

UC

MAPPING ARCHEOLOGICAL SITE MEMORY

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1- Brief Introduction

Research driving force

- in 1977 war b/n Ethiopia & Somalia
- POW detained at Haaway for 10 yrs
- >4000 POW detained until 1988
- Thousands deceased and buried there
- 3527 repatriated to Ethiopia in 1988
- There is high need to bring the dead remains back home but no geo-spatial information about what was where except in people's mind
- Number of survivors is getting low (natural death)
- Many are losing memory due to trauma and age

2- Traditional Topographic Mapping Procedures

Steps:-

- 1- Aerial (photography/ imagery) survey
- 2- Image control points geodetic survey
- 3- Photogrammetric works (ATBA, DTM)
- 4- Field Data Collection(in the AOI)
- 5- 3-D Feature Extraction & Contouring
- 6- Orthophoto Generation
- 7- Map Compilation & Dissemination

3- Remote Mapping Methodology and Inputs

Guiding Principle

- Participatory (Expert + Survivors Ex-POW)

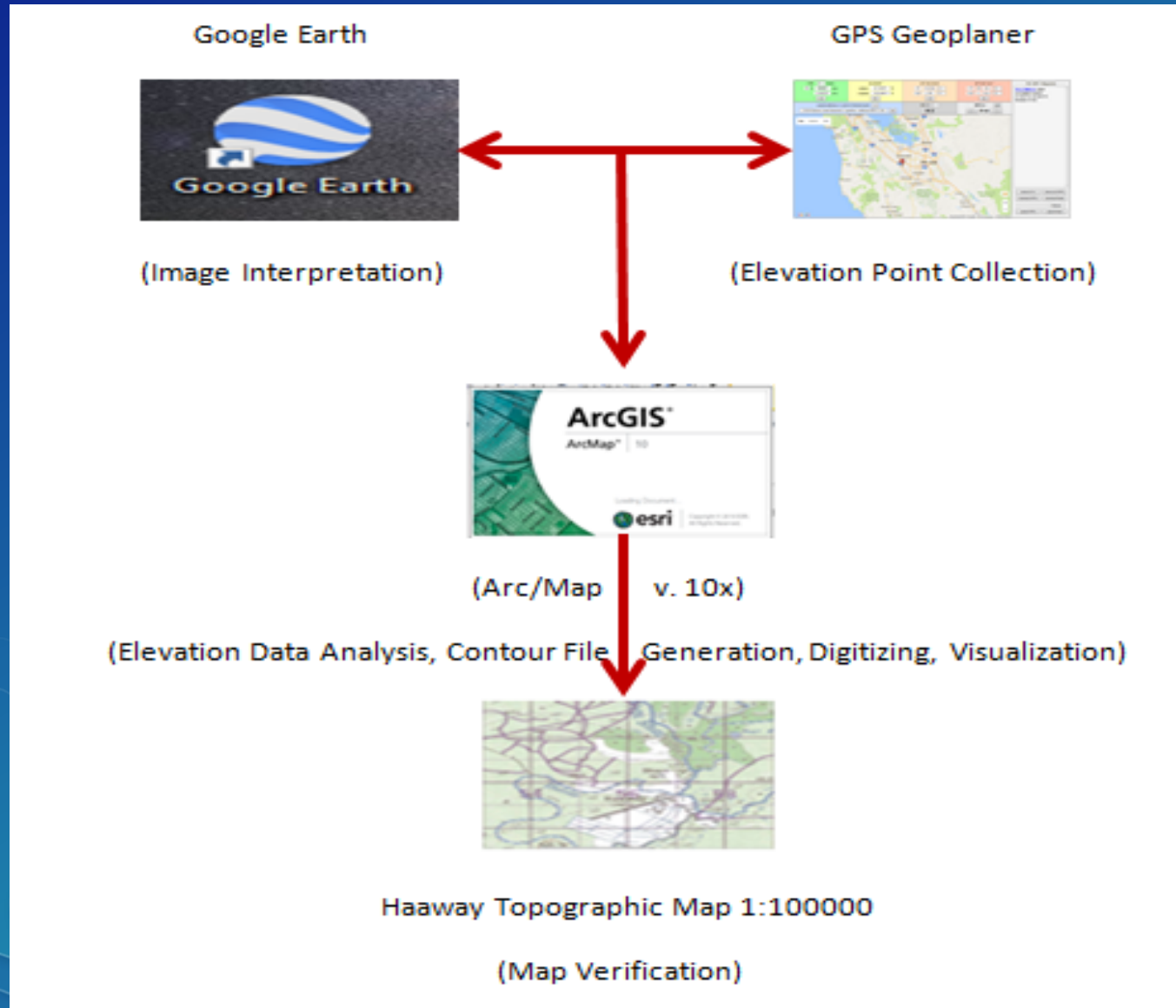
Methodologies

- Independent Mental Sketch Maps
- Place Names (Towns, Water Bodies, Land Marks, etc...)
- Mental Sketch Maps Compilation & Discussion
- Using Expert Knowledge/Skill

Inputs Include

- Google Earth(Image Interpretation/site Identification)
- GPS Geoplaner Online(Elevation Point Collection)
- Arc/Map(Analysis, Mapping, Cartographic Visualization)

