

GPS vs Remote Sensing for Land form Review

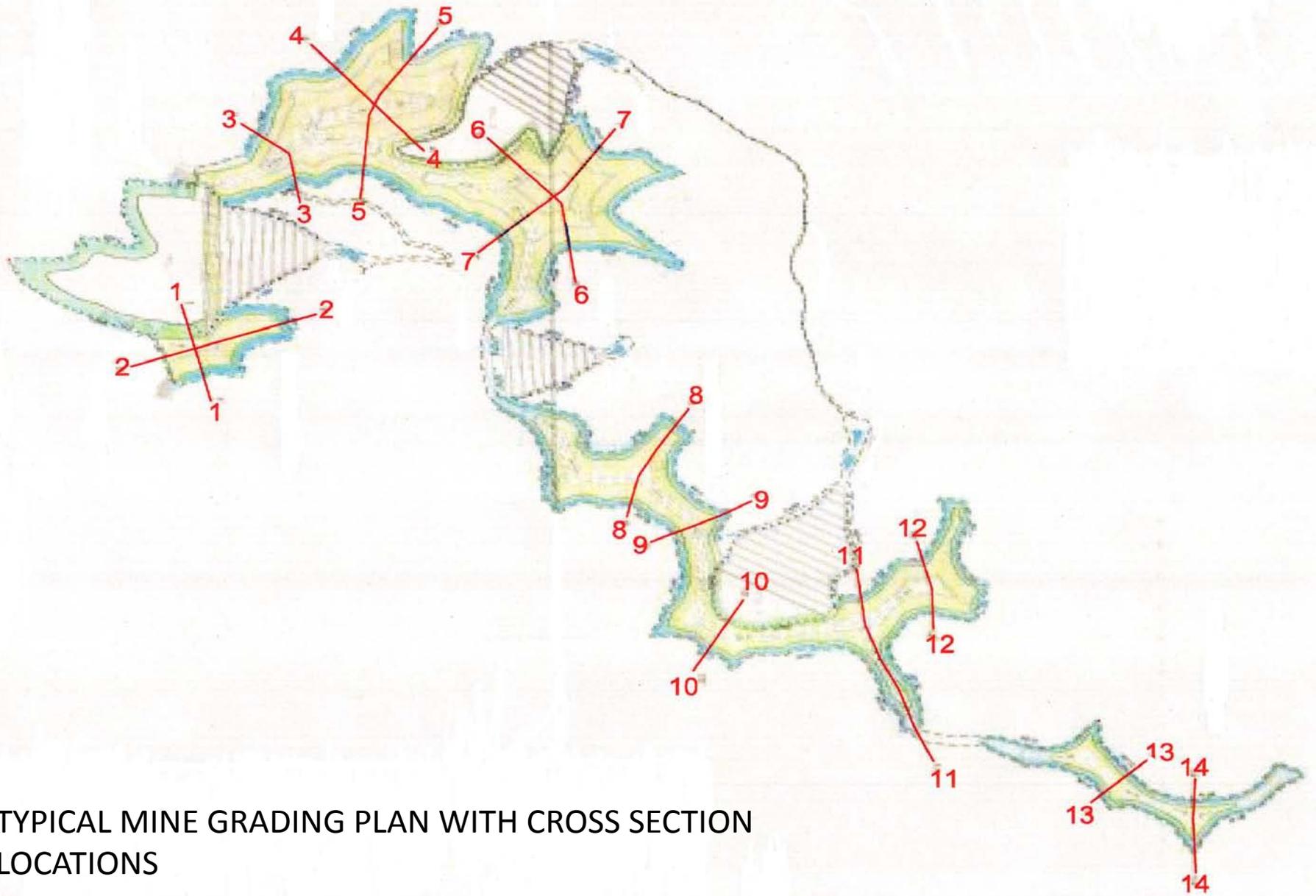
Among Friends- What's the cheapest
way to look at AOC

