

PQWT[®]



Hunan Puqi Geologic Exploration Equipment Institute

湖南普奇地质勘探设备研究院



Groundwater Detector



PQWT - S300 • 300 Meters

PQWT[®]

PROFILE MAP & ANALYSIS

By

Harinath (Professional Geologist) at

PQWT

What is Profile



Profile means an outline of something like (object/materials/subsurface rock formations) as seen from one side

or

Short description of the earth crust/ rocks and its formation stratigraphy / description / characteristic's

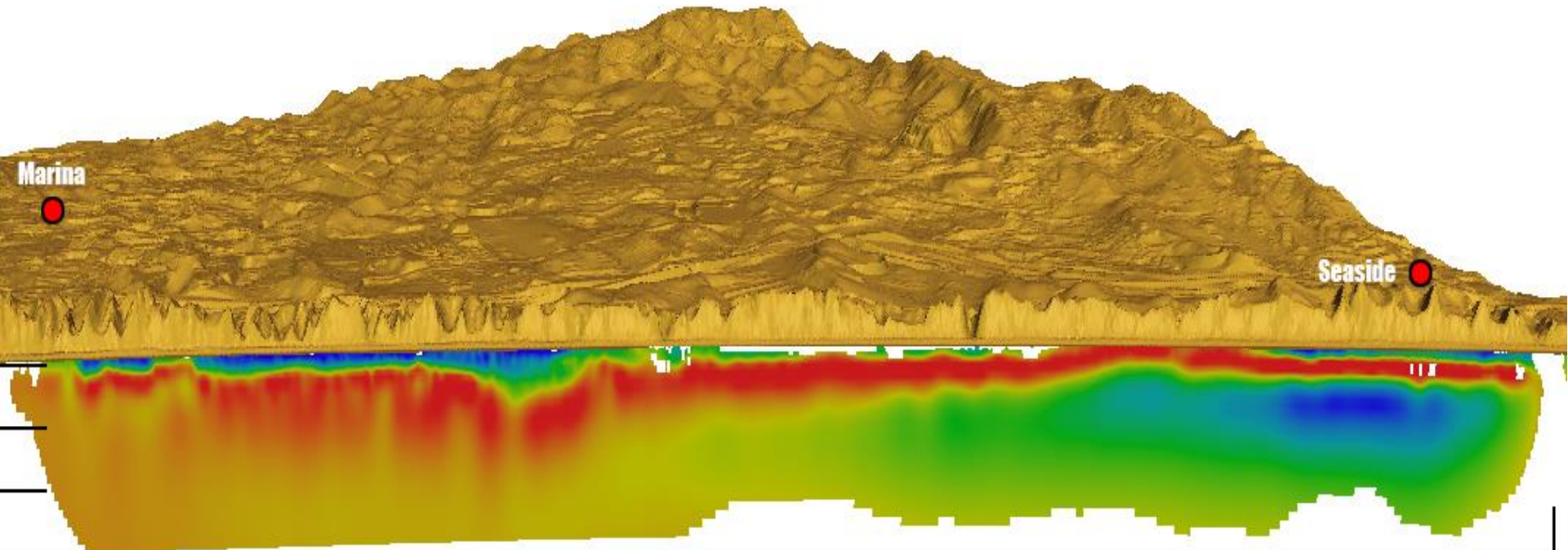




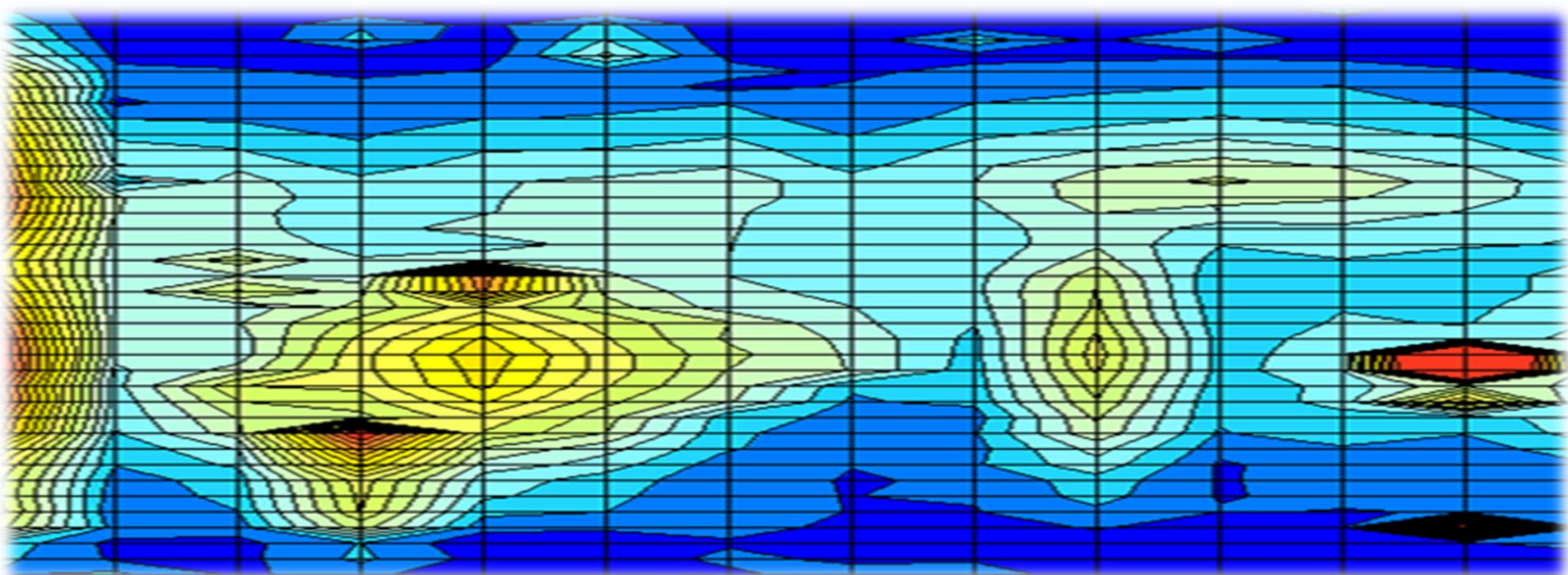
PART OF EARTH CRUST PROFILE

What Is Sub Surface Profile Map In PQWT Water Detector

The subsurface profile map is defined as the vertical section of the measuring points, that is exposed by a measuring of Natural electrical fields variations



subsurface profile map whose contours represent the elevation of a particular rock/ mineral/ ore formation, reservoir or geologic forms in beneath the surface, such that folds, faults, fractures and other geologic structures are clearly displayed



PROFILE MAP & REALITY

PROFILE MAP DESCRIPTION



Parts of The Profile Map

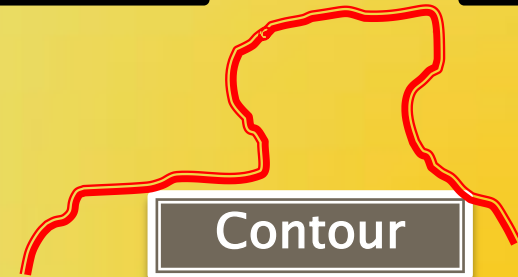
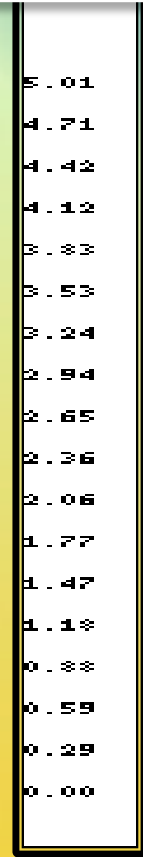
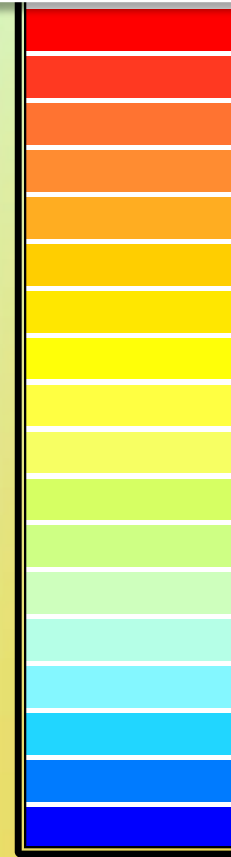
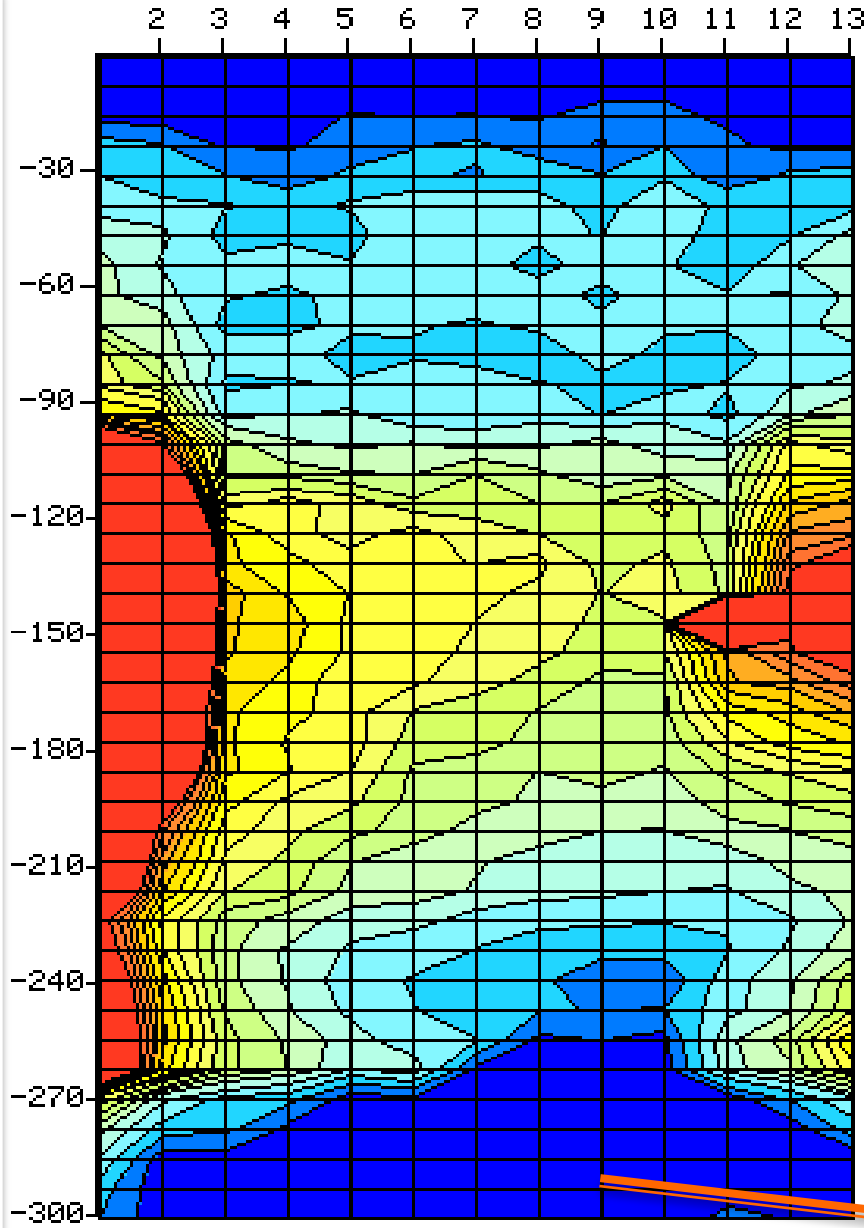
- ▶ **Vertical Axis** : Depth from Surface to Subsurface in meters
- ▶ **Horizontal Axis** : Number of measured points in meters
- ▶ **Contour**: Values As per Local geological conditions in mille v
- ▶ **Color Chart** : Red, Yellow, Blue and Mixed
- ▶ **Values range** / legend : Values as per the rock charactestics
- ▶ **Grid Lines** : vertical 4.5m/7.5/8.9 meters as per model
/ Horizontal 1 meter

Horizontal Axis in meters (Length)

Color chart

values range

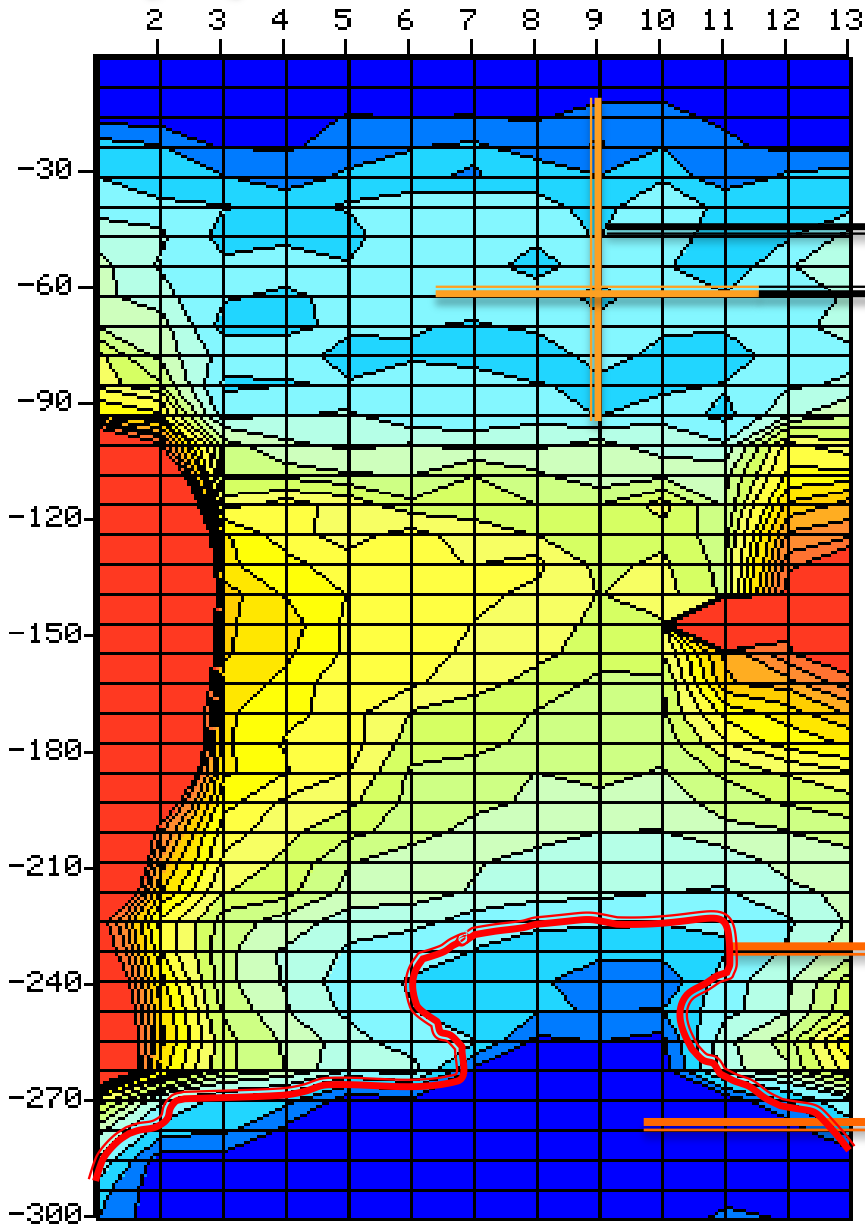
Vertical Axis in Meters (Depth)