3.1. Remote Mapping Workflow



4- Data Analyses and Topographic Mapping

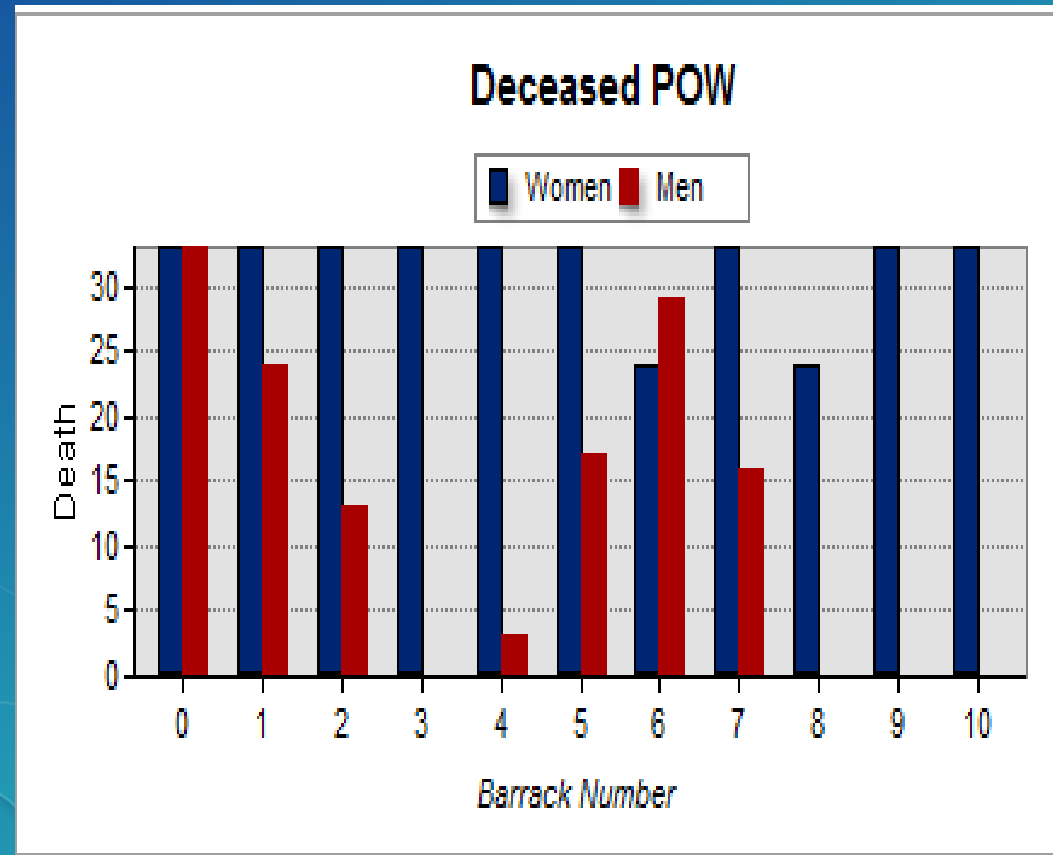
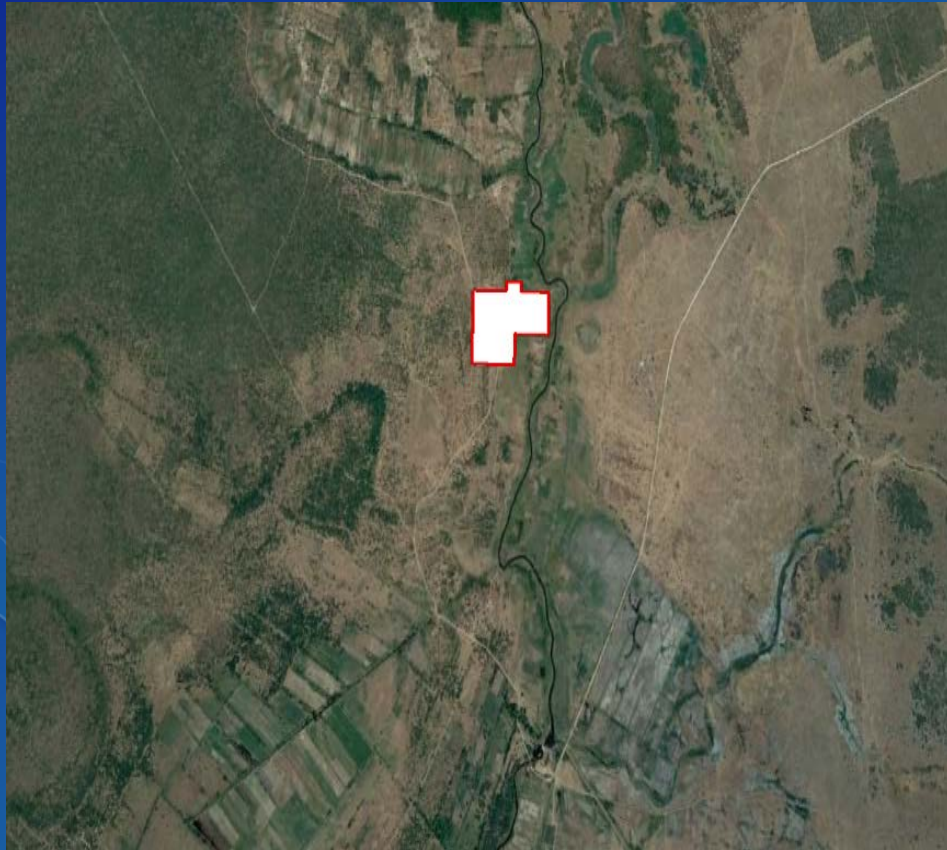
4.1. Rigorous image identification and Elevation Point Collection was conducted by the help of Google Earth image and GeoPlaner GPS :-

Google Earth + GPS GeoPlaner online

<http://www.geoplaner.com/#Accuracy>

4- Data Analyses and Topographic Mapping Cont'd...

4.2. Area of interest (AOI):



<https://www.google.com/maps/@1.1802771,43.7158945,477m/data=!3m1!1e3>

4- Data Analyses and Topographic Mapping Cont'd...

4.3. Elevation points collected (X,Y,Z):

<http://www.geoplaner.com/>

..\Haaway_Elevation_Points.xlsx

4.4. Accuracy of coordinates and heights

Source: Map Data 2017 Google Imagery/ Astrium Digital Globe

Horizontal Accuracy: A precision of 1m

Elevation Accuracy: 0.1m or 10cm

The Datum or Reference Ellipsoid : WGS 84 (World Geodetic System 1984)

Map Projection: Universal Transverse Mercator(UTM)

Hemisphere: N

Zone: 38

4- Data Analyses and Topographic Mapping Cont'd...