Purpose

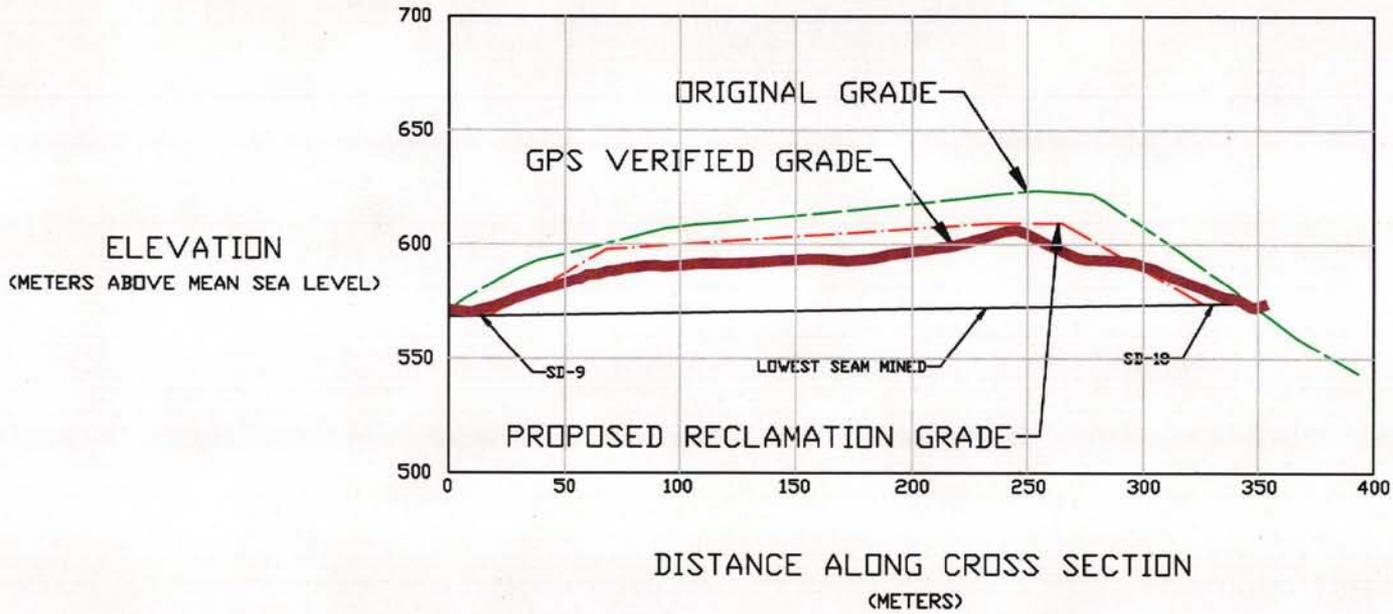
- Cost/Benefit Analysis
- Regulatory Compliance Verification – land forms
 1. Field GPS
 2. Photogrammetry
 3. Lidar
 4. Satellite?