Vertical & Horizontal grid line

One meter space one point to other / as per your choice

Vertical depth in Meters



Well Point Number

Vertical grid line

Horizontal grid line

Profile map values range

Contour

Color



Profile Map & Subsurface Reality

2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

Soil Profile

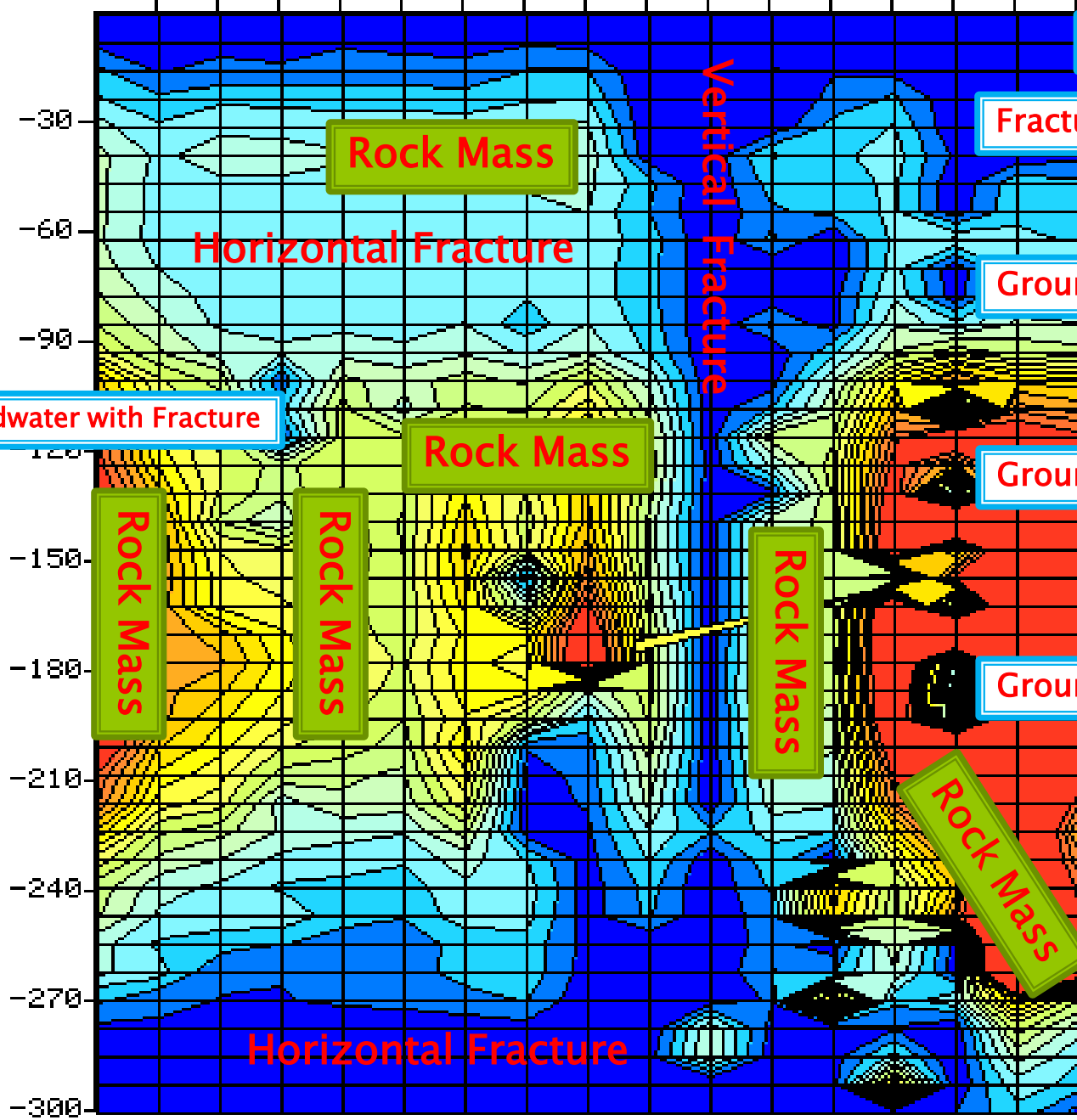
Fractured/ Weathered Rock

Groundwater with Fracture

Groundwater with Fracture

Groundwater with Fracture

Groundwater with Fracture



Rock Mass

Horizontal Fracture

Vertical Fracture

Rock Mass

Rock Mass

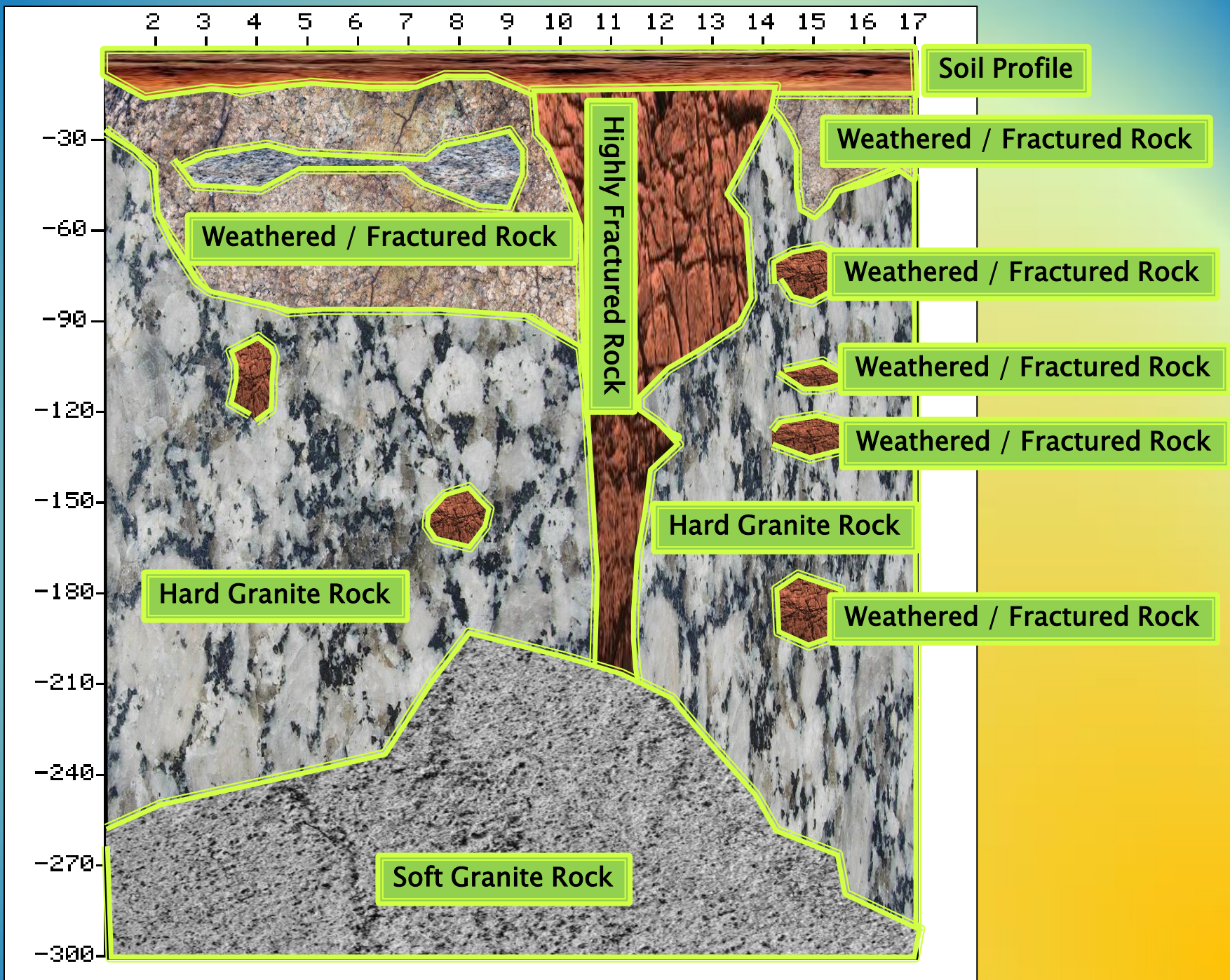
Rock Mass

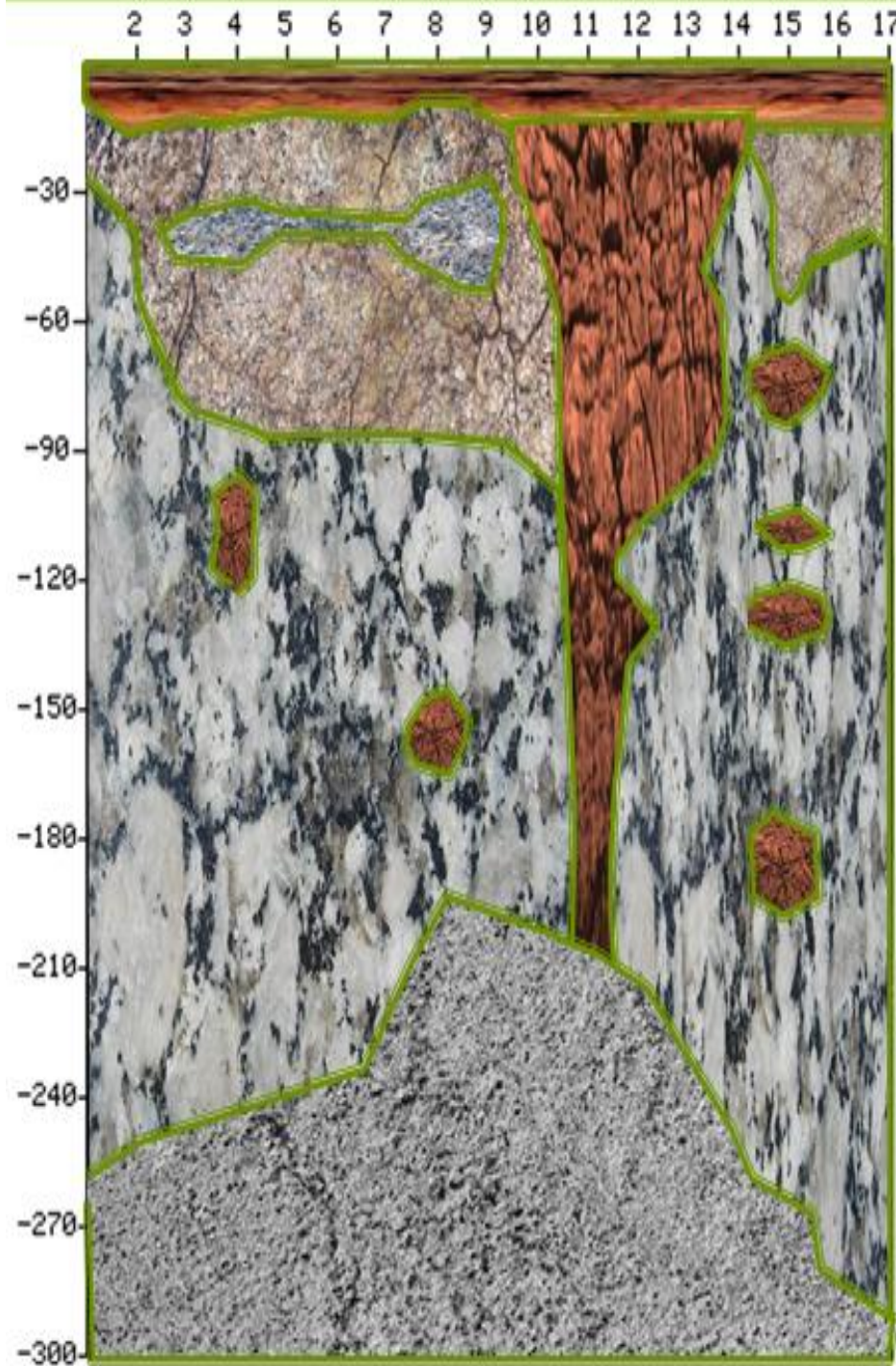
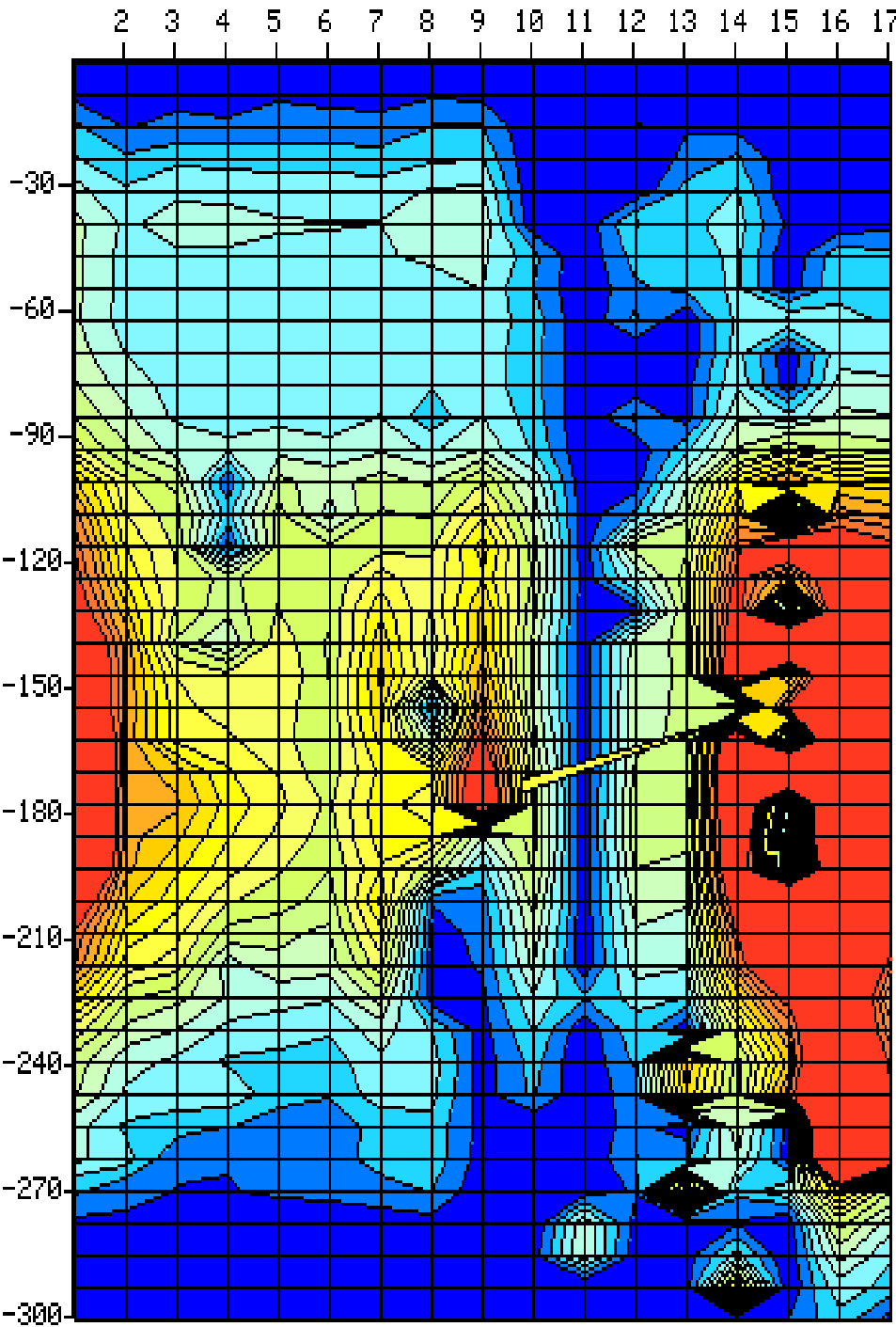
Rock Mass

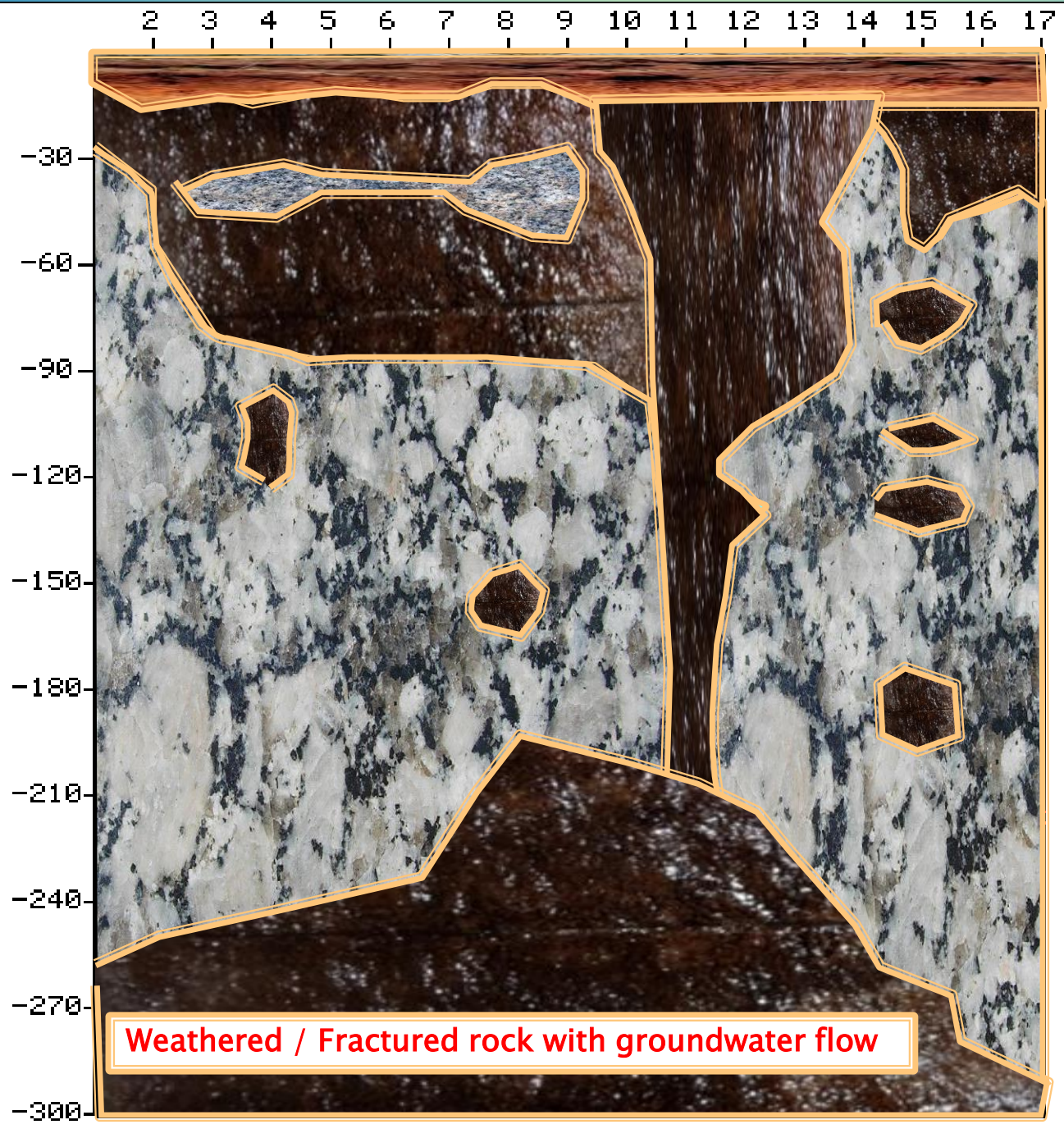
Rock Mass

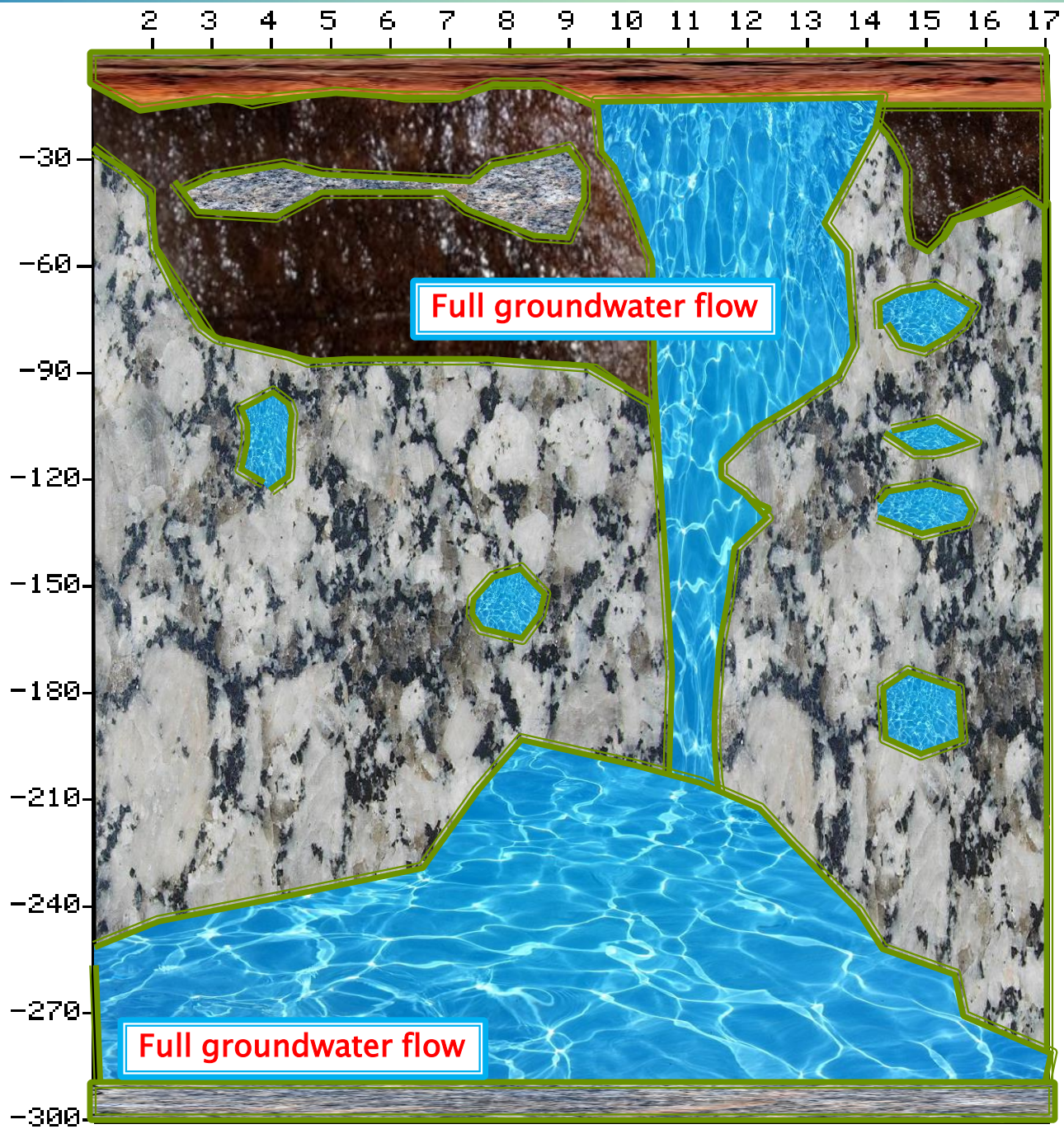
Horizontal Fracture

-30
-60
-90
-120
-150
-180
-210
-240
-270
-300










ANALYSIS



COLOR CHART & ANALYSIS

What is **COLOR**?

Definition: What our eyes see that is being reflected or absorbed by the light

- Therefore, without light, you can not see color!
- One of the most dominant **Elements of Art**
- **Color Scheme:** An arrangement of colors

Objective of color scheme

The objective of Color chart is representation, identification, description, variations, comparison, and analysis of subsurface rock formation and its distribution, this chart gives the easy way to identify with out any confusion either literate / illiterate people

As we are reading / watching, make a note of things we find interesting, important, or insightful when we finish project, in this way we choose of color, the scheme stands for best represents and capture's of essence of the ideas, this is a all well and good for interpretation of map

Red Color represents **highly** strengthen/ high resistivity of rock formation, and the color indicate danger symbol, we don't get water in this zones/ getting in limited areas

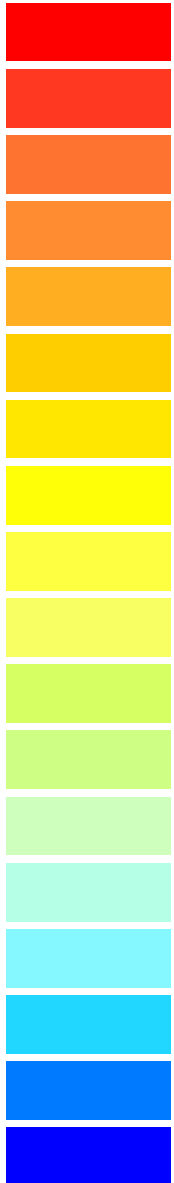
Orange Color represents **less than the highly** strengthen rock formation, this color also indicates some of danger zone, here we don't get water in this zones / getting in the limited areas

Yellow Color represents **medium** strengthen rock formation, this color also indicates warning to getting water in this zones

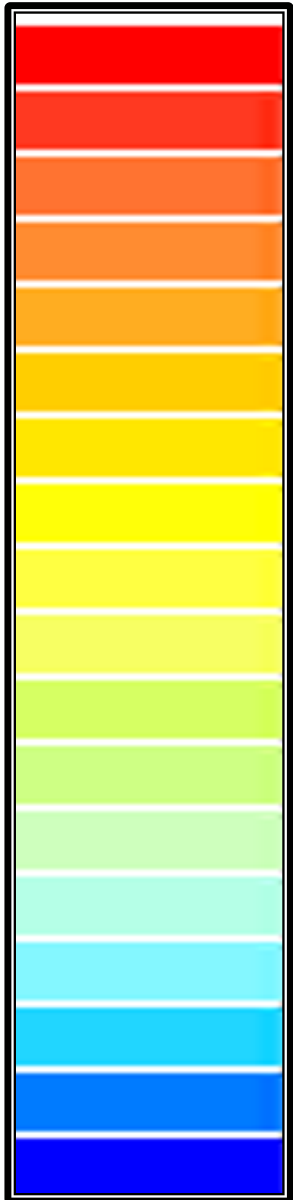
Green Color represents the **less-than medium** strengthen rock formation, this color also indicates starting of water zones

Light Blue Color represents the **soft rock formation** / water bearing rock formation, this color indicates wealthy chances of getting water in the zone

Blue Color represents the **soft rock formation** / water bearing rock formation, this color indicates wealthy chances of getting water in the zone



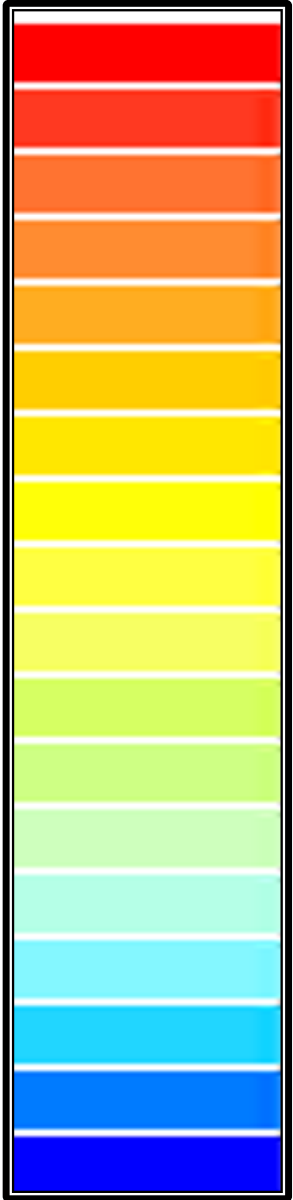
Color Chart



Very Hard / High density / High Resistivity / High potential

Hardness / Density / Resistivity / Potential Decrease's down words from Deep Red color to Deep Blue