4.5. Kriging



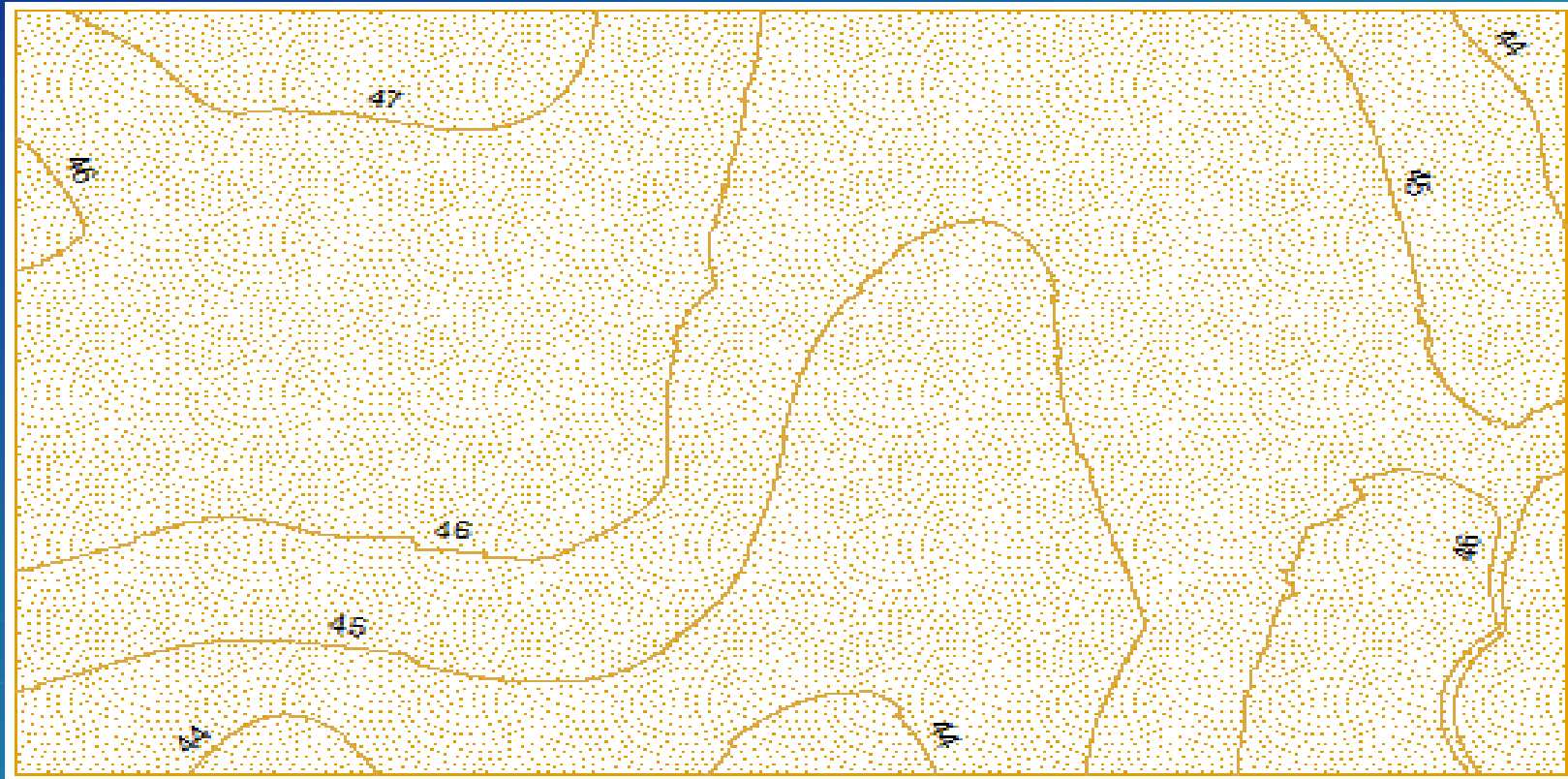
4- Data Analyses and Topographic Mapping Cont'd...