More fill area and numbers permitted than necessary





TYPICAL MINE GRADING PLAN WITH CROSS SECTION LOCATIONS



SECTION 8-8



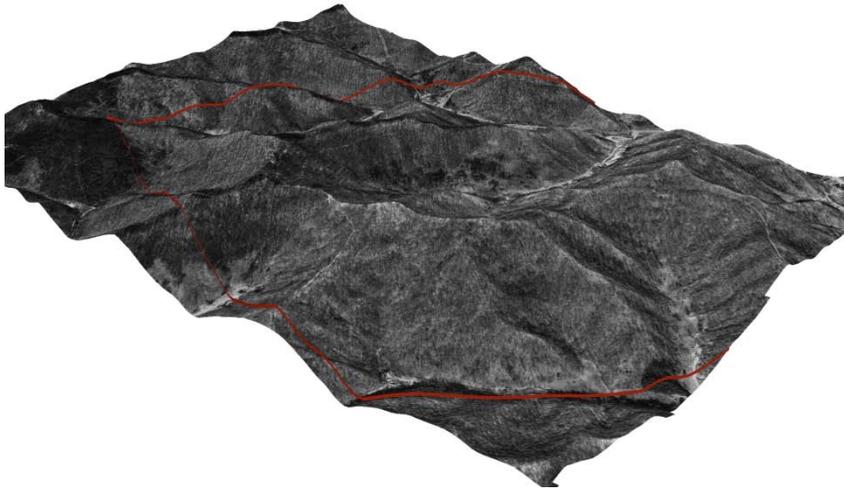


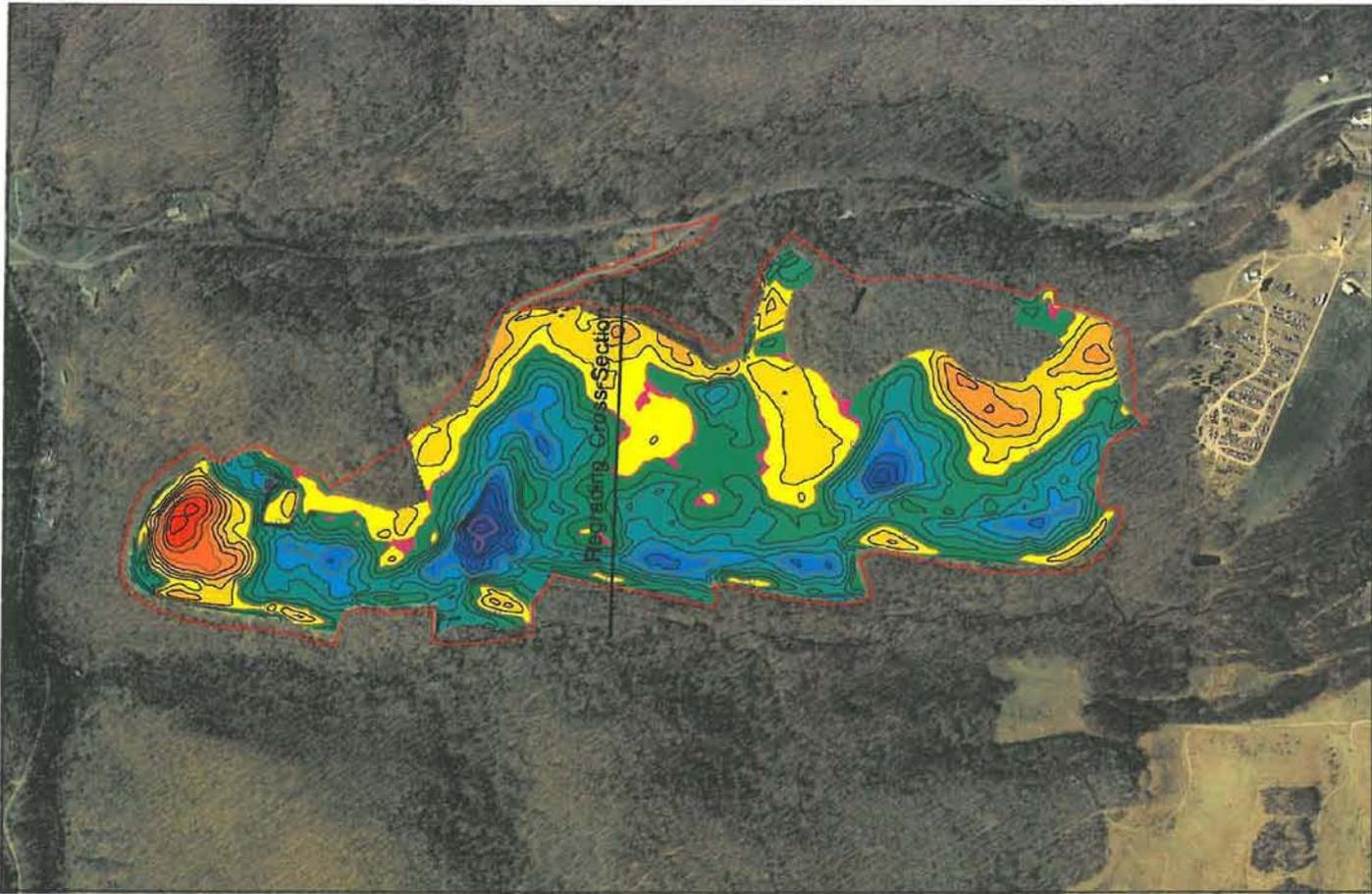
Costs

- 2 Engineers
 - 1 Reclamation Specialist
 - 1 GIS Data Administrator
 - 0 students
-
- 855 hours
 - 4088 miles
 - 7 overnight trips