Soft / Low density / Low Resistivity / Low Potential

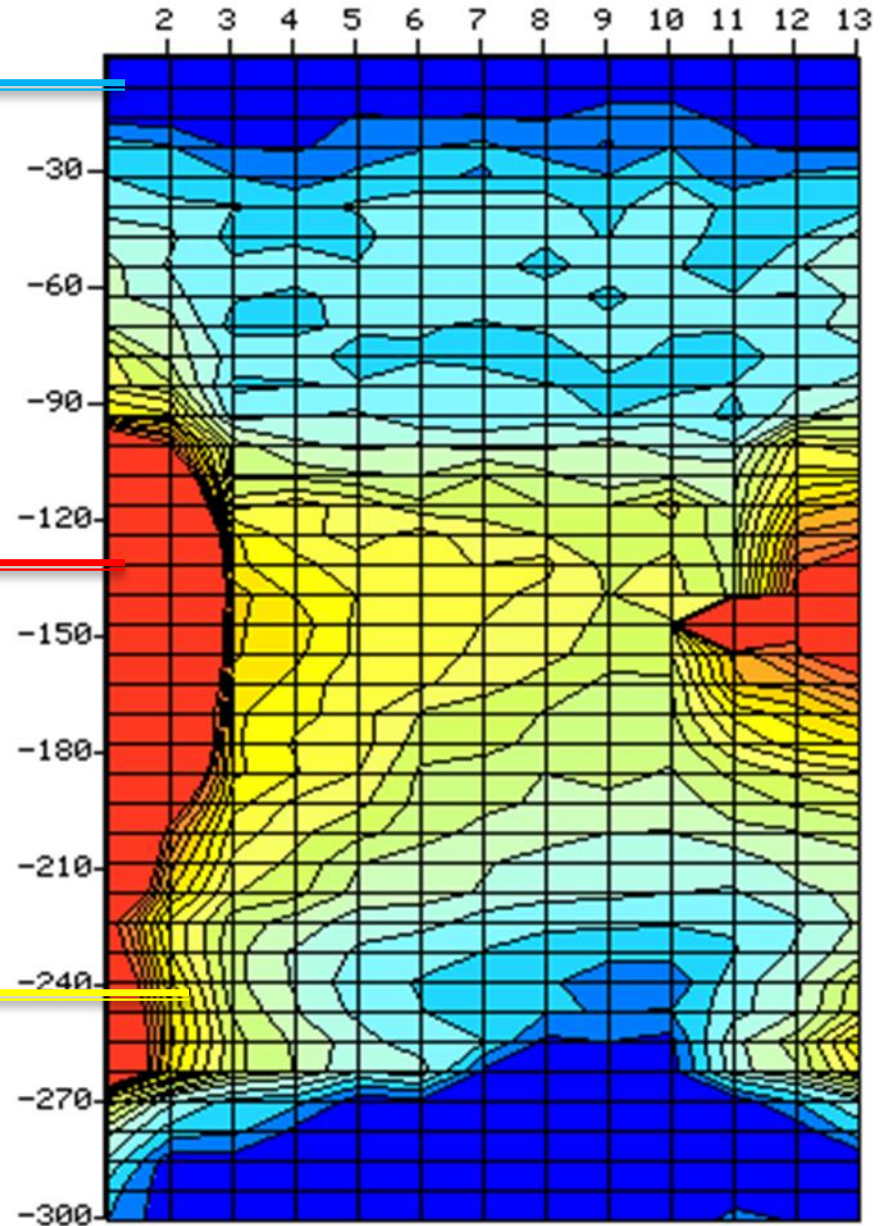


Groundwater view description of subsurface material

Low resistivity/ Low
Density/ Soft / Low
potential value

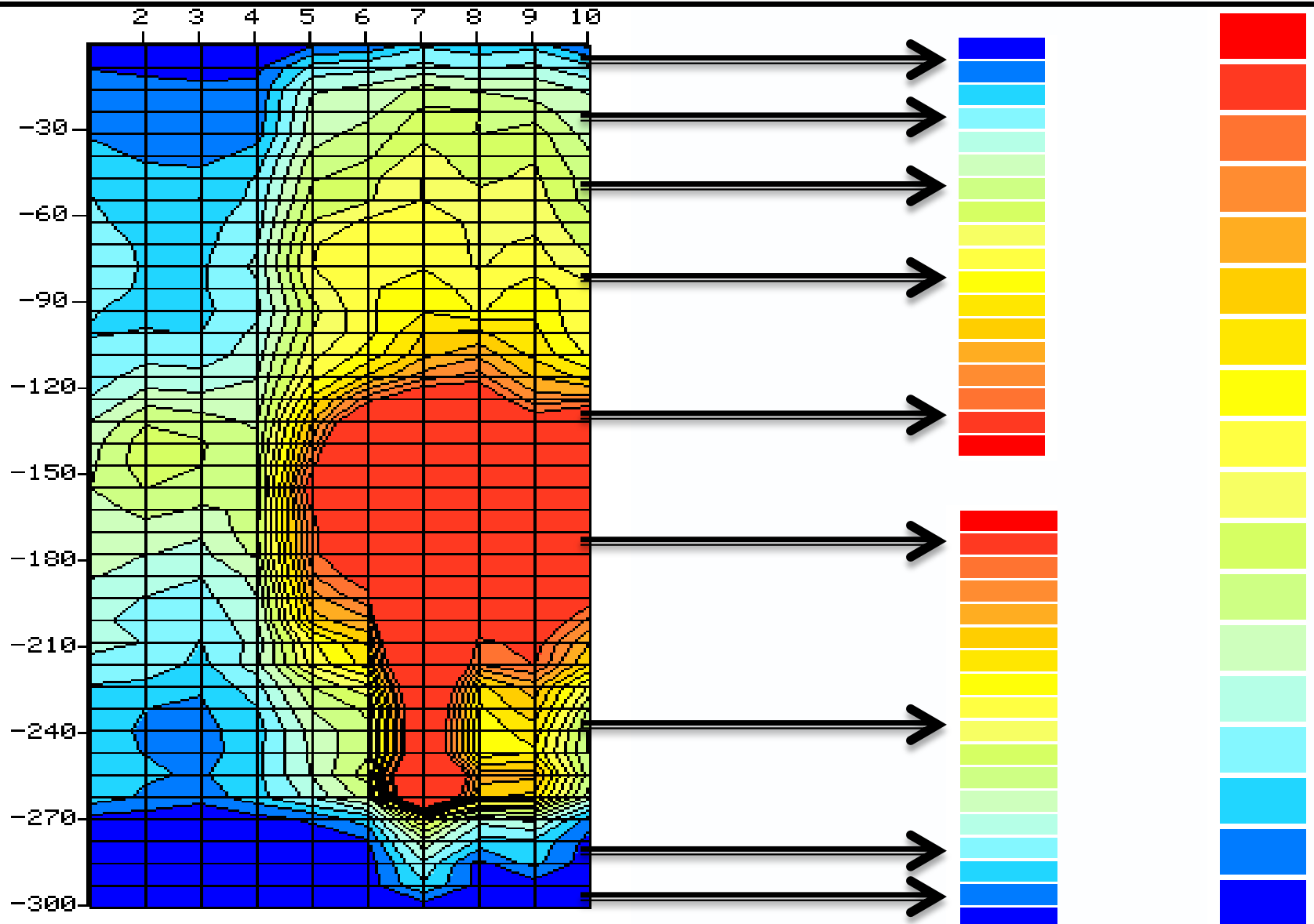
High resistivity/ High
Density/ Very Hard
/High potential value

Medium resistivity/
Medium Density/
Medium Hard /Medium
potential value



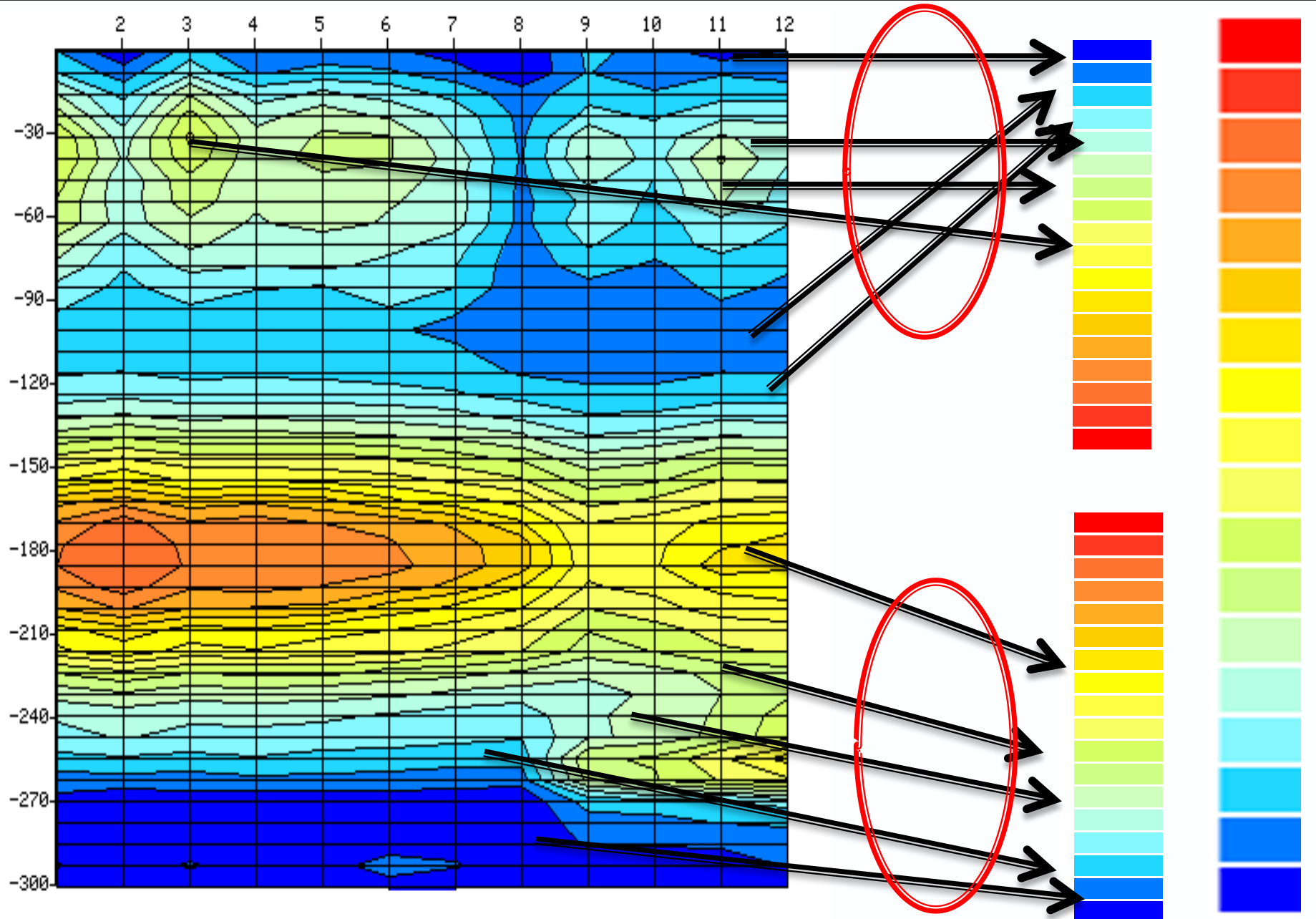
Color Chart Analysis

NOT GOOD MAP FOR WATER GETTING

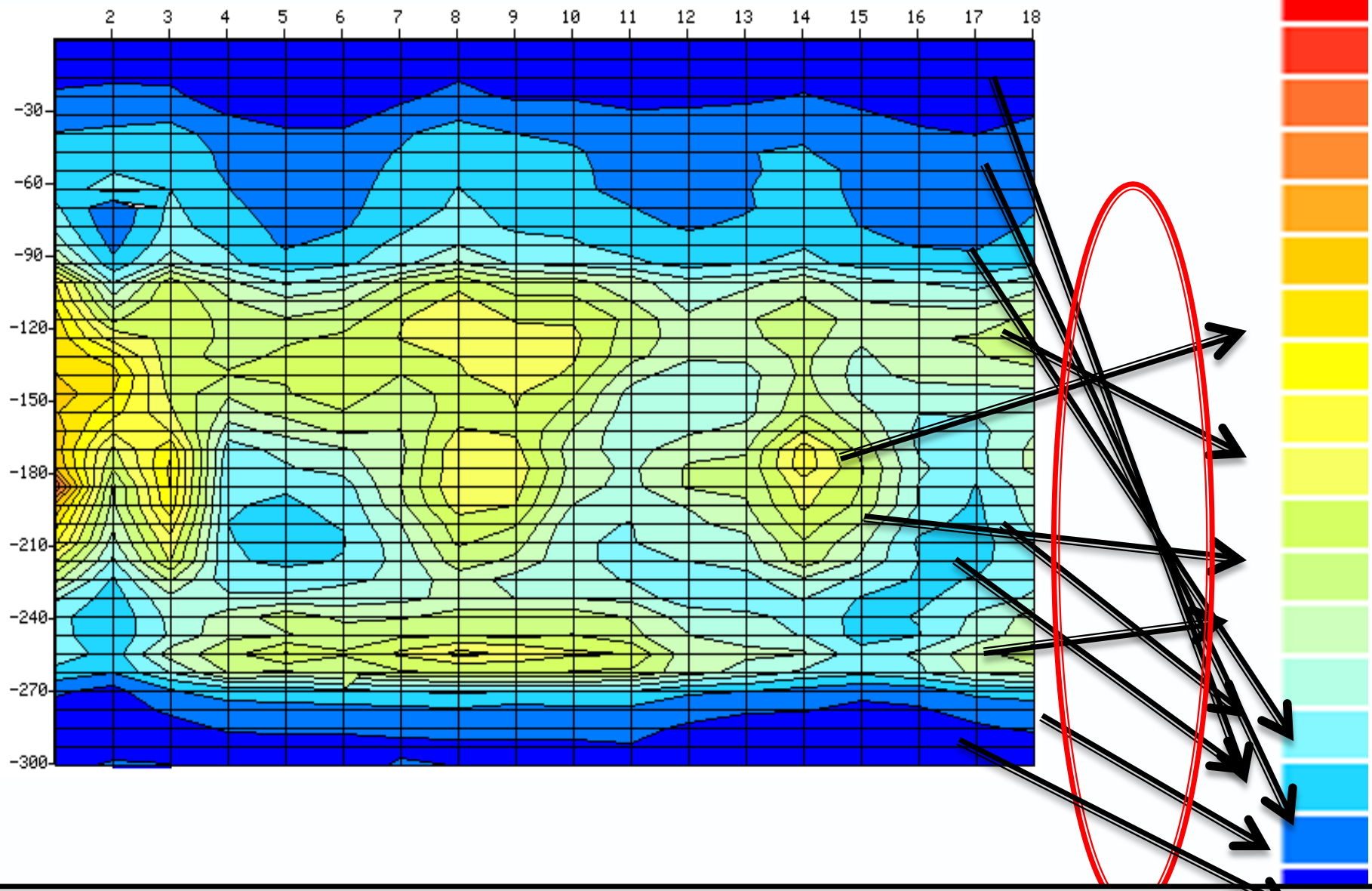


All the parallel arrow marks indicated the profile map is not good for water getting