4.6. Hypsograph



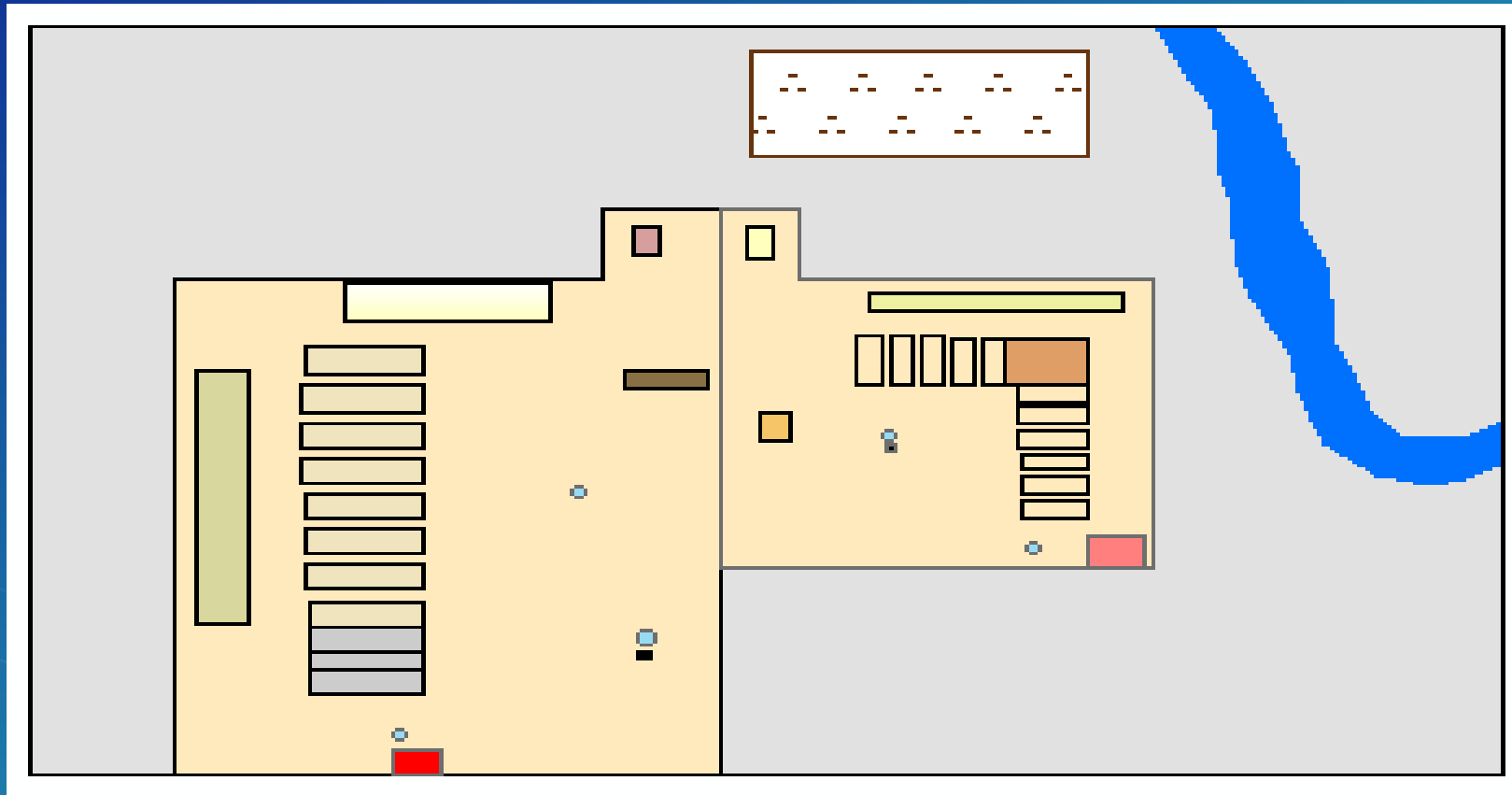
4- Data Analyses and Topographic Mapping Cont'd...