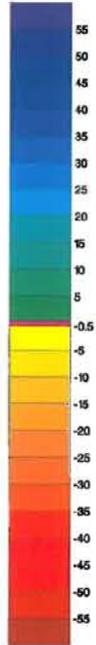
Attaining Data

- Premining Contours and Backfill Grading Plan
- Postmining Configuration

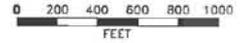




Change Key
Units: Feet



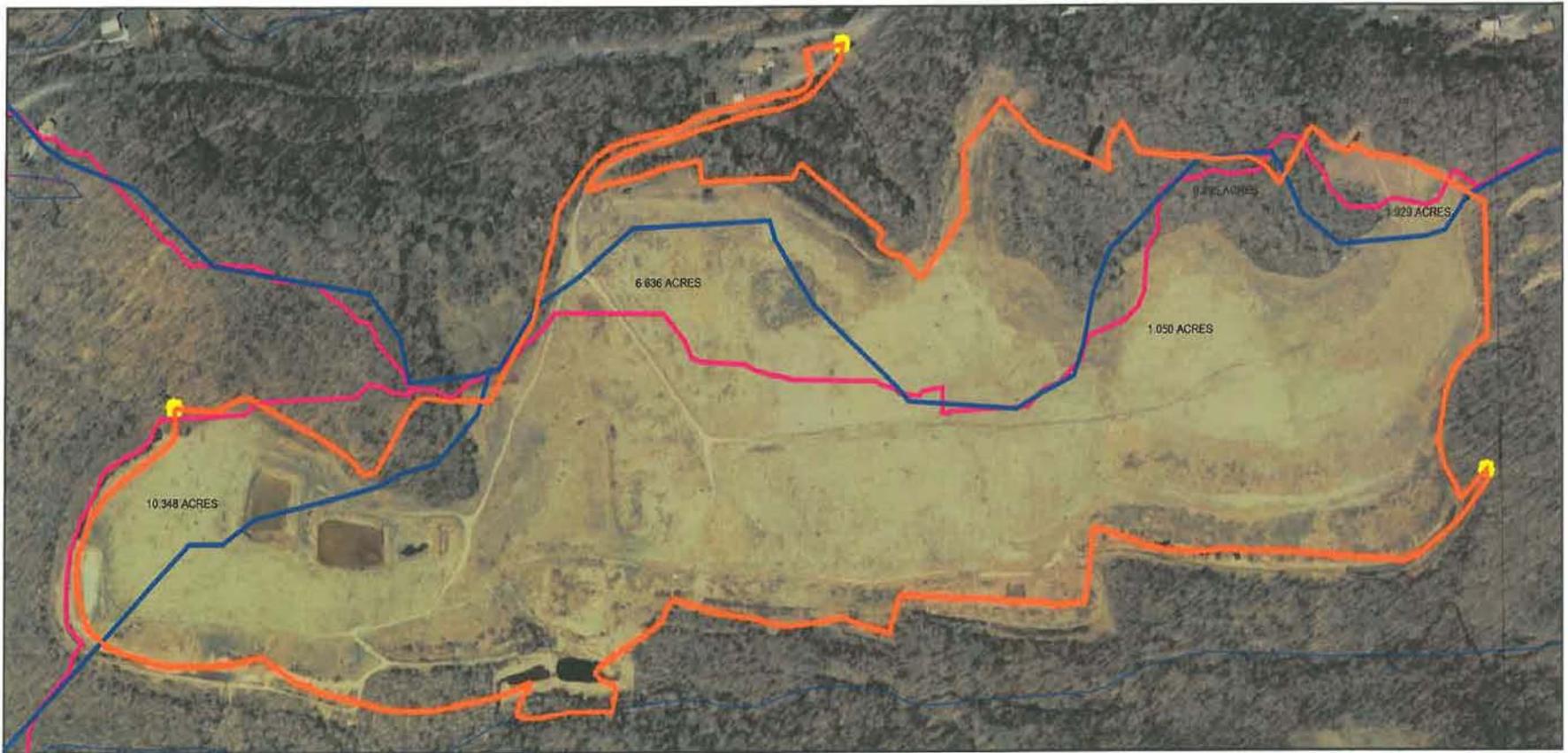
0° 00'



APPROXIMATE ORIGINAL CONTOUR
AND
POST-MINING LAND USE STUDY

S 1022-88 PATRIOT MINING Co.