GOOD MAP FOR GETTING WATER

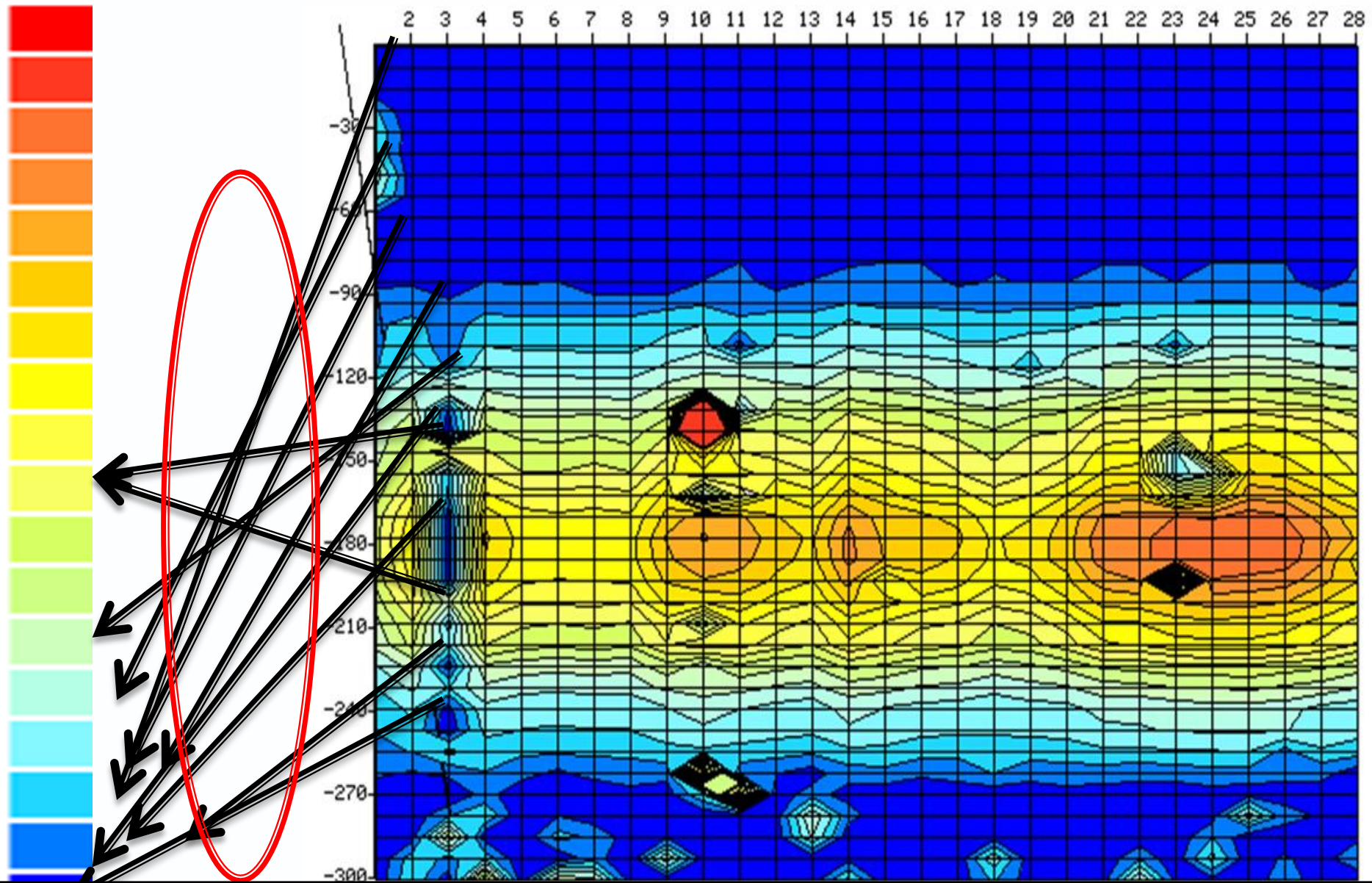


GOOD MAP FOR GETTING WATER



The intersection of arrow marks indicated good point for success well case

GOOD MAP FOR GETTING WATER

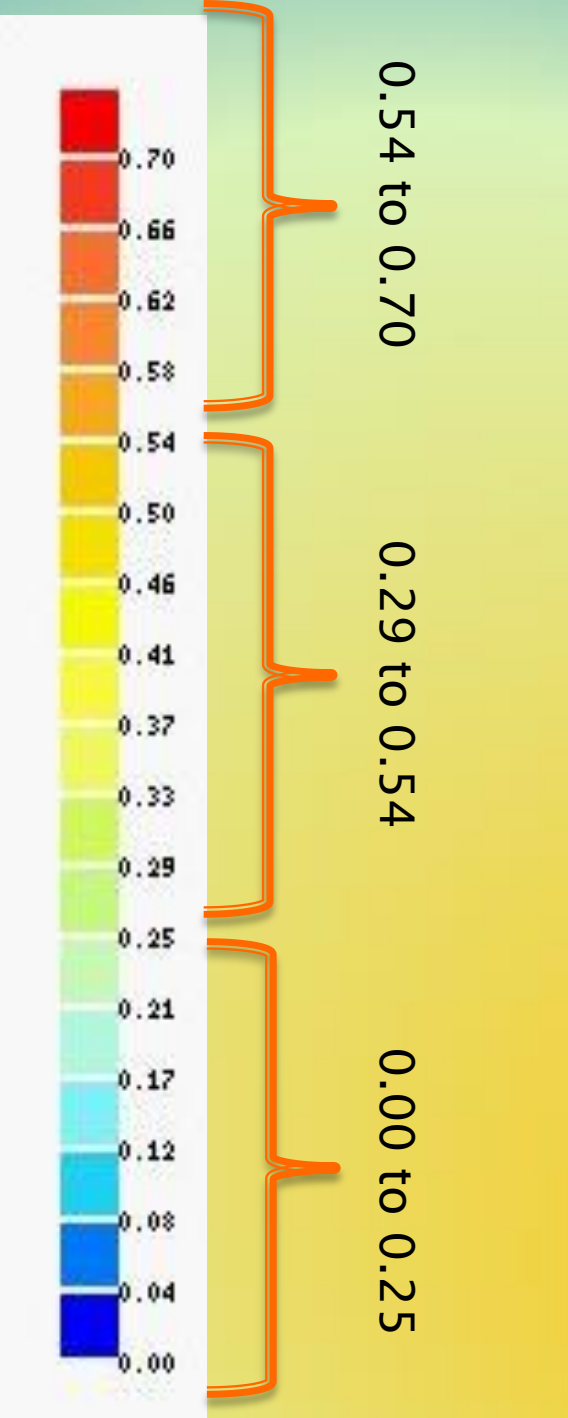


The intersection of arrow marks indicated water 100% success well case

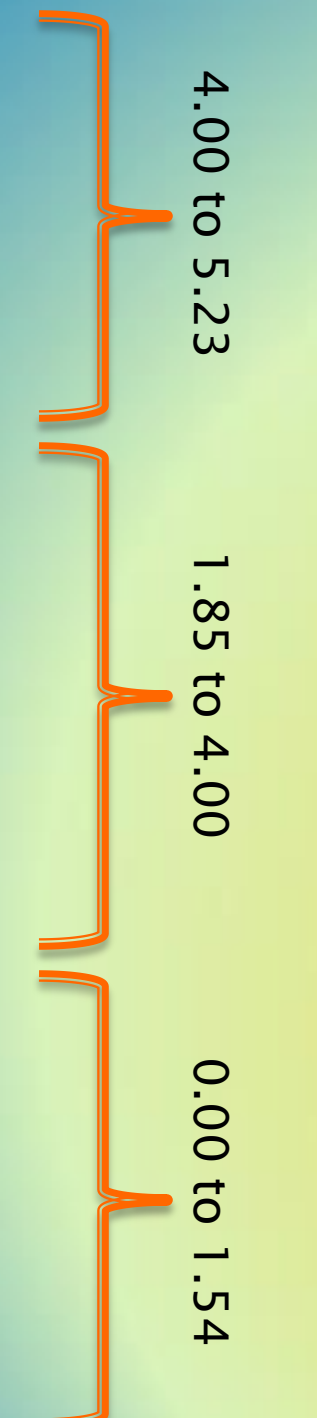
VALUES RANGE ANALYSIS

One number series range
0.1 to 0.10/
0.01 to 0.09/
1 to 1.9
Single Digit Series

Below Average Values range

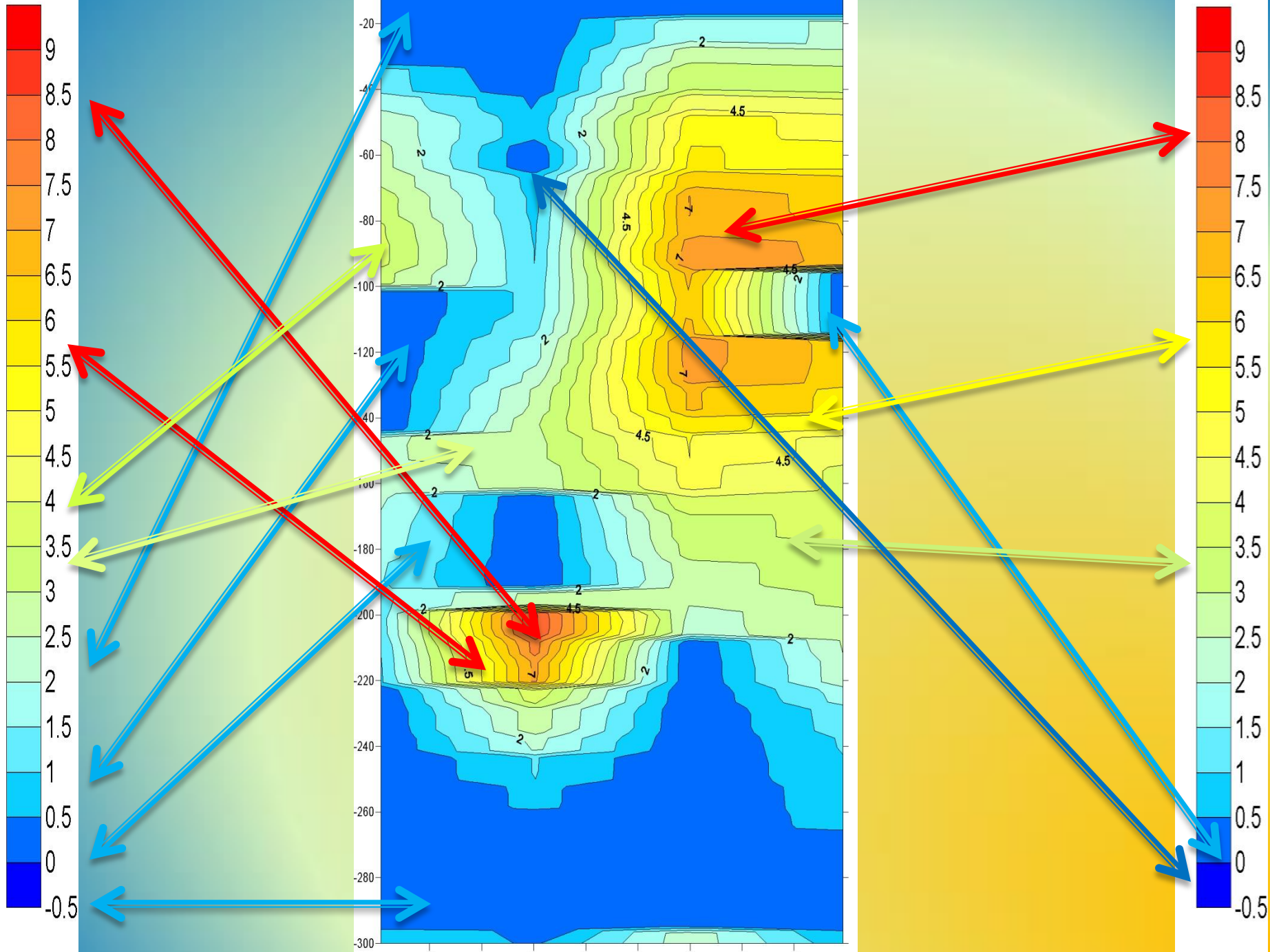


Average Values range

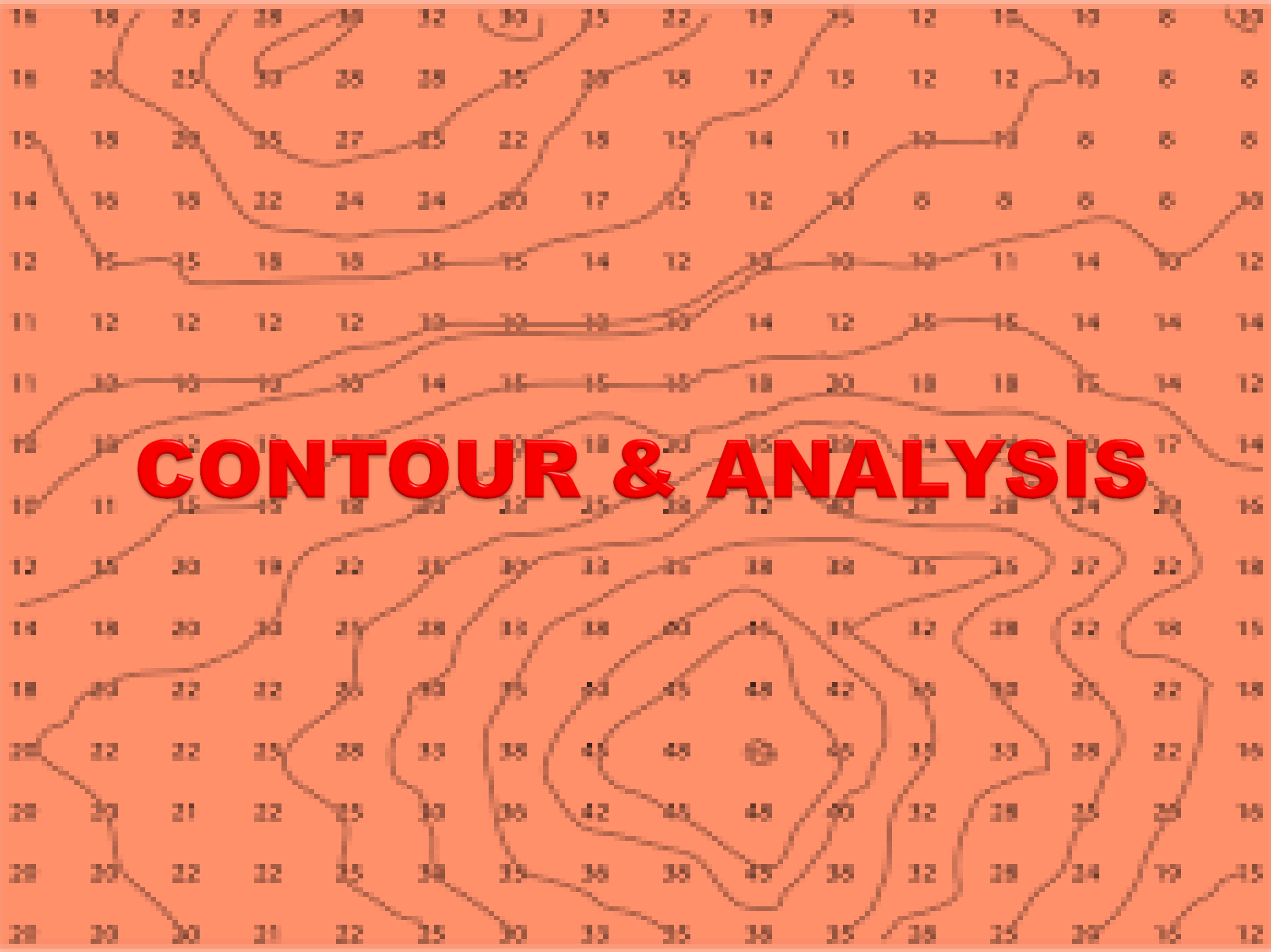


Good Values range





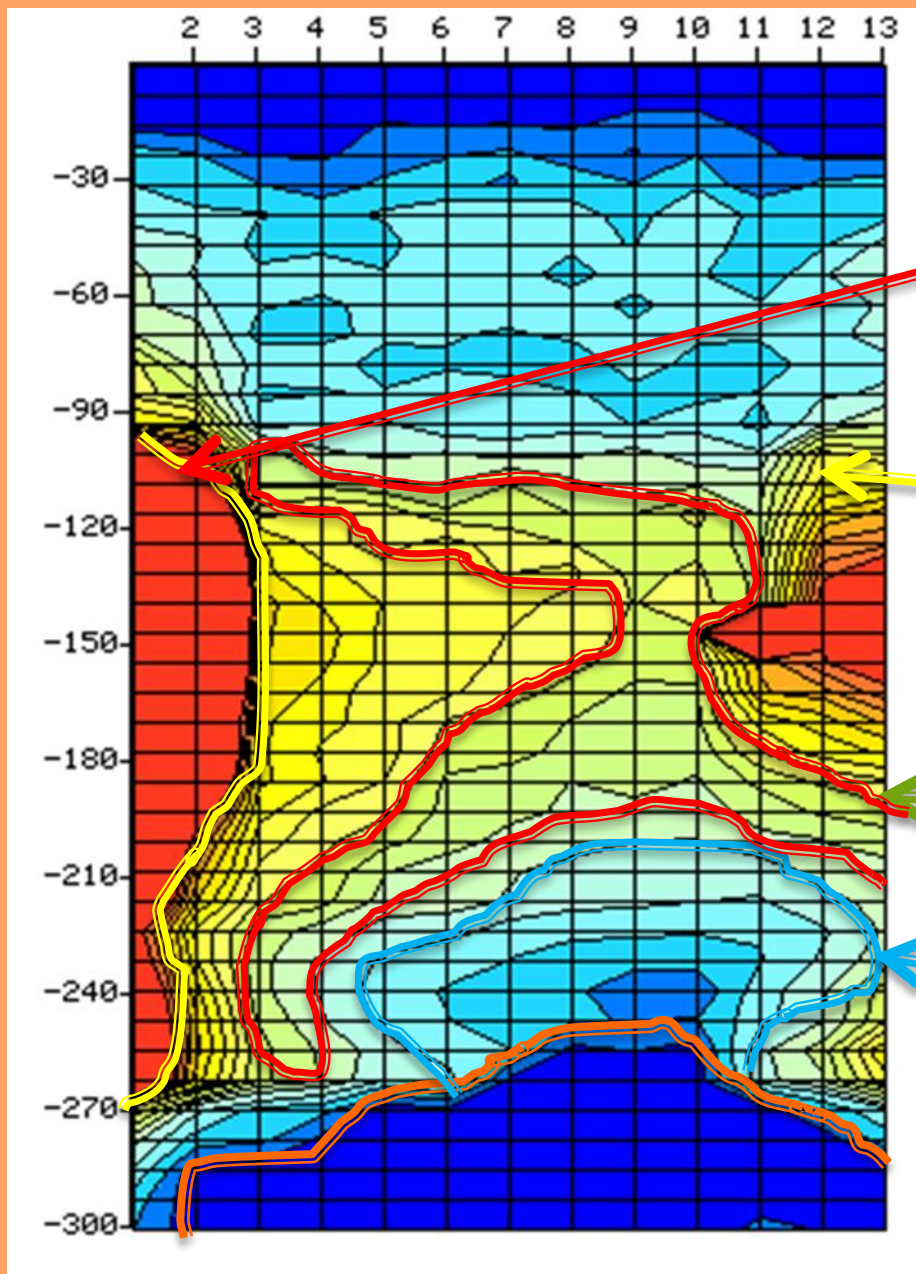
CONTOUR & ANALYSIS

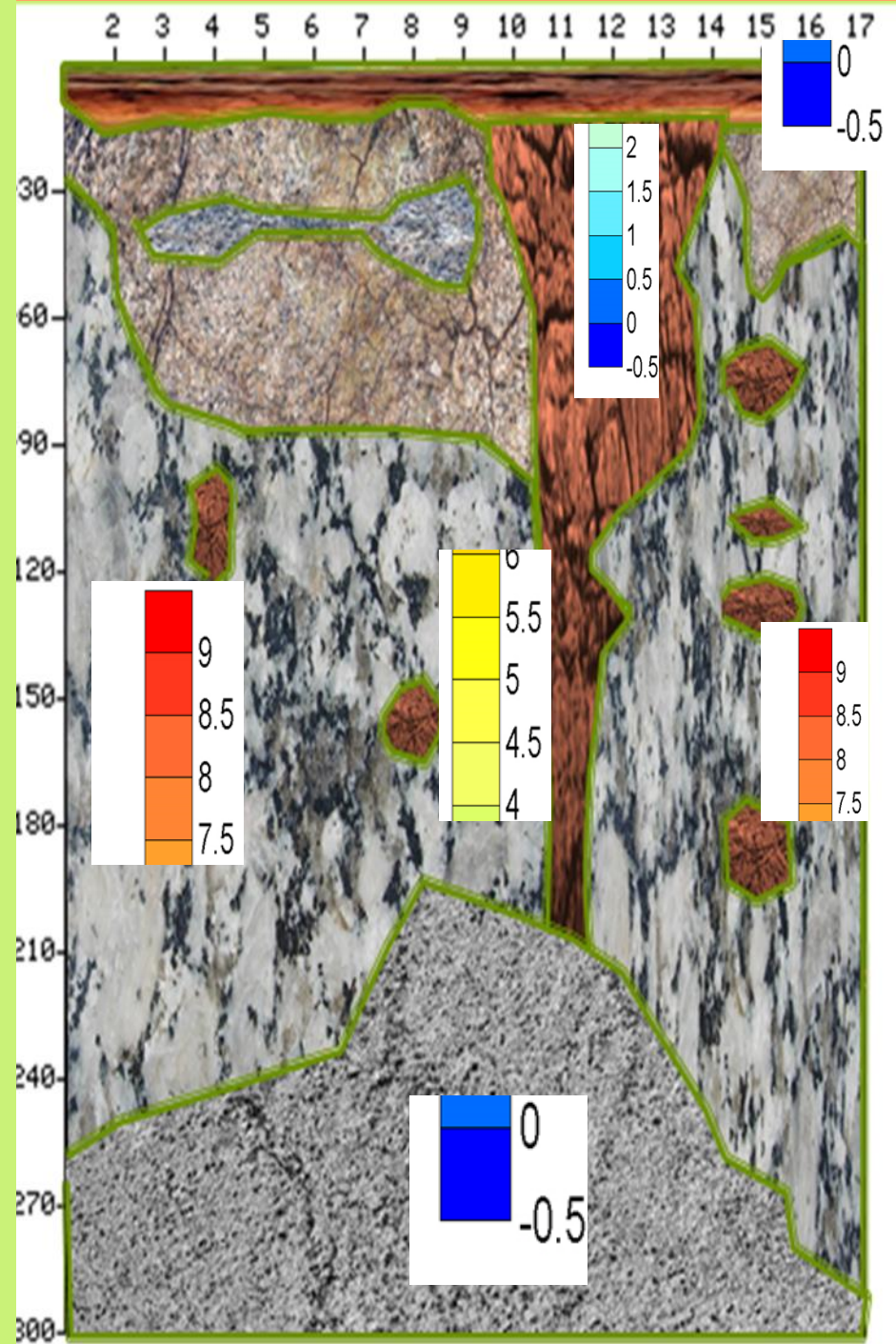
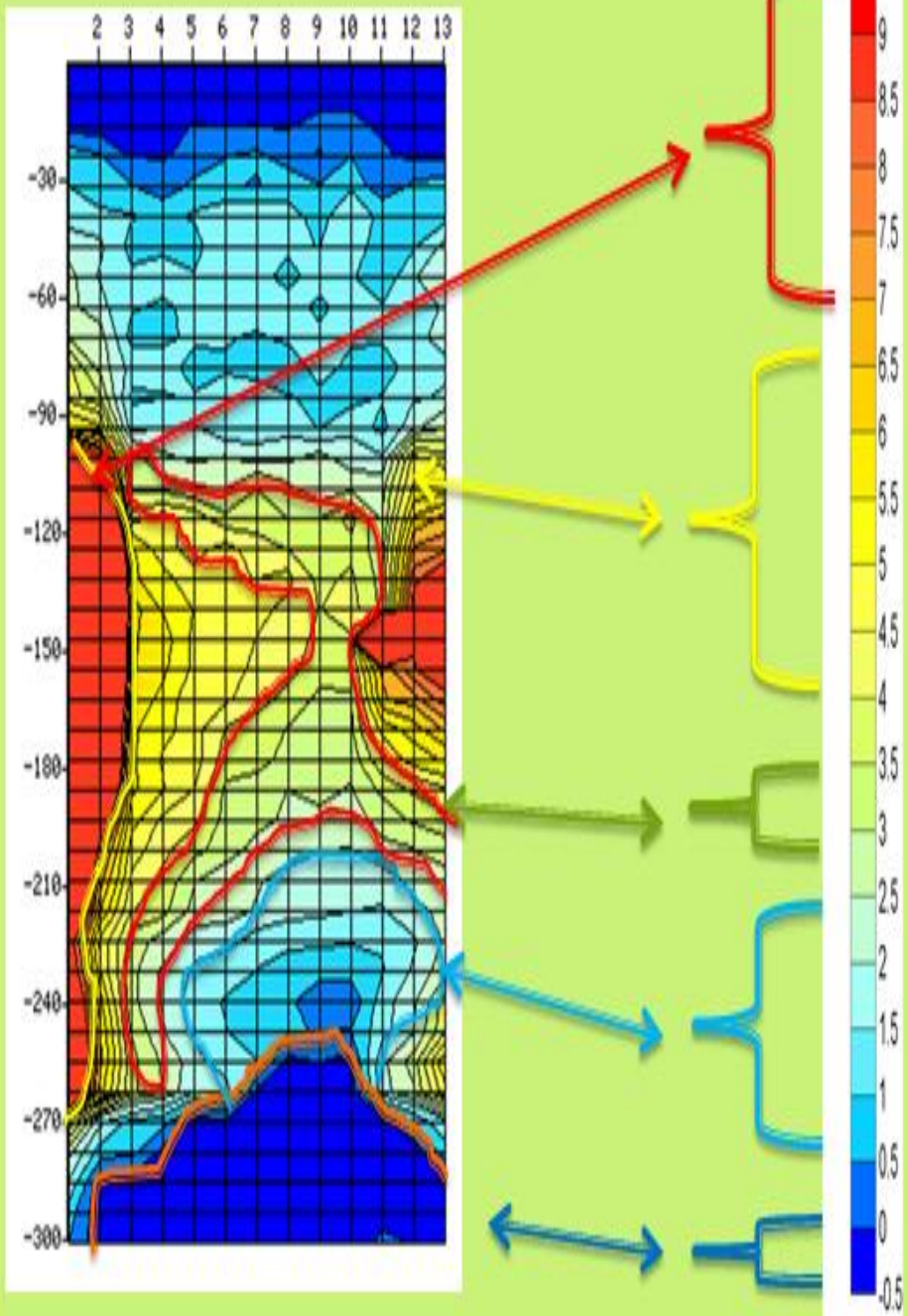


Contour & Analysis

An outline representing or bounding the shape or form of subsurface material's.

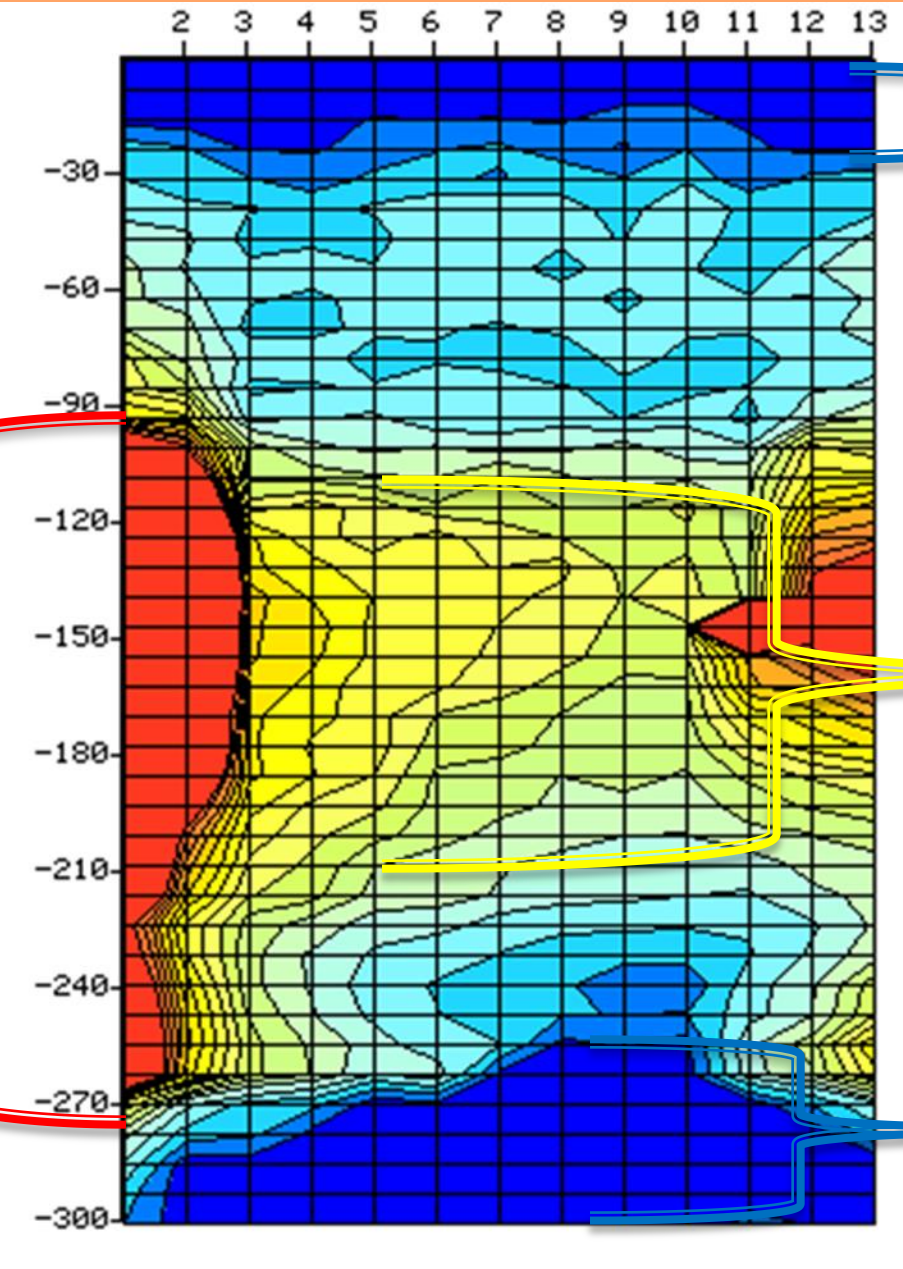
- ❑ The contour stresses the quality of an outline or a bounding surface as being smooth, jagged, curving, or sharply angled.
- ❑ Useful for know the shape and size, length and width of solid / material's measurements and fractures length and width





