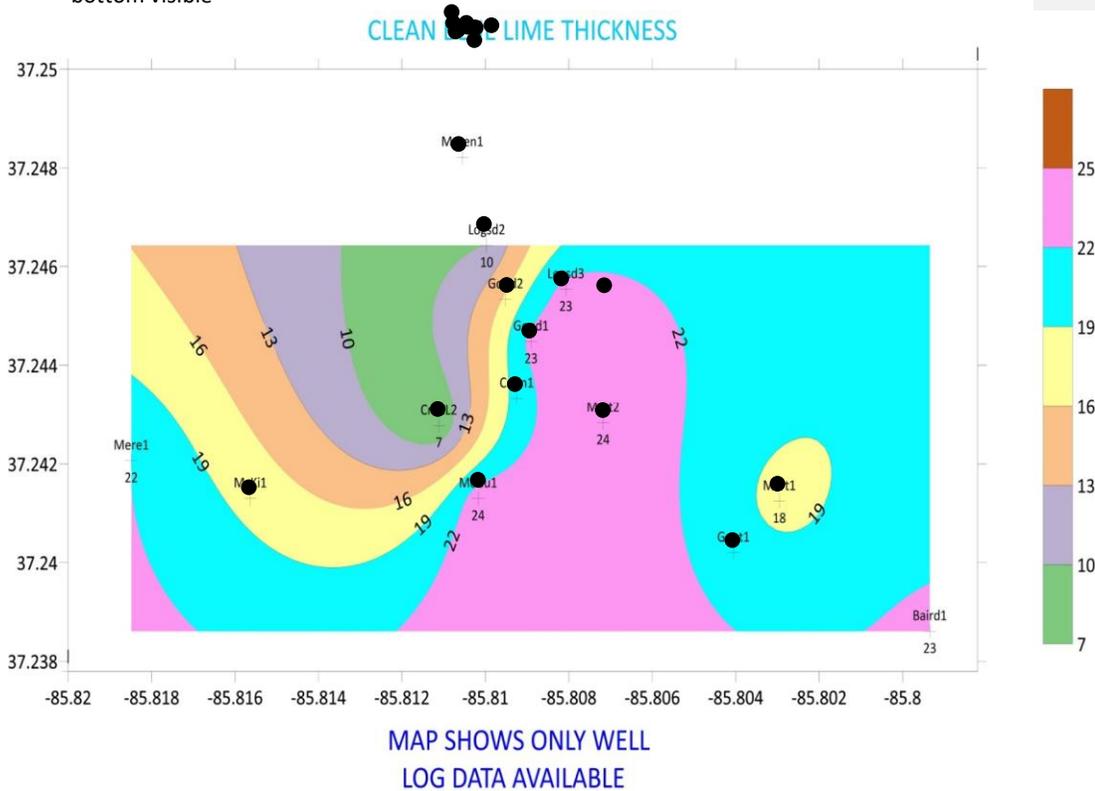
The lime thickness eliminates the [redacted] two and [redacted] one because the bottom was not logged. Additionally, [redacted] two is eliminated because it only has seven feet of clean lime where nearby wells have three times this thickness. The [redacted] two is not much better with only 10 feet of clean lime break. This narrows the list to [redacted] one and [redacted] three with the [redacted] three eliminated because the company does not own the well.

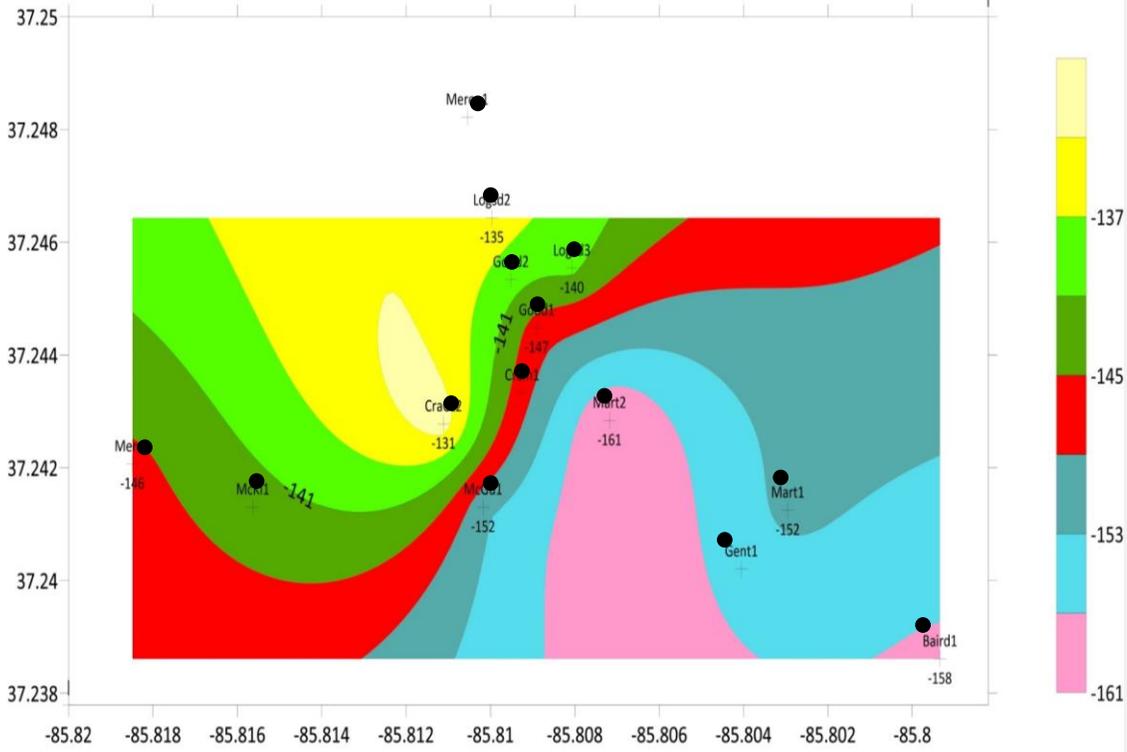
RECOMMENDATION

The area between [redacted] one and [redacted] three looks promising because of the 23 feet of clean lime depicted by the logs. There are certainly higher wells in the area, but they often show thinner, clean lime breaks such as the [redacted] two and [redacted] two.

However, the [redacted] one, at 23 feet of clean limestone break, is the best in limestone thickness criteria. The [redacted] one is both centrally located near other owned wells and has one of the deeper clean lime bottoms seen on the log at -147 feet. This is one of the few logs that clearly record porosity worth treating and producing. Of the wells that are still open and owned [redacted] one is the best option for a disposal well because of formation depth and porosity.

Below are contour maps of the clean lime thickness and wells with a logged [redacted] Formation bottom visible





Commented [YHO2]: Header cropped out. These last two graphs were originally separate files to the report