DEVIATION FROM ORIGINAL GRADE



NET CHANGE OF 8.1 ACRES DIVERTED FROM SOUTHERN TO NORTHERN DRAINAGE

- PRE-MINE DRAINAGE DIVIDE
- POST-MINE DRAINAGE DIVIDE
- PERMIT BOUNDARY

APPROXIMATE ORIGINAL CONTOUR AND POST-MINING LAND USE STUDY
S 1022-88 PATRIOT MINING Co.
DRAINAGE CHANGE

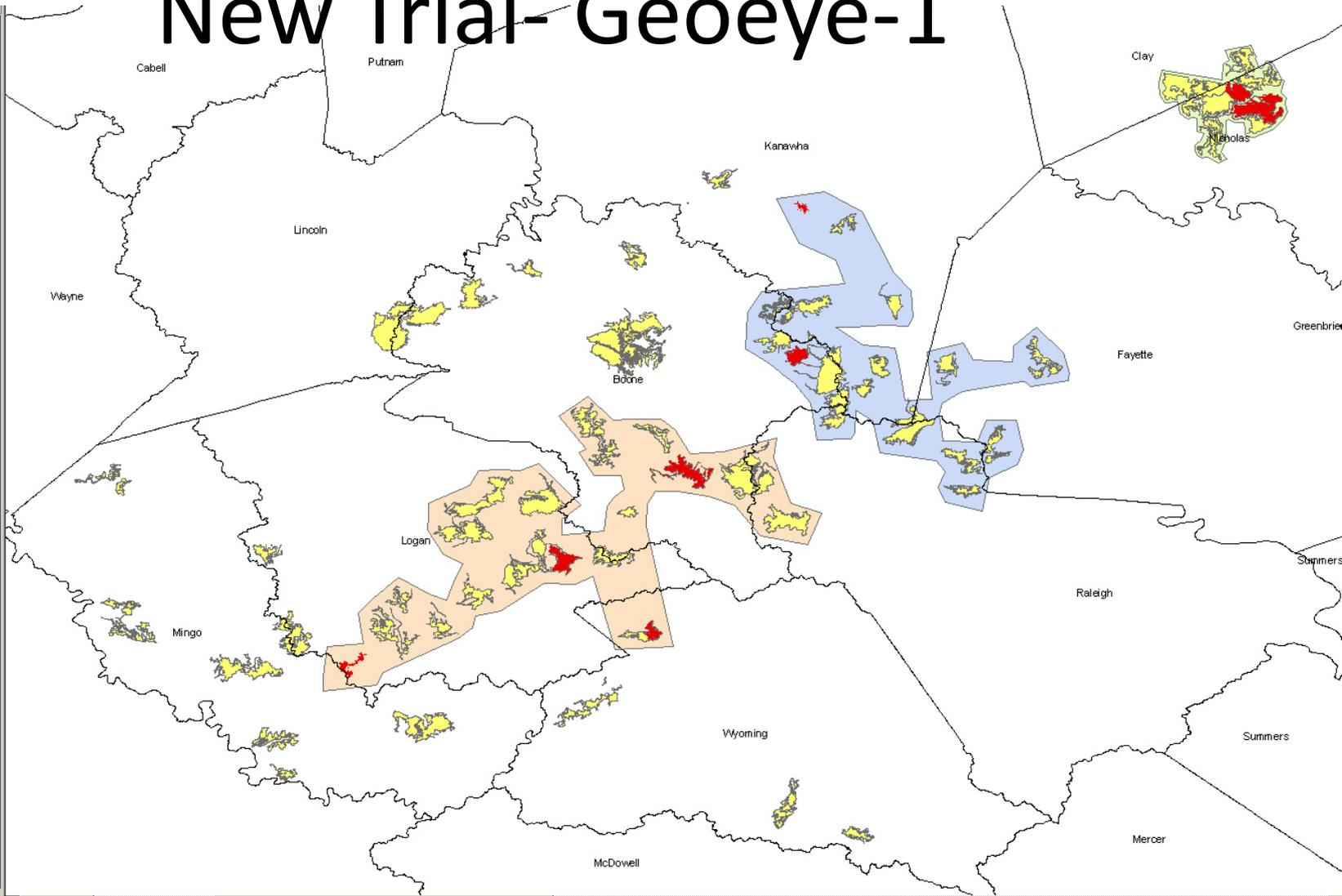
Costs

- Field GPS- 51 K
- Photogrammetry- 72 K
- Lidar- 27 K
- Satellite 3D less than 19 K ?

New Trial-Geoeye-1

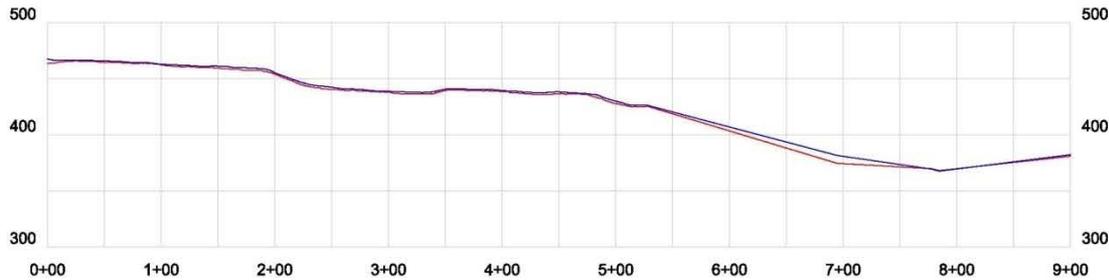
Layers

- countyStatewide_censusAndUSGS
- AOC_permit_boundaries_Projec
- InspectionProposal2
- Apogee
- Catenary
- fola