Medium hard Rock distributed from 110 m to 210 m

Soft Rock distributed from 0 m to 30m



Soft Rock distributed from 260 m to 300 m

Hard Rock distributed from 90 m to 270 m

GRID LINES

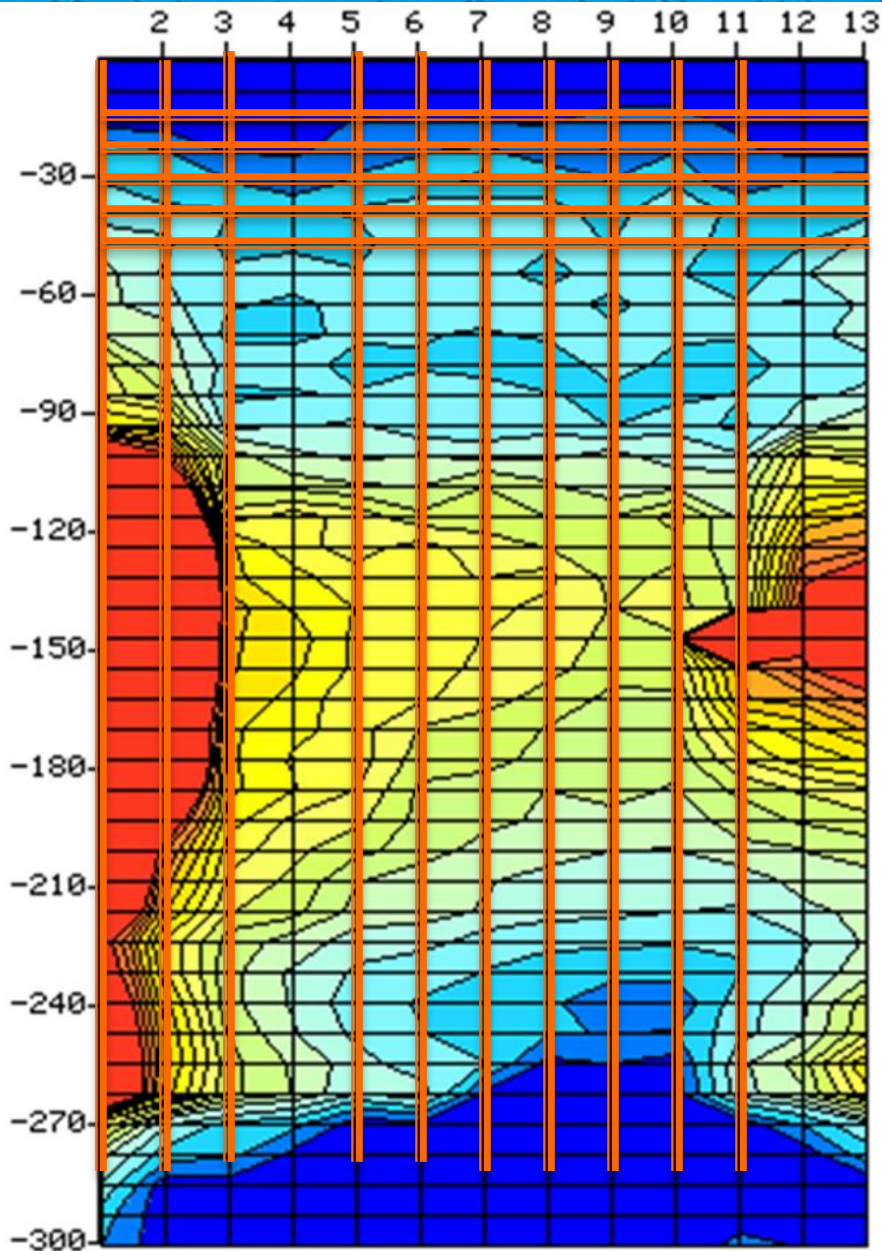
What is GRID

A network of lines that cross each other to form a series of squares or rectangles.

or

In graphic design, a **grid** is a structure made up of a series of intersecting straight (vertical, horizontal, and angular) or curved lines.

The Benefits of Using a Grid. ... Efficiency and quickly understand, Grids make it **easier** for any persons to work



Grid lines Vertical and horizontal

One grid line to another grid line width is one meter and length is 300 meter/as per the model

Horizontal line width 7.5 meter & Length is maximum 1500 meter

Uses Of Gridlines

Length and width of grid lines given the measurement's and distribution view of the subsurface material's in the profile map based on this measurement's we can estimate the shape, size and distribution of the subsurface material's ex:

The **Red** color rock portion is distributed from point 1 to point 3 and point 10 to 13 point

The **yellow** color rock portion is distributed from point 1 to point 13

The **Blue** color rock portion is distributed from point 1 to point 13



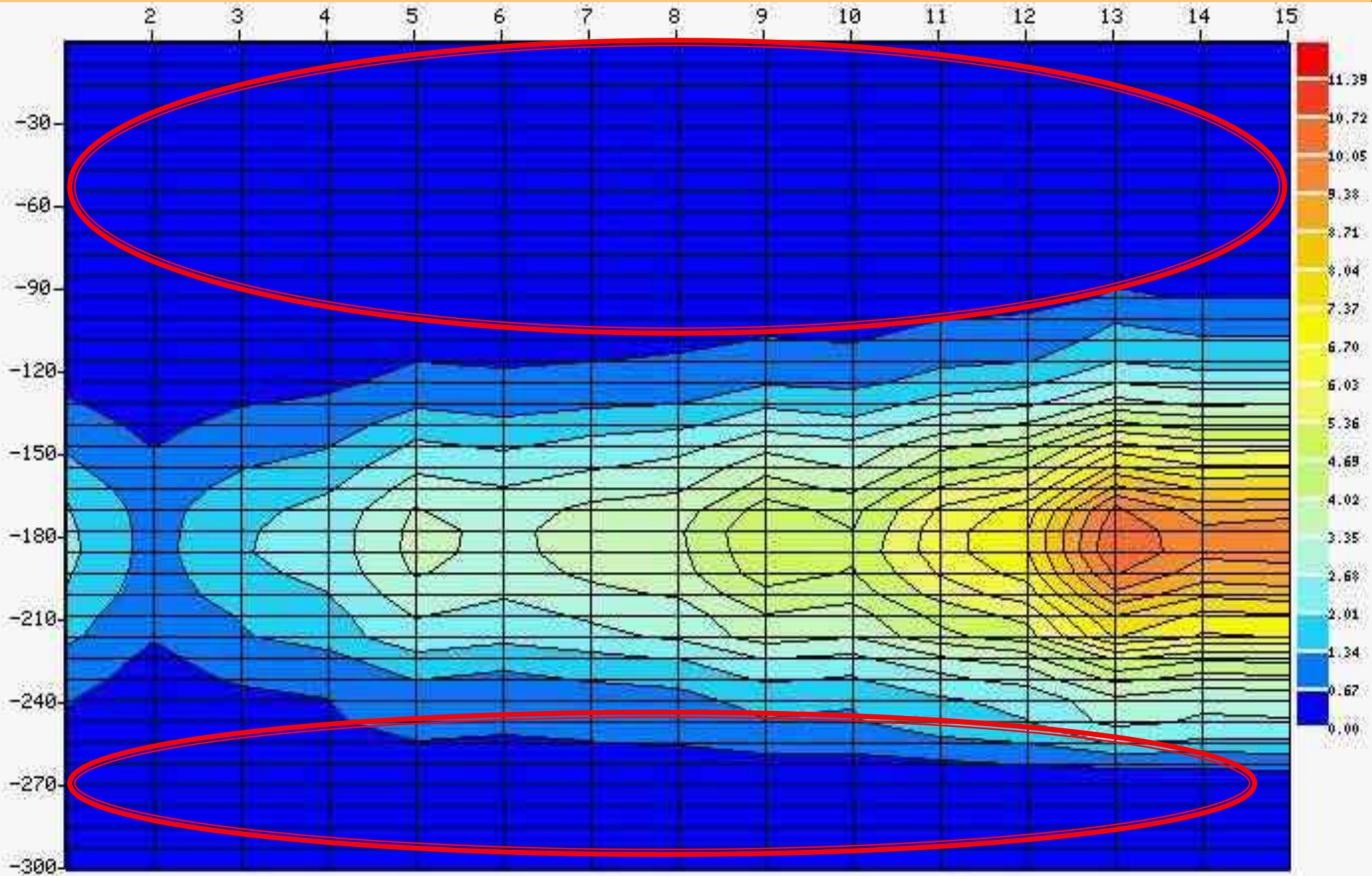
Processed Map and Analysis

What is a Process Map?

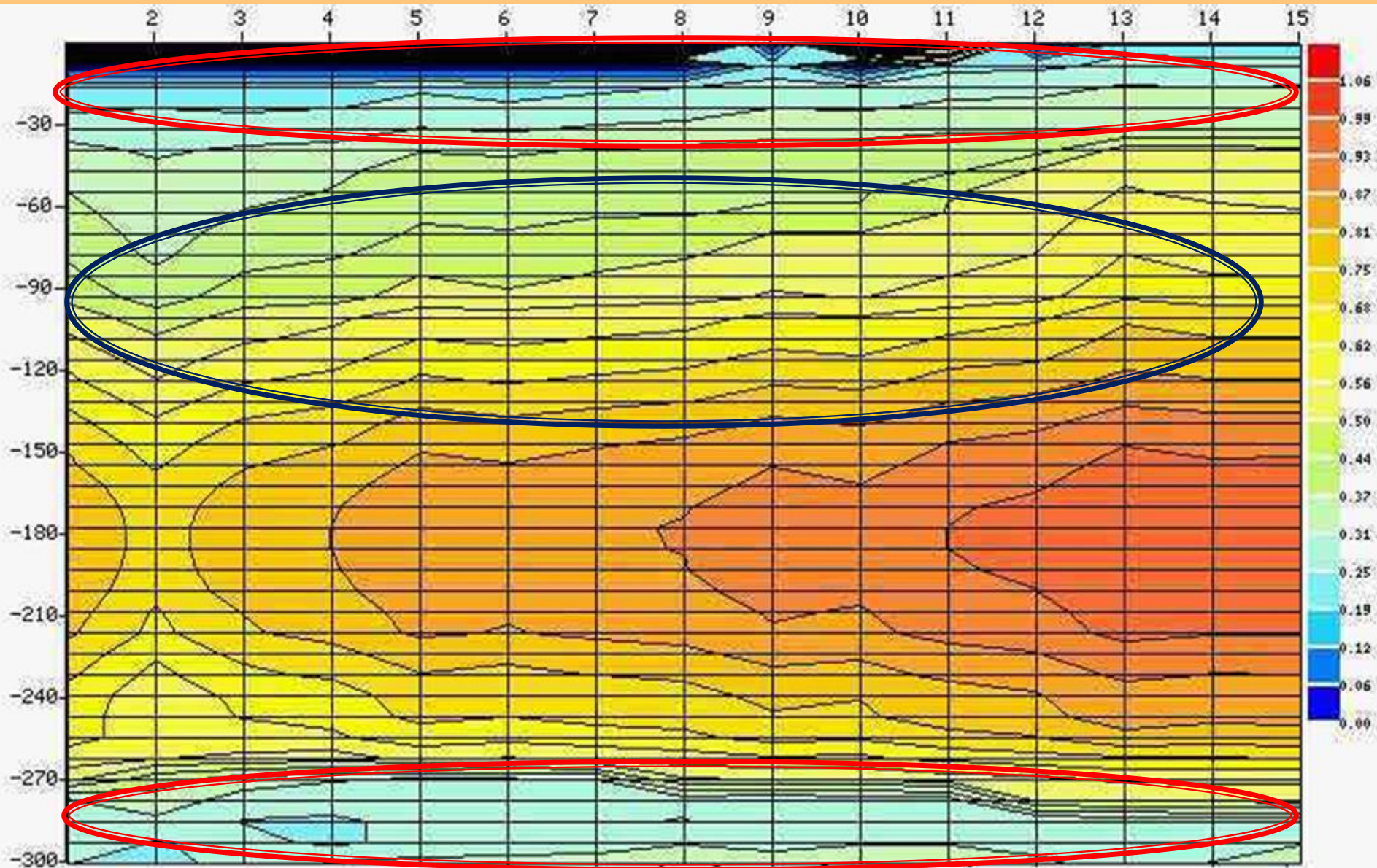
A process is a structured set of activities in the instrument that transform inputs into outputs.

Processed maps are used to develop a better understanding discussion and communication of targeting objective

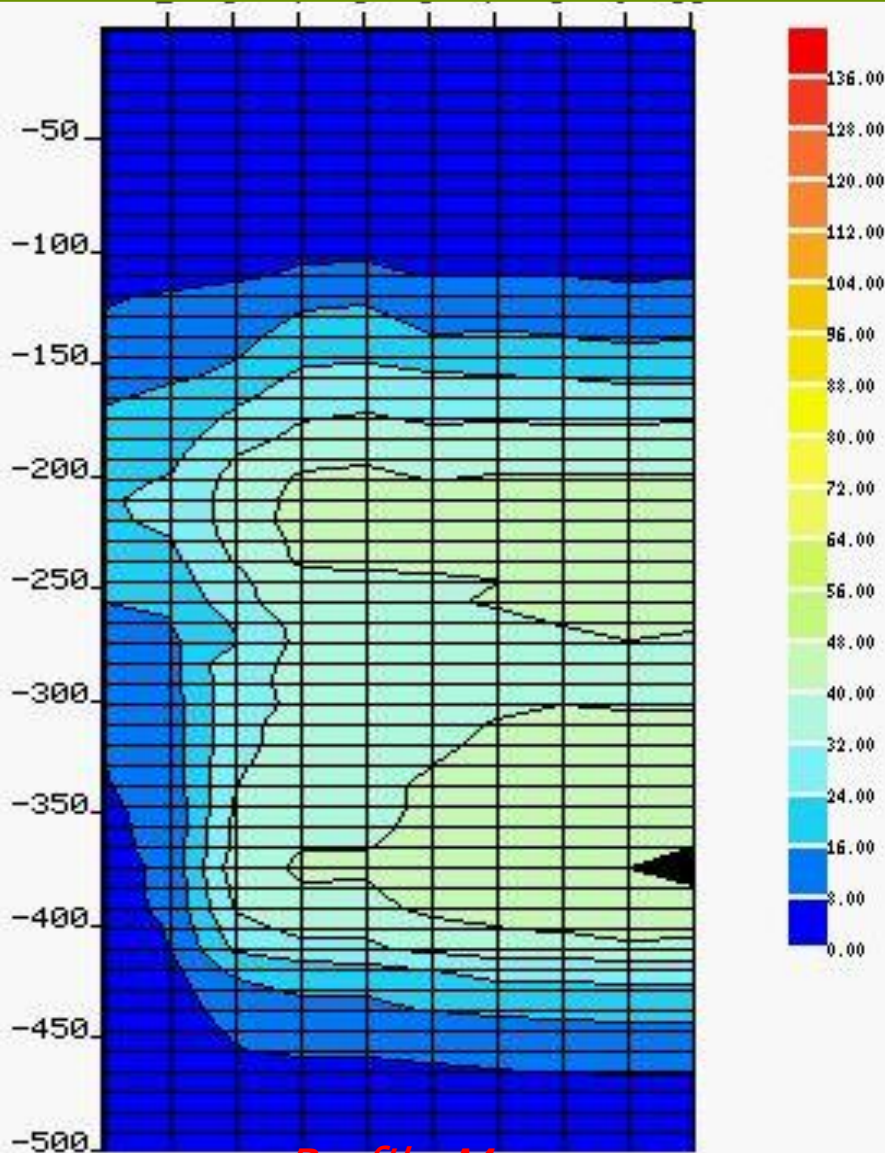
We can not seen anything in the blue color rock formation



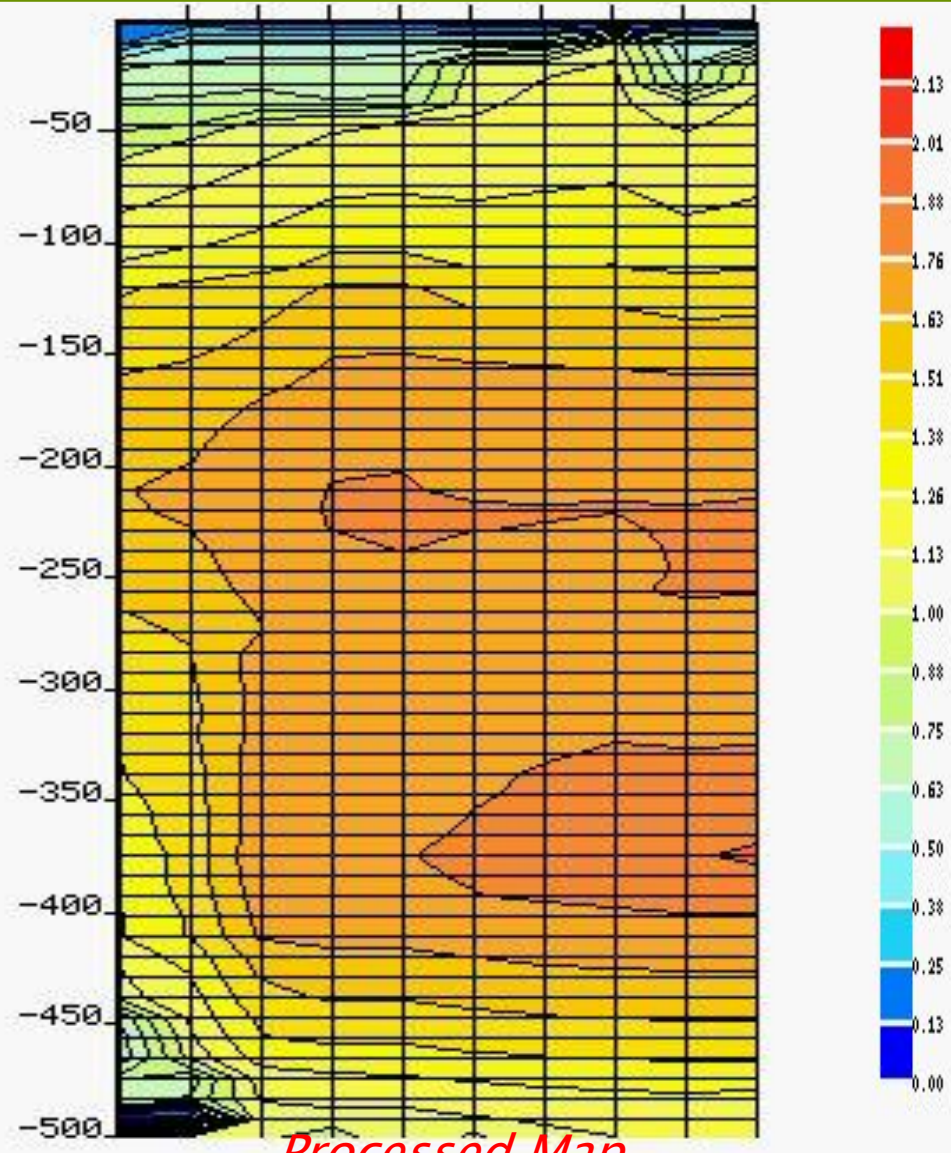
We can see all contours in the blue color rock formation and top most soft rock formation in the profile map



Compare both profile and processed map, we can see the variations

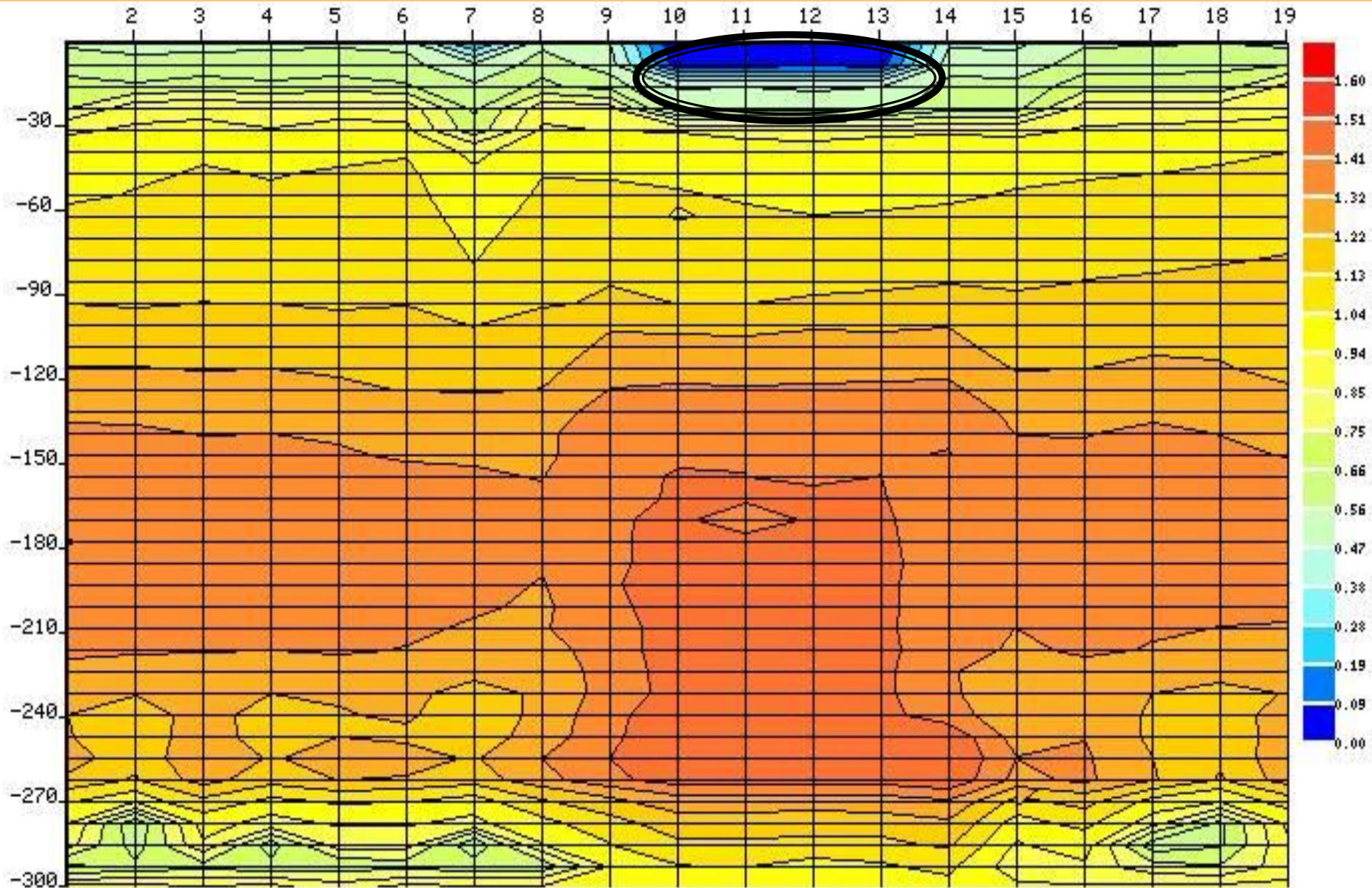


Profile Map

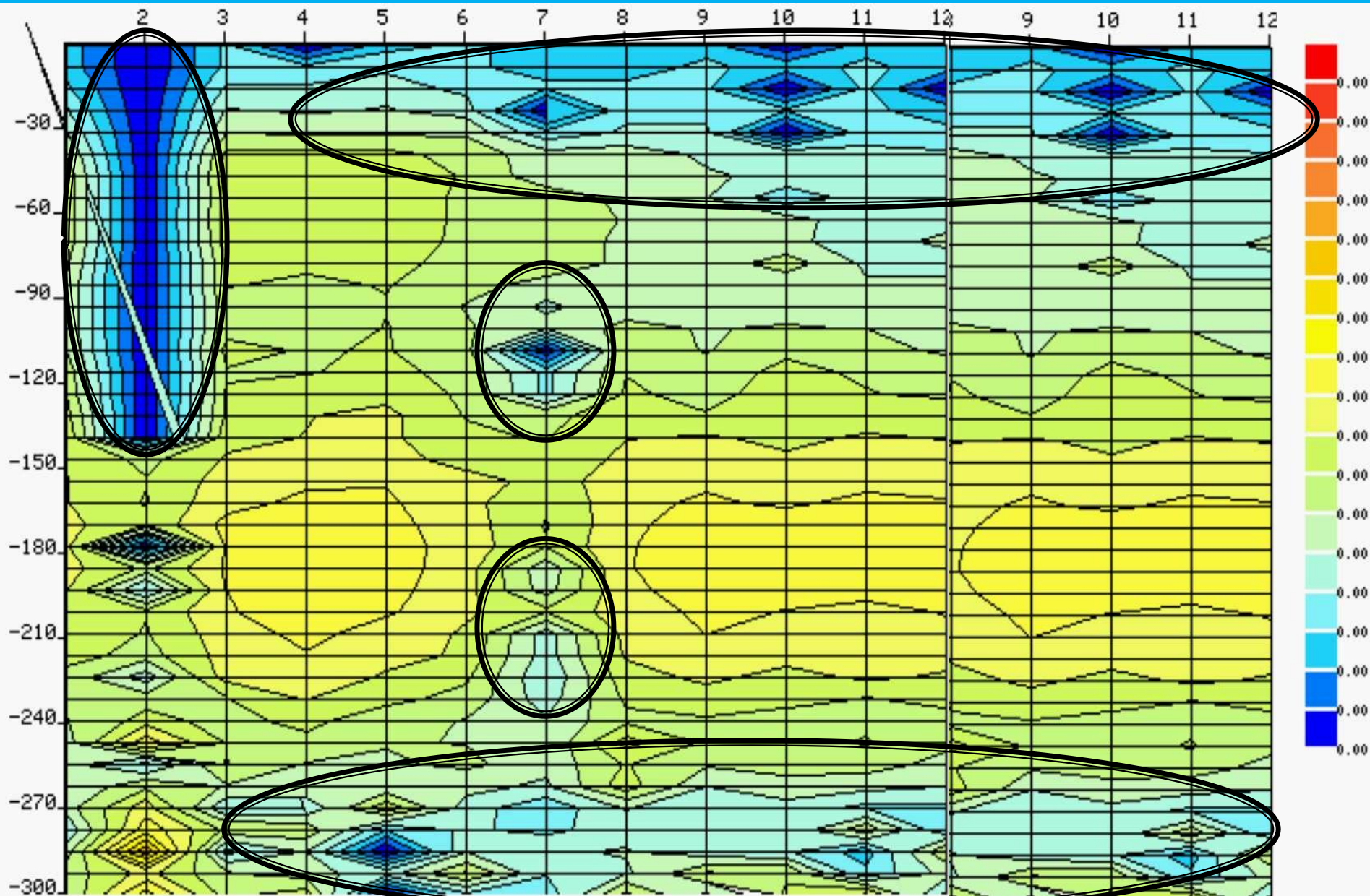


Processed Map

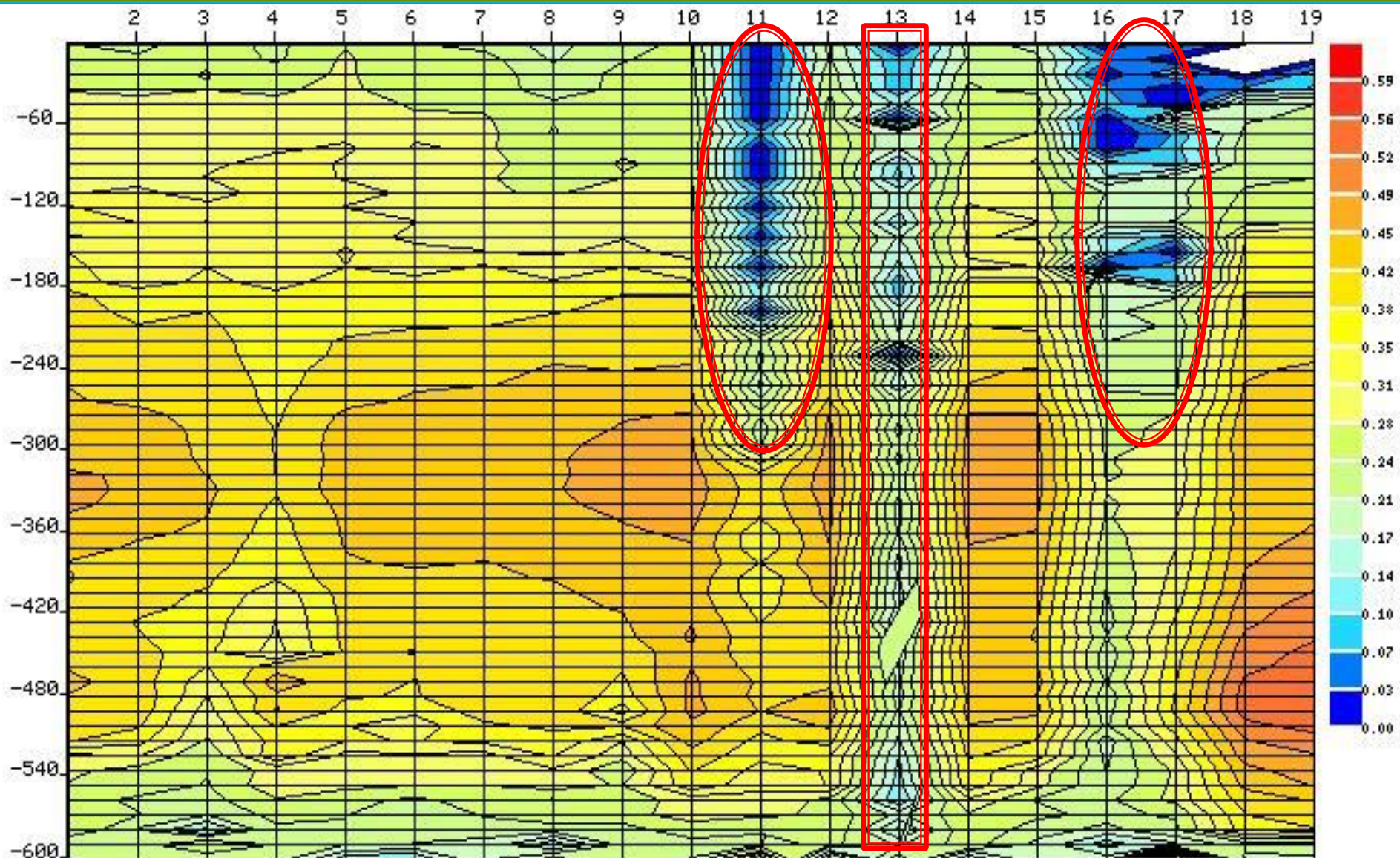
Not good map in any 1 / 2 color seen



Good map more area with blue color and other colors



Good map more area with blue color and other colors



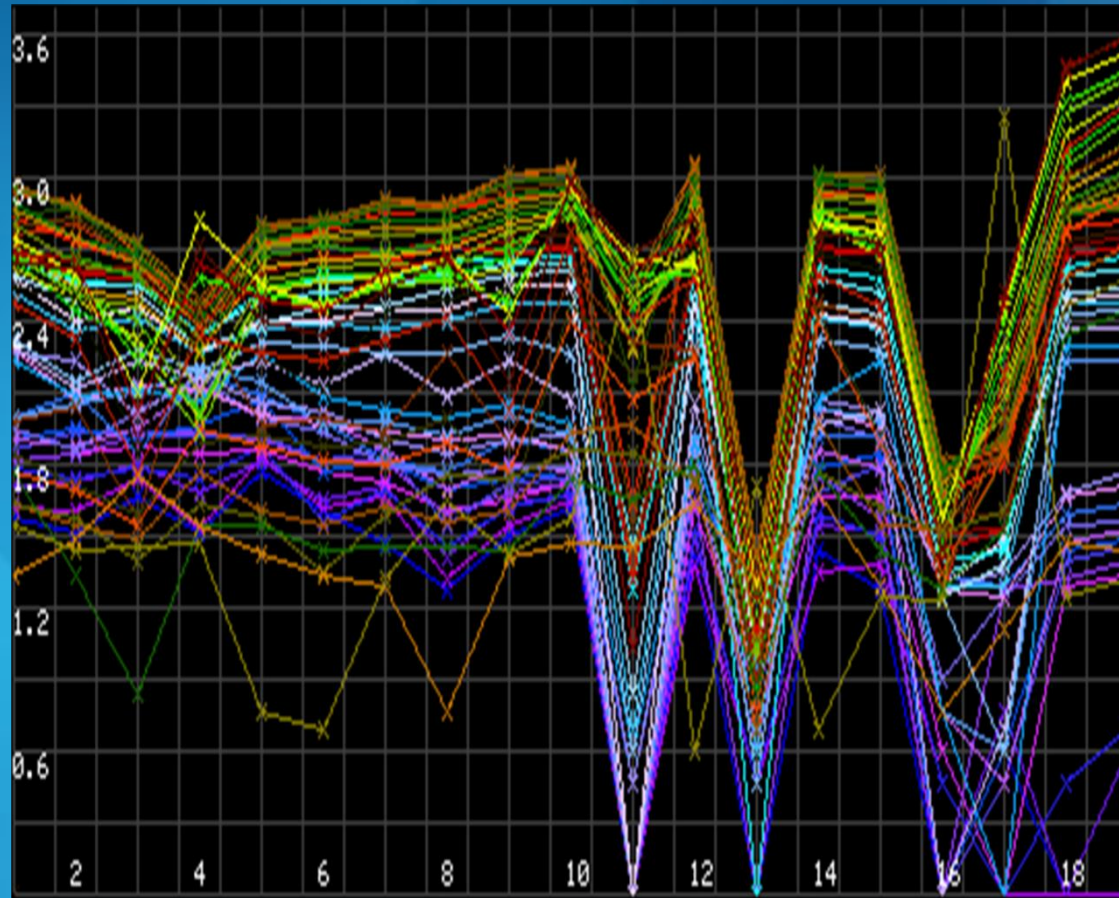
Curve Map Analysis



- IN THE MATHEMATICS A CURVE IS GENERALLY SPEAKING AN OBJECT SIMILAR TO A LINE NOT BE STRAIGHT AND NOT TO BE ZERO
- CURVE ANALYSIS IS POWERFUL AND EFFECTIVE ANALYSIS TECHNIQUE IN MANY RESEARCH AREAS RELATED WITH HYDROGEOLOGY
- A LINE GRAPH IS COMMONLY USED TO DISPLAY CHANGE OVER THE AREA AND A SERIES OF DATA POINTS / LINES CONNECTED BY STRAIGHT LINE OR CURVING NATURE,
- THE STRAIGHT/ CURVING LINE INDICATES HOMOGENEITY OF SUBSURFACE MATERIAL
- CURVE ANGLE INDICATES THE VARIATION'S OF ROCK PROPERTIES
- SUDDENLY FALL DOWN CURVE INDICATES HIGHLY CHANGED SUBSURFACE MATERIAL'S / TWO ROCKS CONTACT/MAJOR FRACTURE
- SERIES OF STRAIGHT LINES / PARALLEL LINE ONE TO ONE INDICATES THE ROCK IS HOMOGENEOUS WITH OUT ANY CHANGES

“Y” AXIS

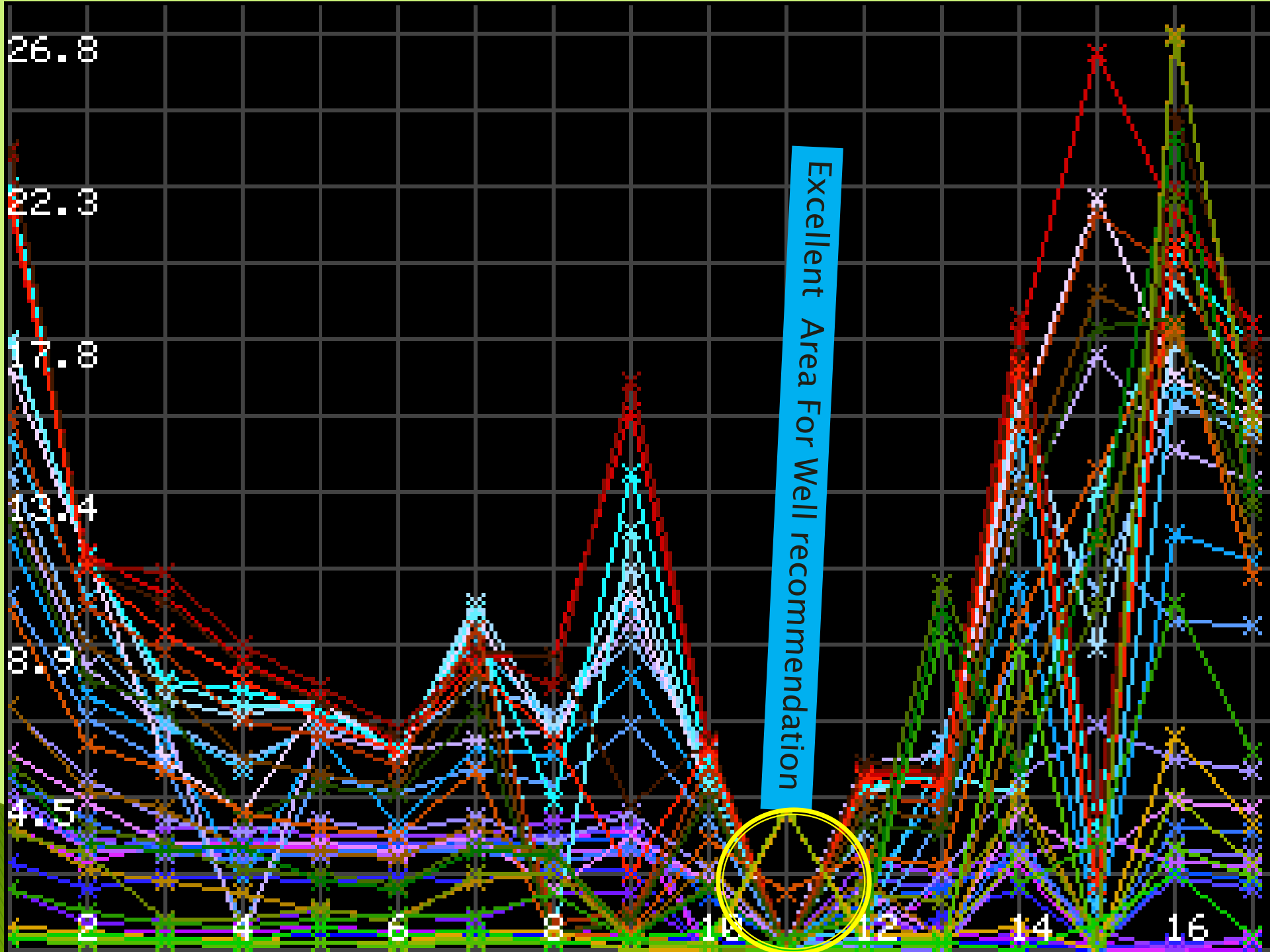
ROCK PROPERTIES VALUES RANGE



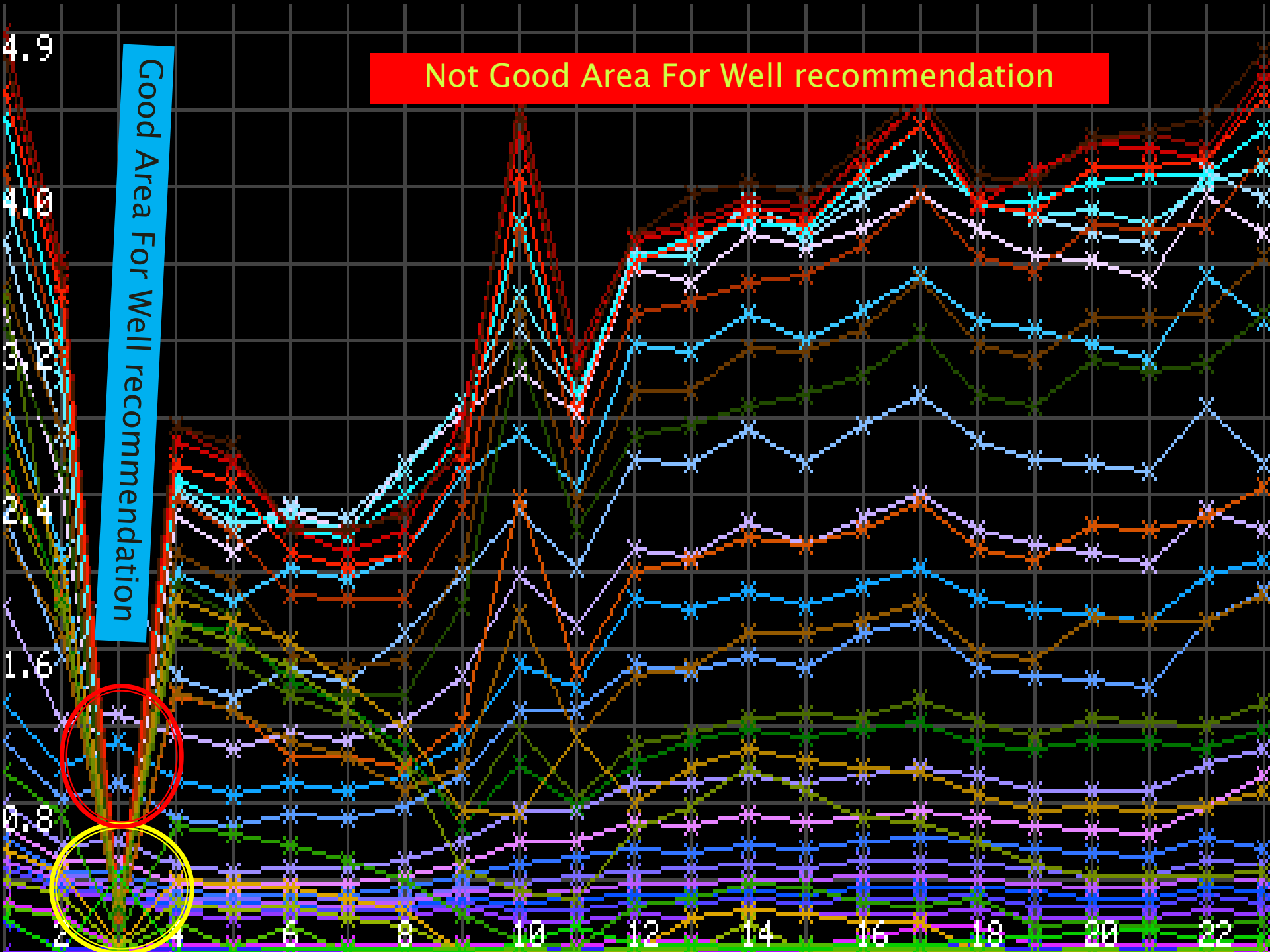
NUMBER OF POINTS

“X” AXIS

GOOD CURVE MAP
(MAXIMUM LIENS INTERSECT AND UNION ONE TO
ONE)