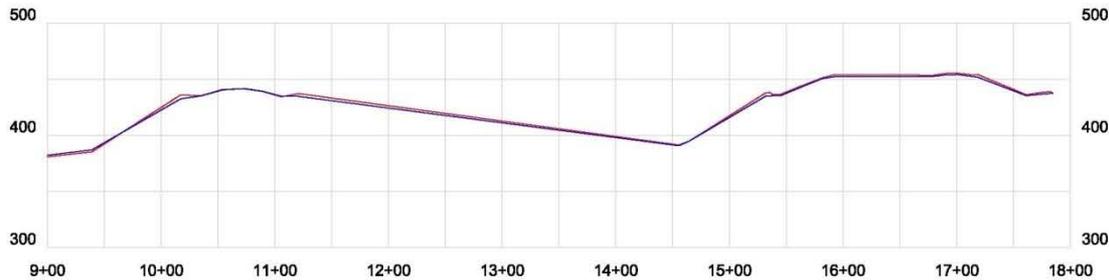


GPS to GEOEYE-1 with 8 hour Human Orthorectification + GCP

Section D

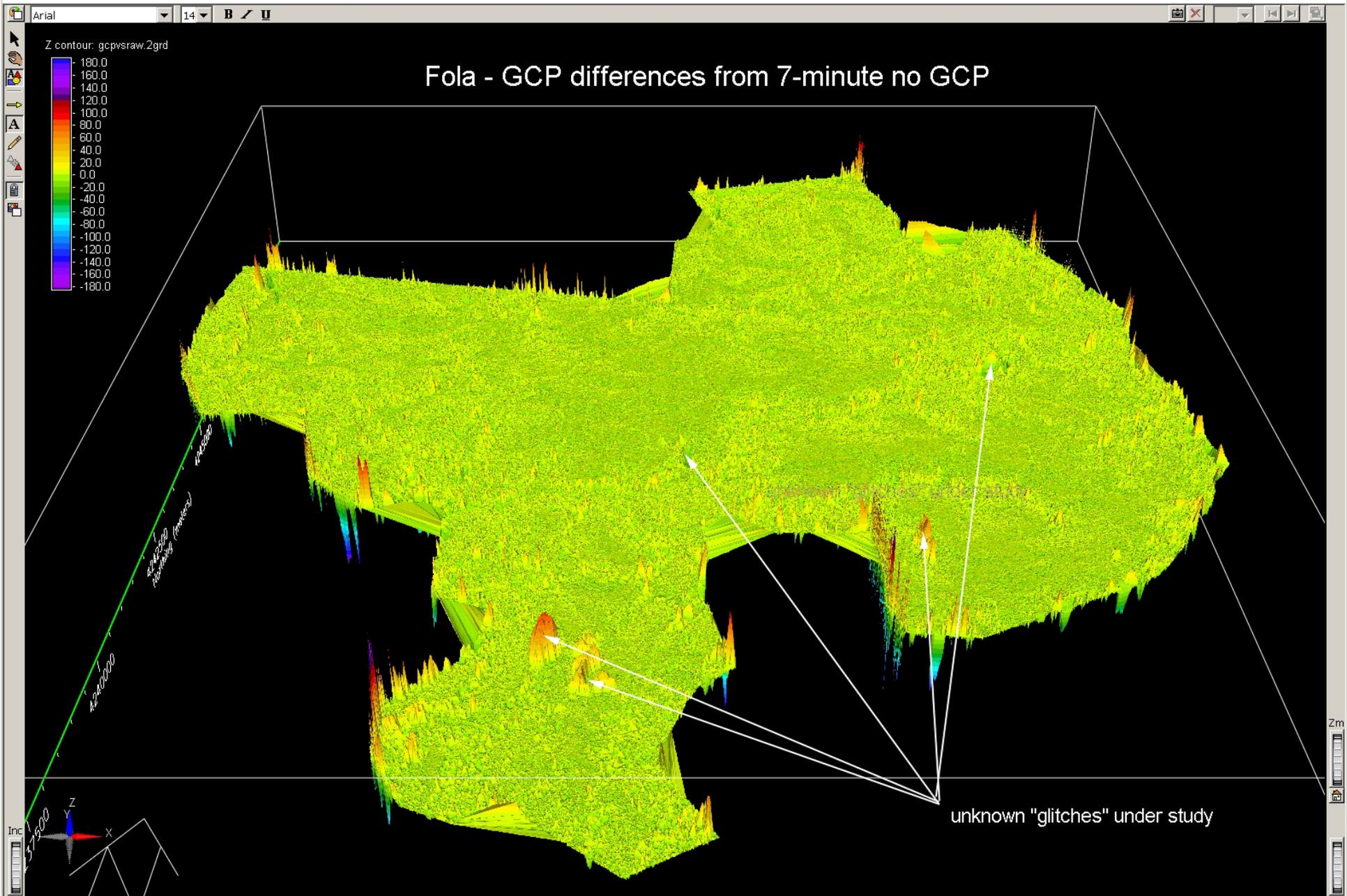


Section D (continued)