Excellent Area For Well recommendation

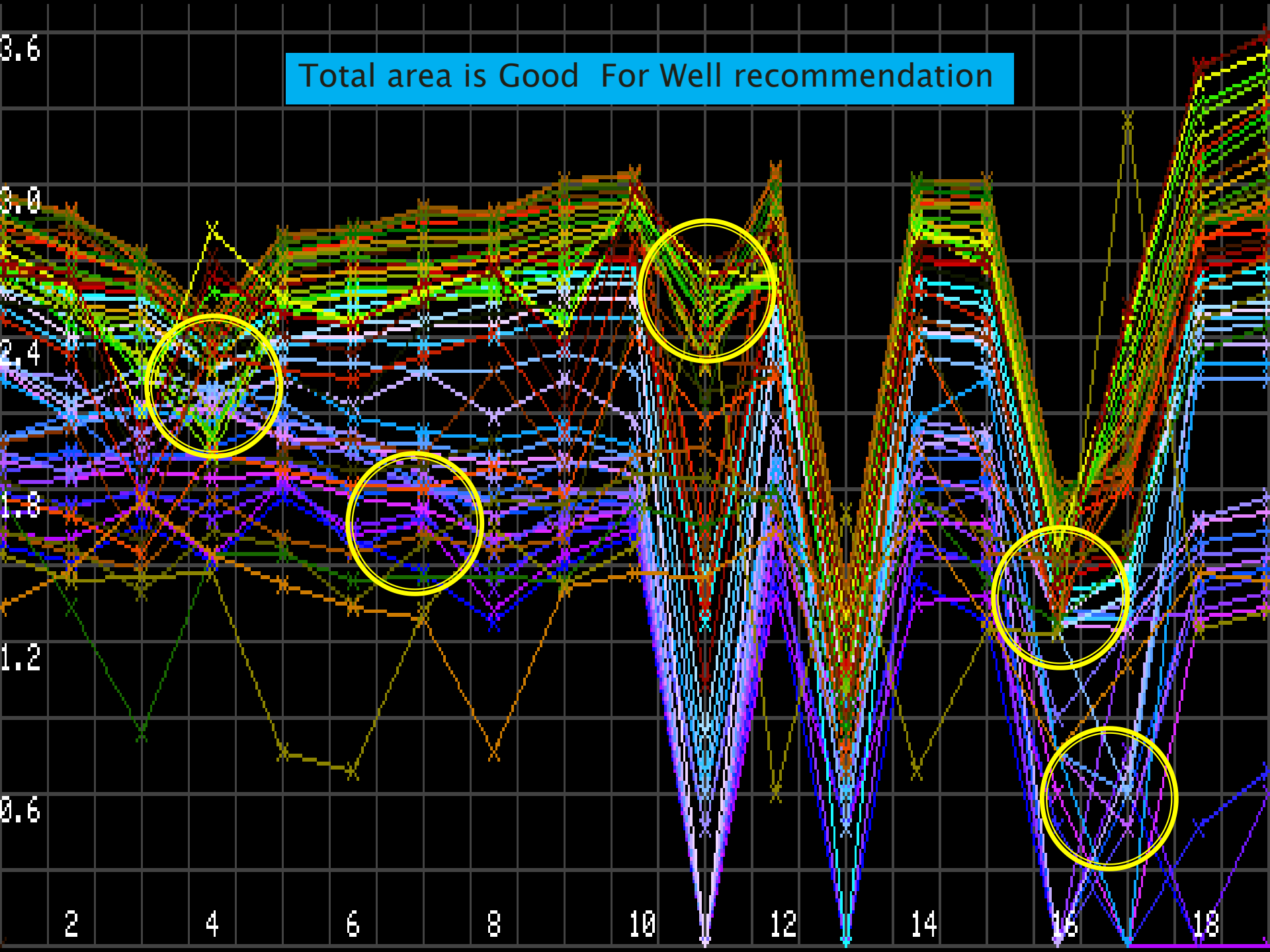


Not Good Area For Well recommendation

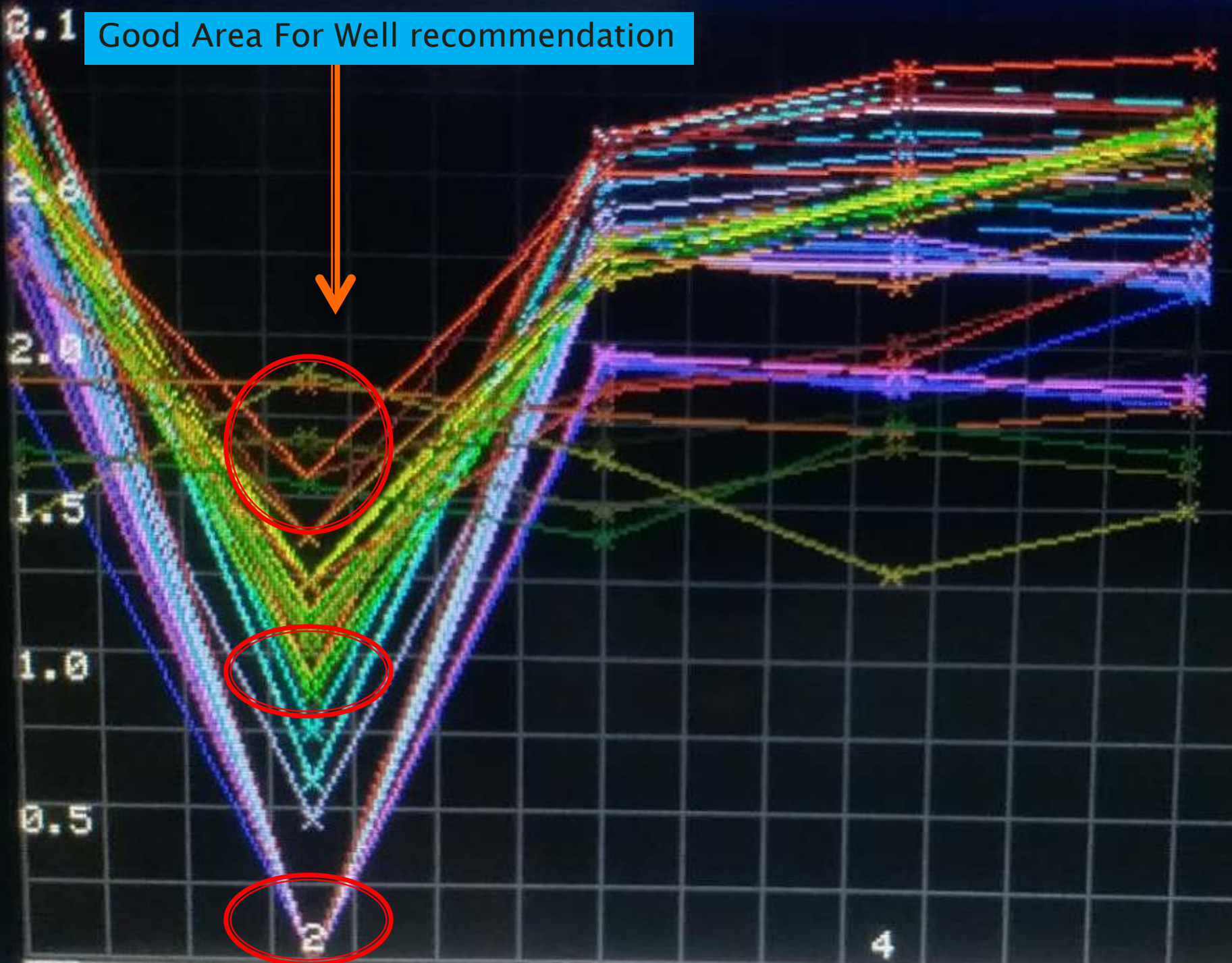
Good Area For Well recommendation



Total area is Good For Well recommendation



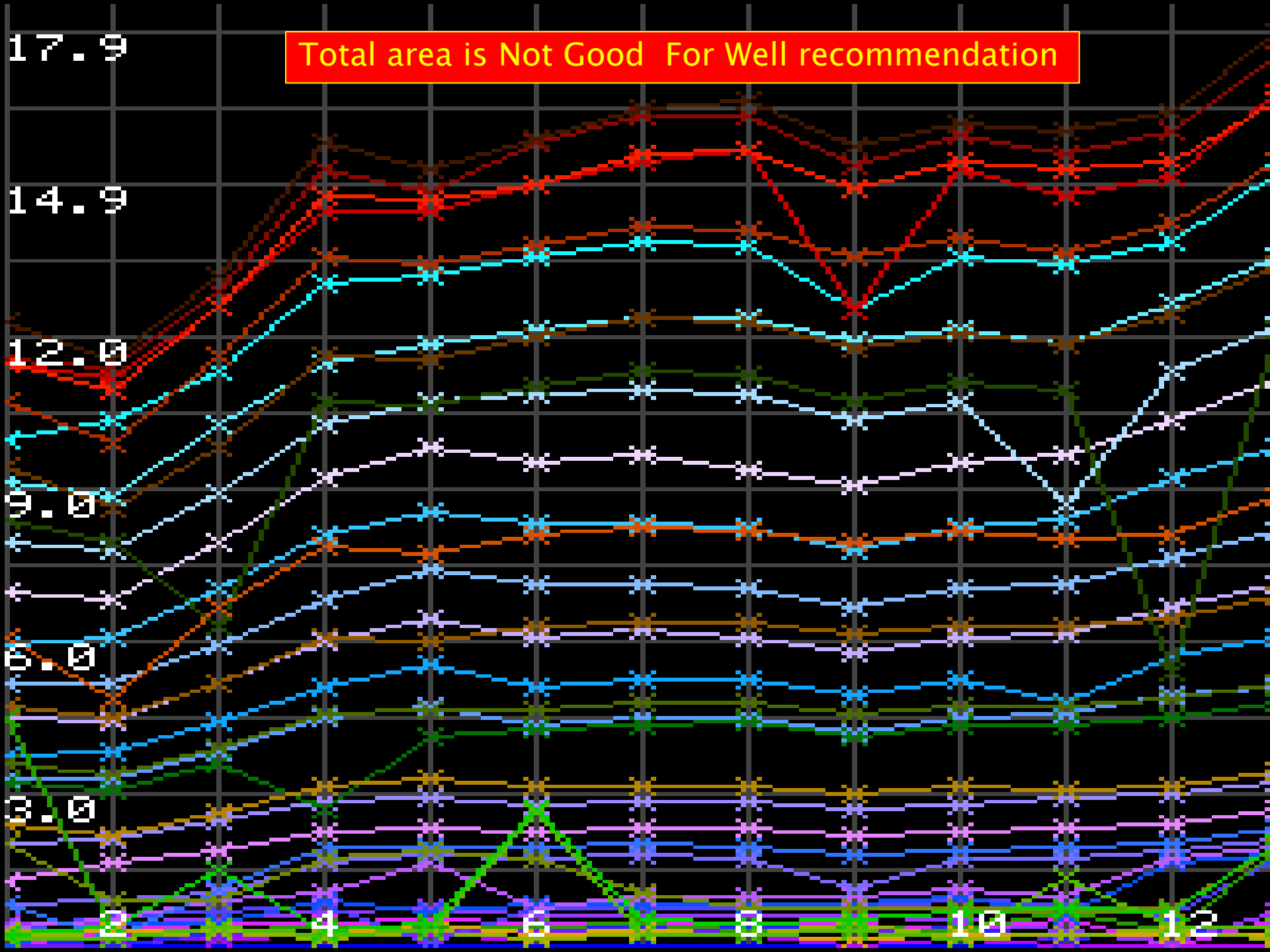
Good Area For Well recommendation



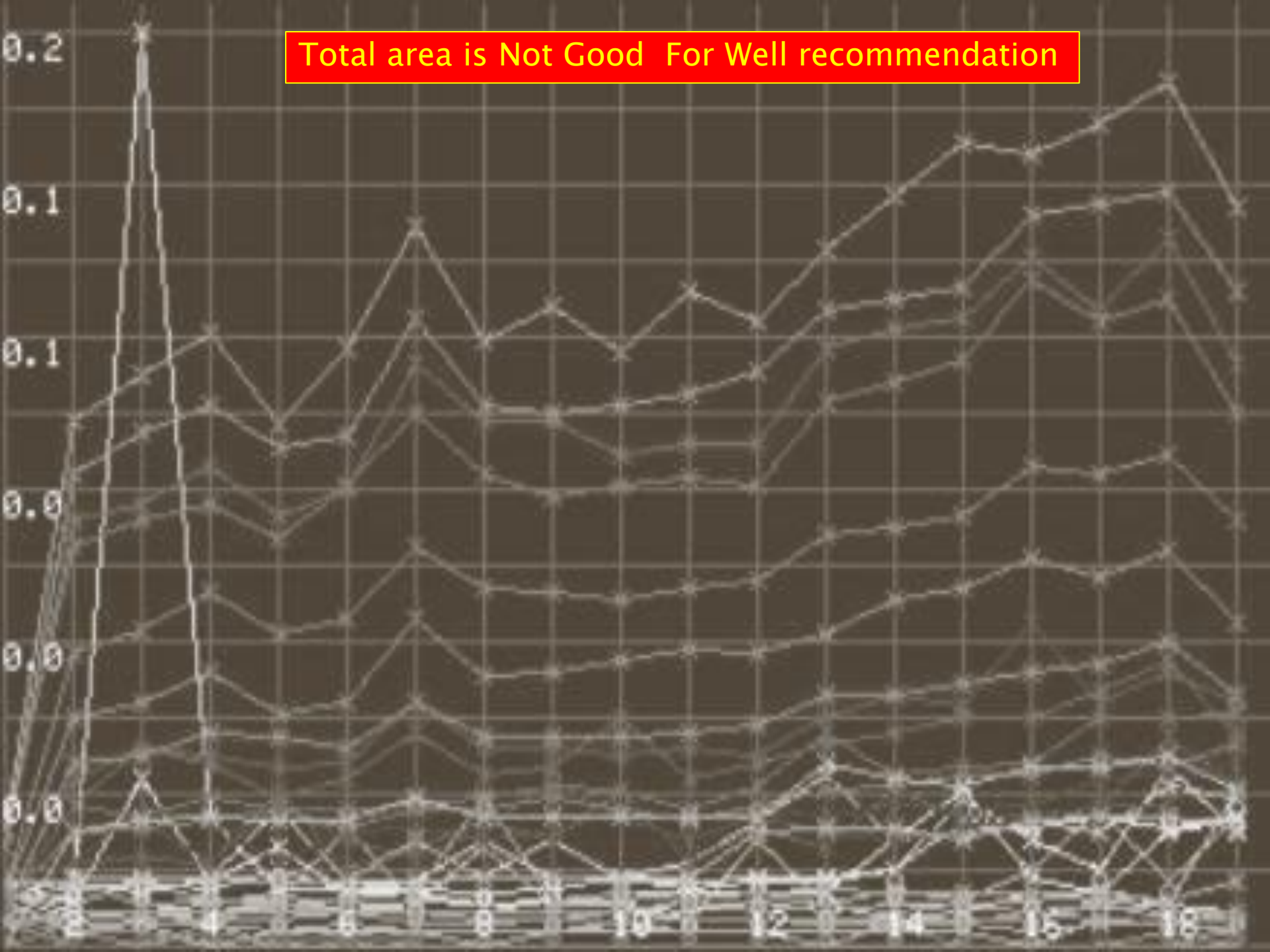
NOT GOOD CURVE MAP

(ALL LINES ARE PARALLEL TO ONE TO ONE)

Total area is Not Good For Well recommendation

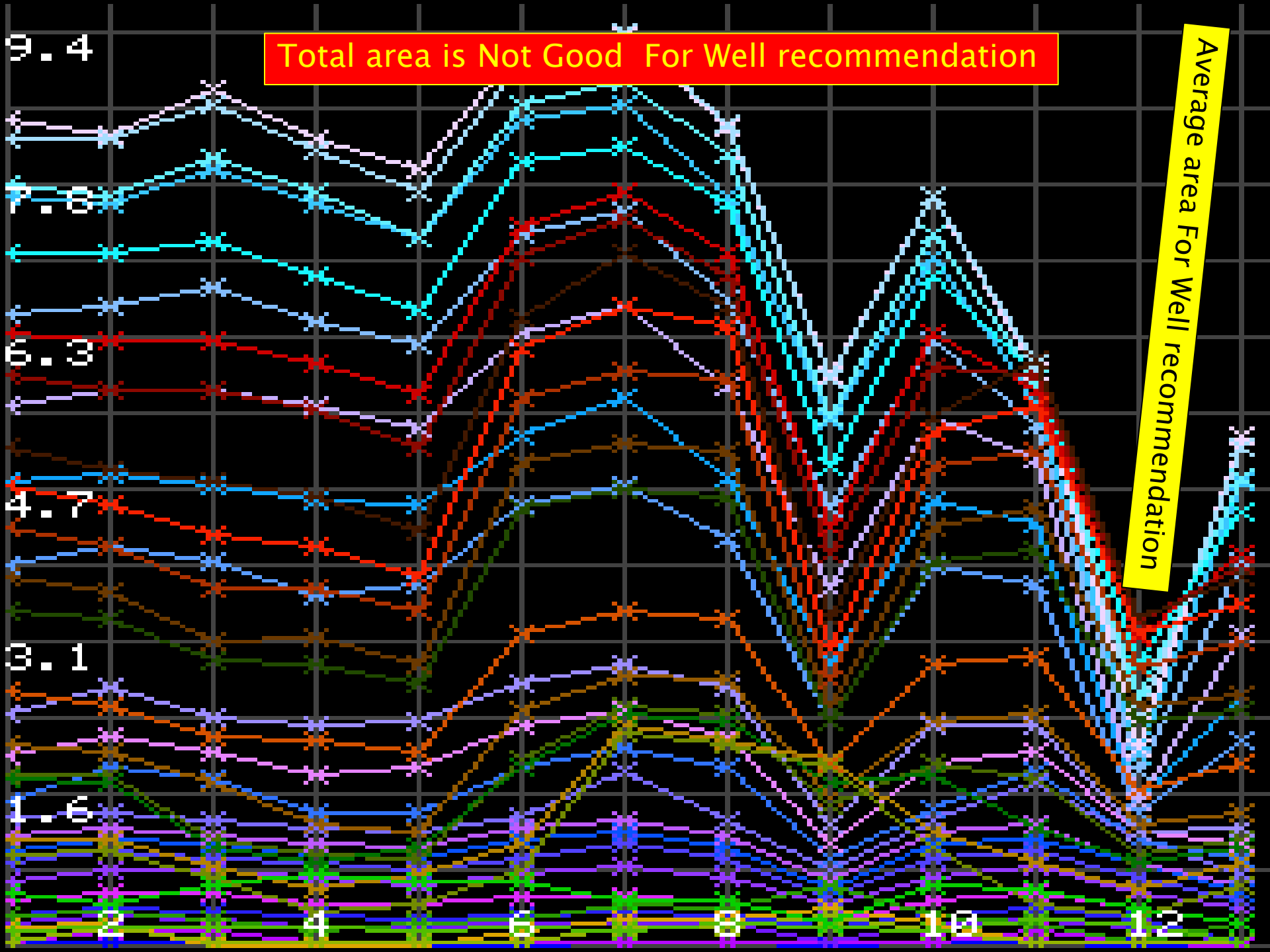


Total area is Not Good For Well recommendation



Total area is Not Good For Well recommendation

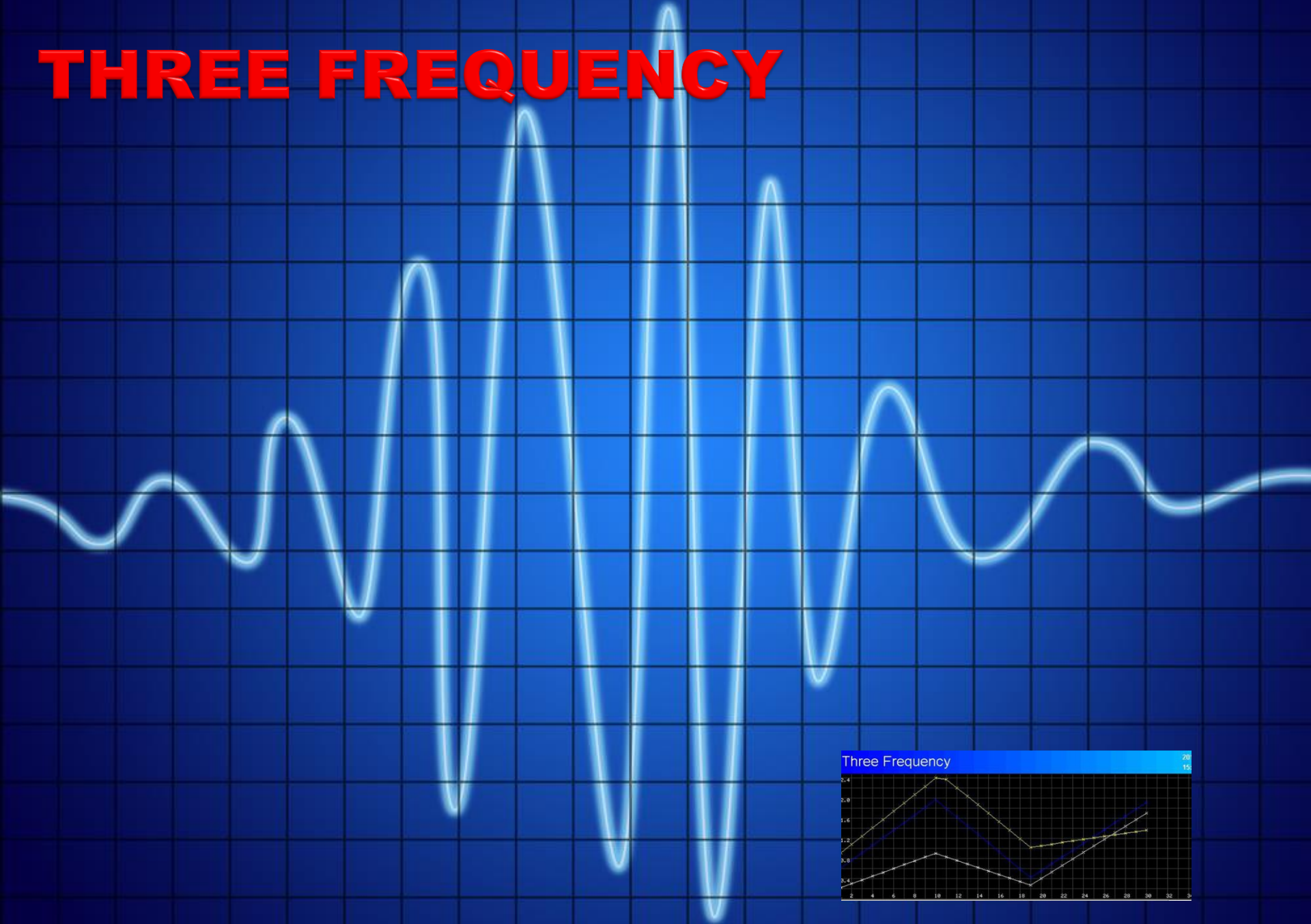




Total area is Not Good For Well recommendation

Average area For Well recommendation

THREE FREQUENCY

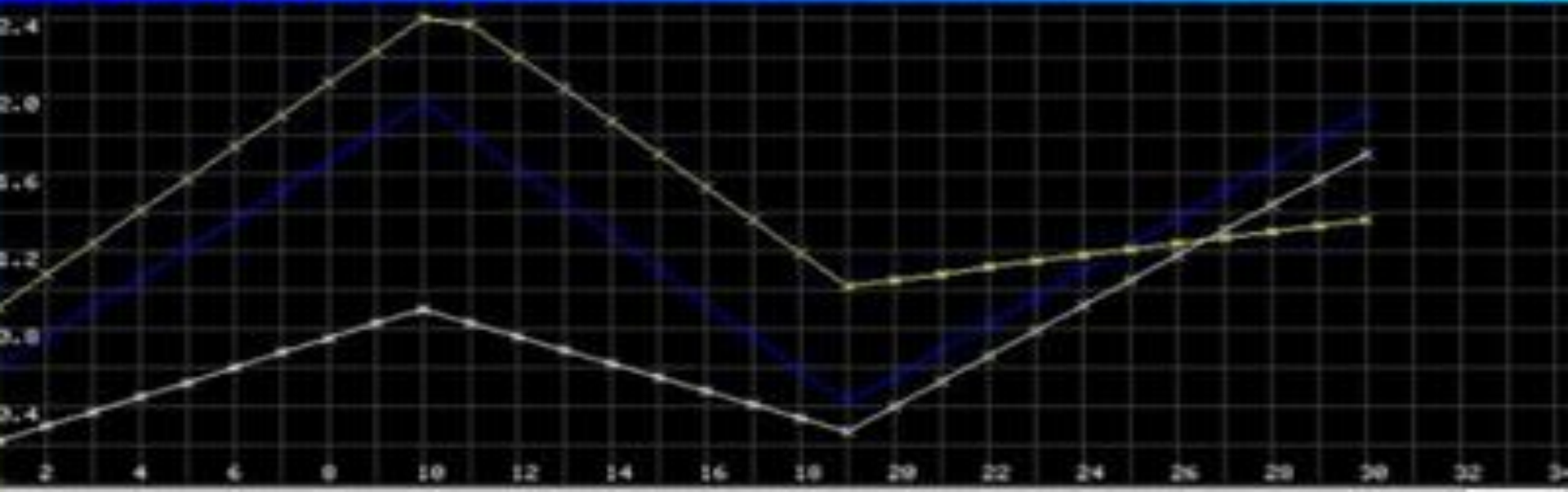


Measure the subsurface part of earth crust layers like shallow depth at 170Hz, Medium depth at 67Hz and Deeper depth at 25Hz (It is based on the maximum depth of the instrument)

Use of Three Frequency Short out the area large area to small area it means which portion of the area for feasible / not feasible for groundwater occurrence's Finding the direction for profile survey like North-south / East-West etc..

After recorded the three frequency, the values plotted a curve on the instrument screen like above (Fig:), we are seen on the screen abnormal point of higher values / lower values / intersection or unions of three lines, Choose the intersection or union or high and low value area / line for profile measurement.

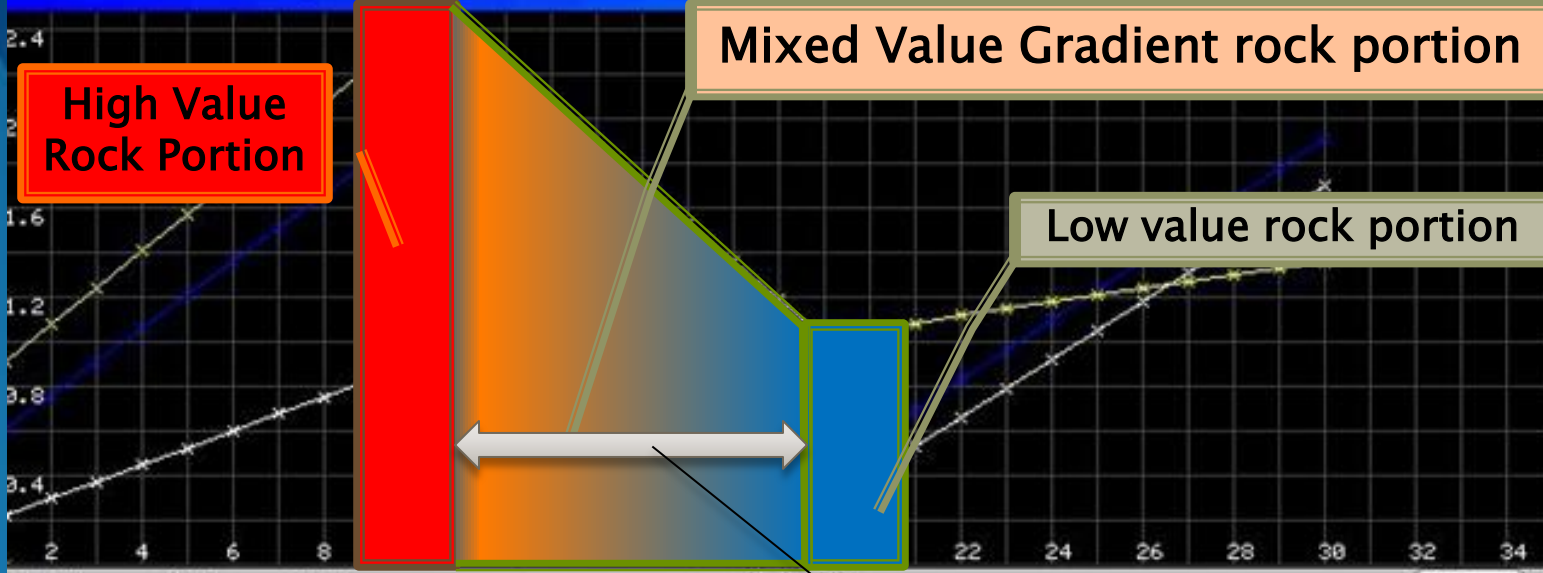
Three Frequency



Three Frequency

2017/06/20

15:33:45



High Value Rock Portion

Mixed Value Gradient rock portion

Low value rock portion

Direction to make profile measurement

170Hz — 67Hz — 25Hz — Gain: 40 Refresh

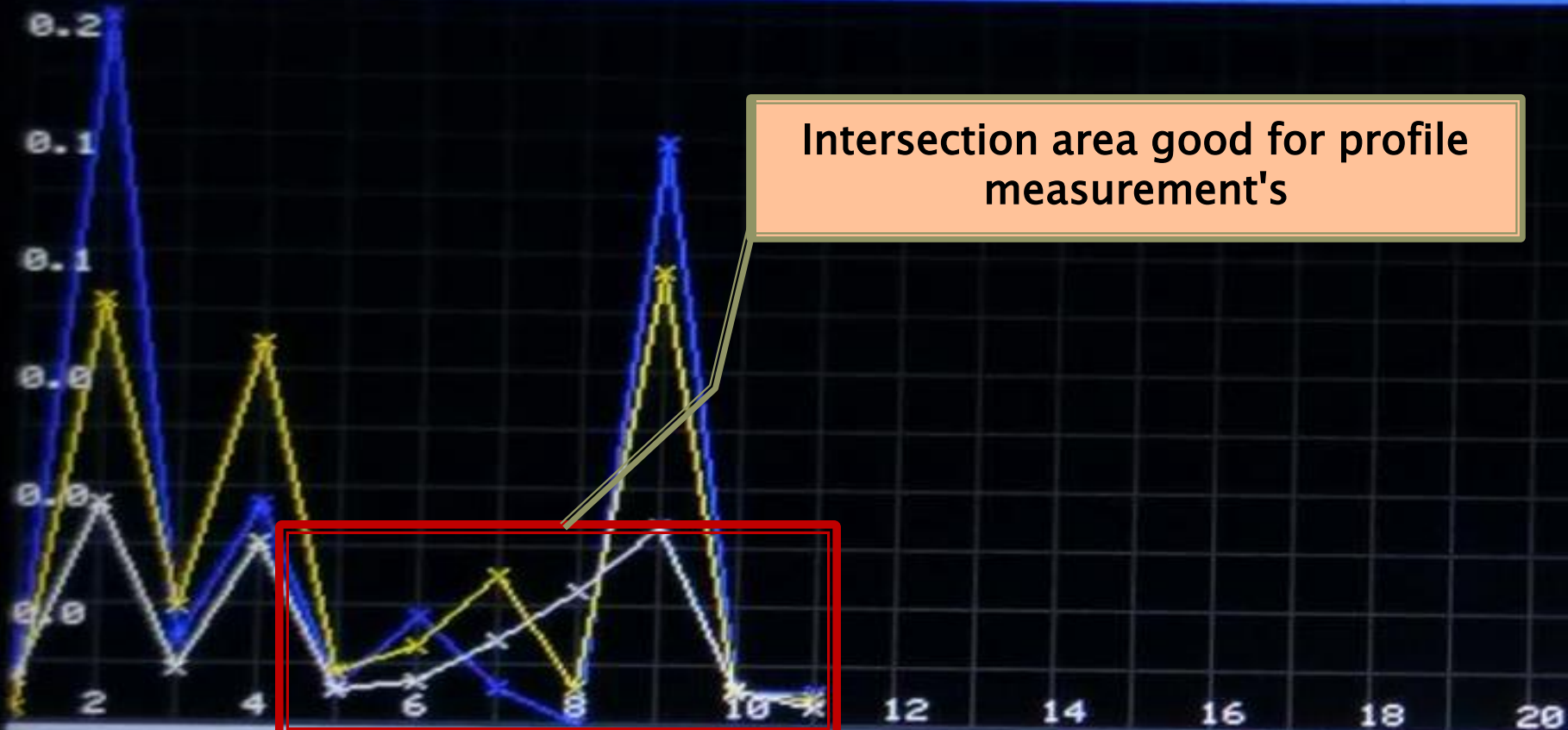
L	N	170Hz	67Hz	25Hz
1	30	1.92	1.369	1.71
1	29	1.784	1.338	1.58
1	28	1.648	1.307	1.45
1	27	1.512	1.276	1.32

0% Refresh

Line:L=001 Site:N=031 Status:Waiting for operation.

- Line Test
- Profile
- Options
- Delete
- Return
- Record

Three Frequency



Intersection area good for profile measurement's

170Hz — 67Hz 25Hz Gain: +1

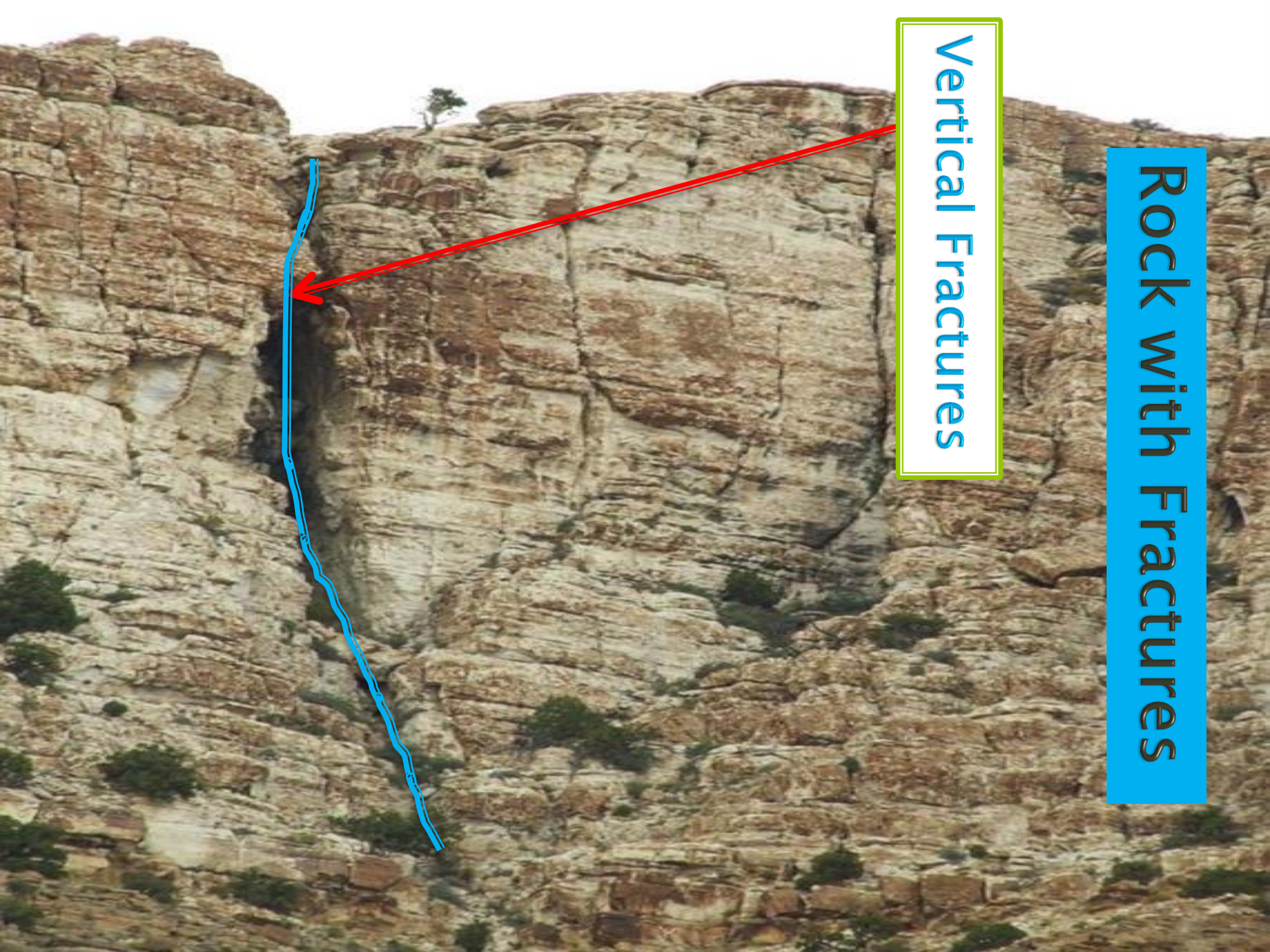
L	N	170Hz	67Hz	25Hz
5	11	0.007	0.006	0.004
5	10	0.007	0.007	0.008
5	9	0.126	0.098	0.043
5	8	0.000	0.008	0.029
5	7	0.000	0.000	0.010

GROUNDWATER STORAGE AREAS



Rock with Fractures

Vertical Fractures



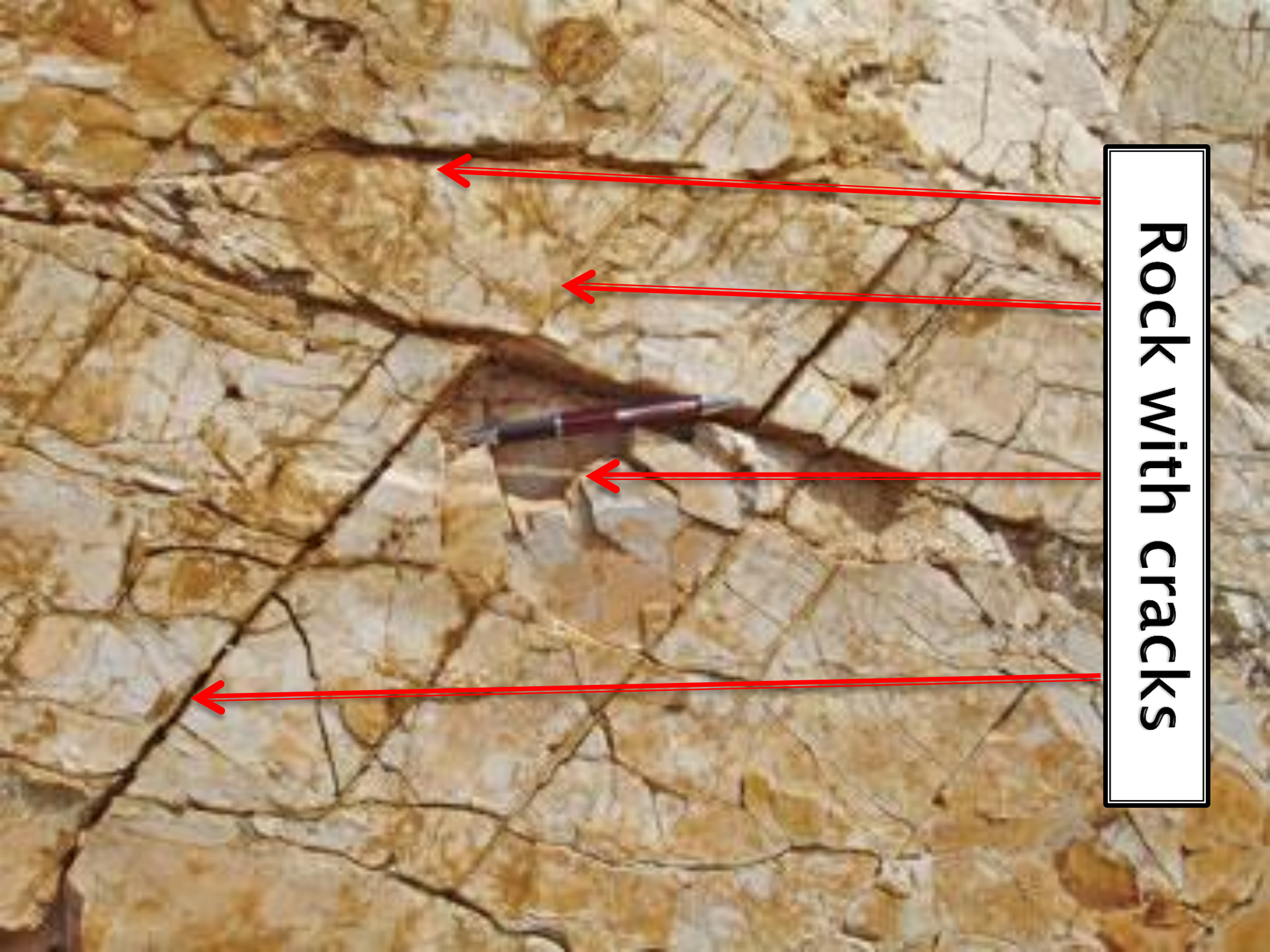


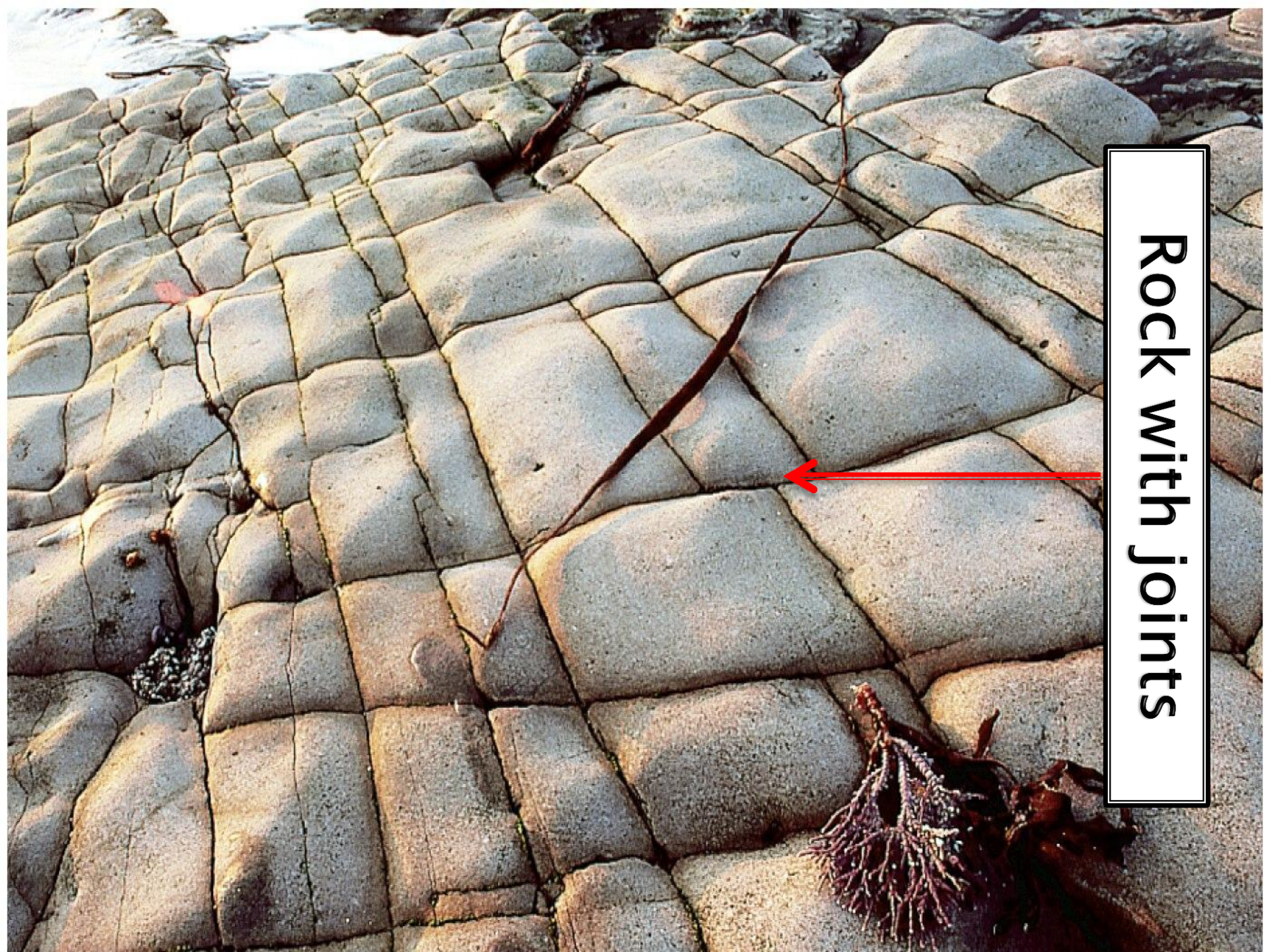
Vertical Fractures with water



Rock horizontal Fractures

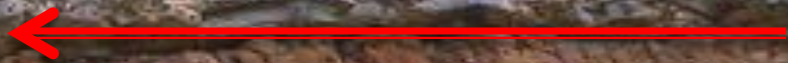
Rock with cracks





Rock with joints

Rock contact zone



PQWT[®]



Thank you!

E-mail:
info@pqwtcs.com

Conditions Apply

www.pqwtcs.com