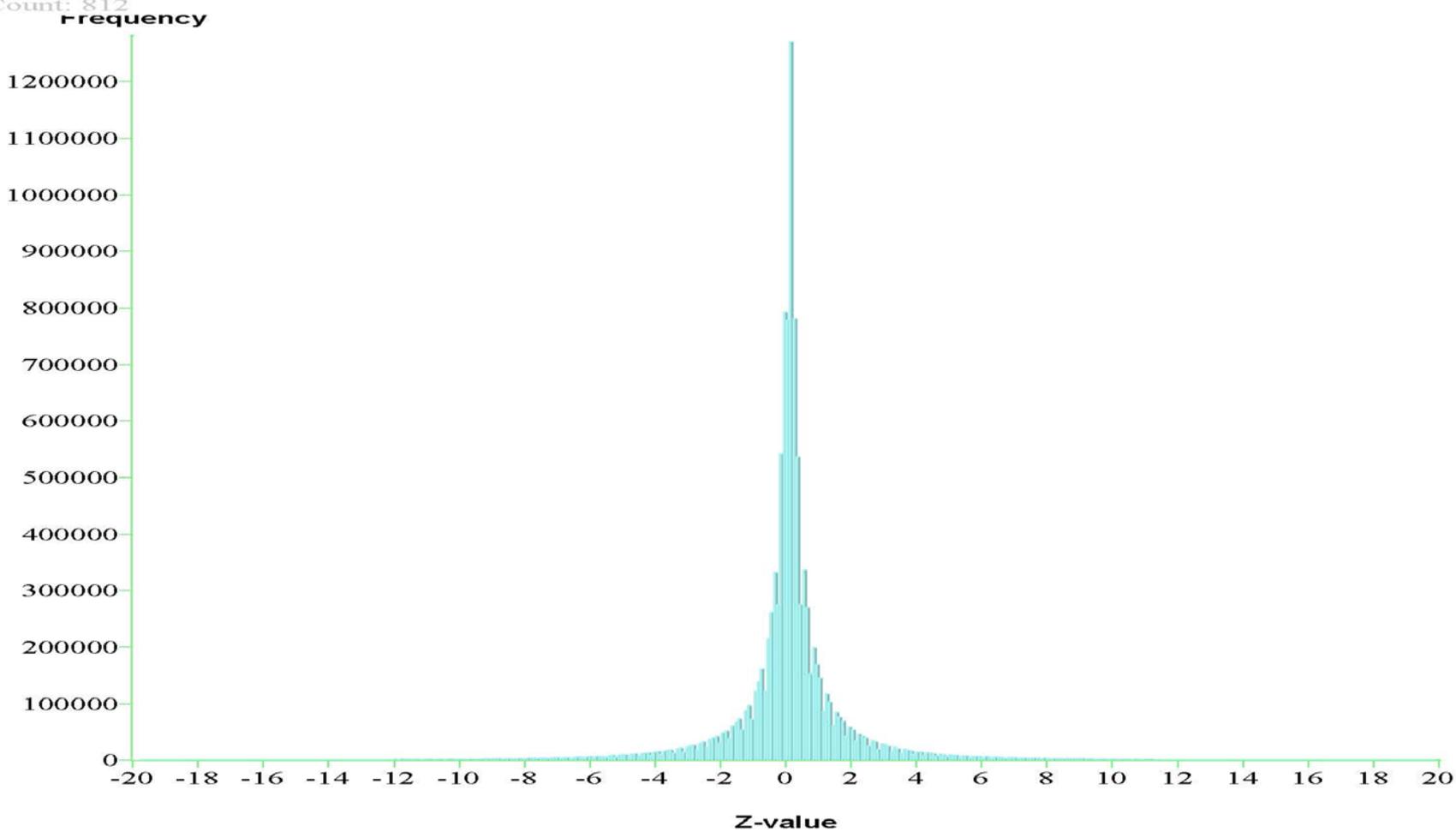
7 minute Solution -RPC NO Ground Control

- In ArcMap, I subtracted the 7-minute, no control version and the several hour GCP version , output an ESRI Grid , flipped it into a DEM from the arcworkstation command line, brought it into EarthVision for display and statistics.
- Notice the histo is very narrow and the overwhelming majority of data is within 1 SD



Lower: -17.5
Upper: -17.4
Count: 812

Histogram of Z-value



Plot Statistics

Number of Data: 11334327
Mean: -0.11741
Variance: 27.546
Maximum: 185.08
Median: 4.605e-003
Minimum: -183.083
Kurtosis: 97.293

Number of Nulls: 10035791
Standard Deviation: 5.2485
Coefficient of Variation: -44.704
Upper Quartile: 0.4464
Lower Quartile: -0.43719
Skewness: -1.8666

What does this mean to a manager?

- Quote from the same scientist:
“good enough for gummit work”

Or \$ 52 K vs. less than \$19 K

And a few cross lines vs. 3 D

Glitches- Timing

- Budgeting
- Capture timing
- Technical difficulties
- Cloud cover in the East