4.7. Final Contour with label



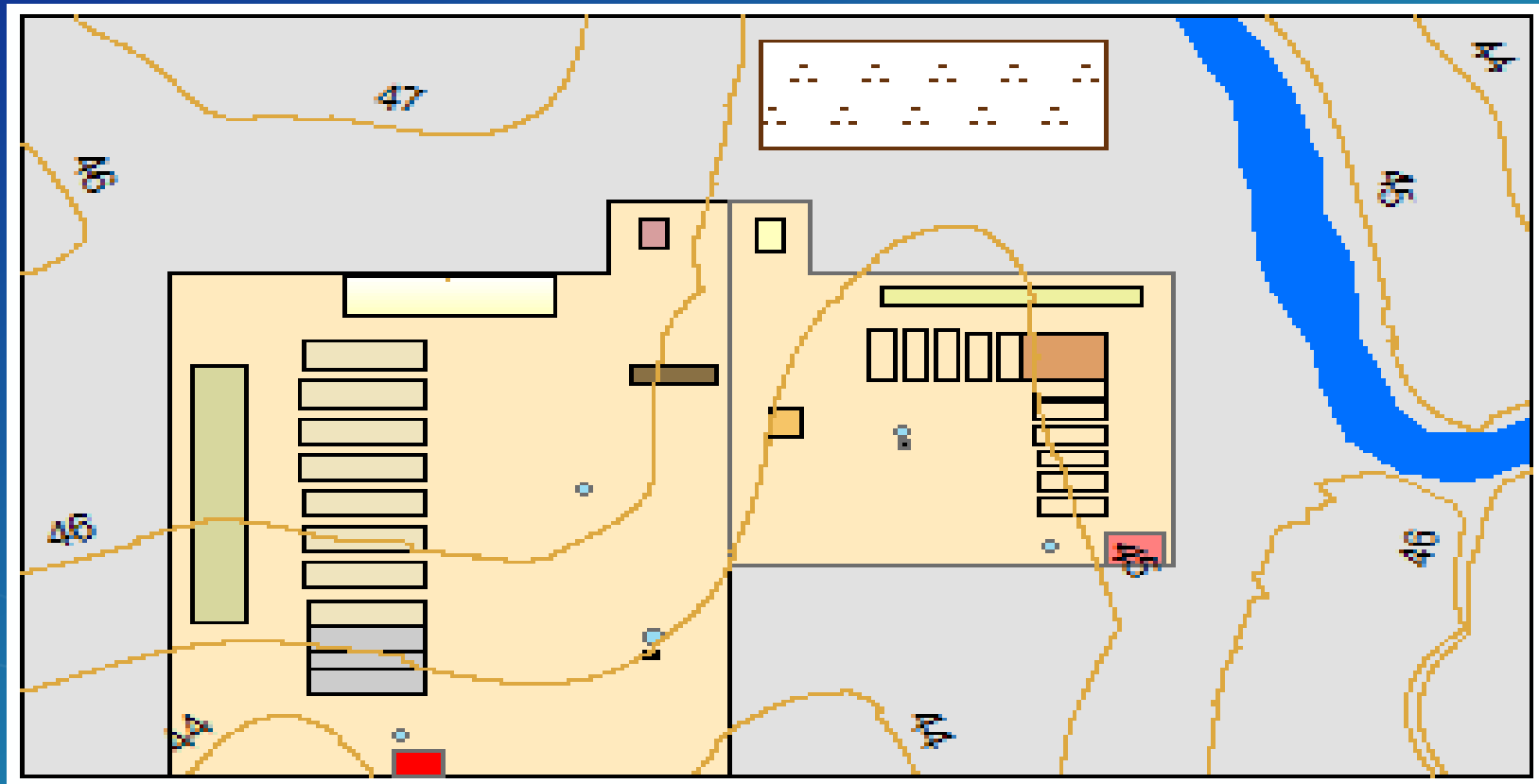
5- Products and Method of Verification

5.1. Transformed Map



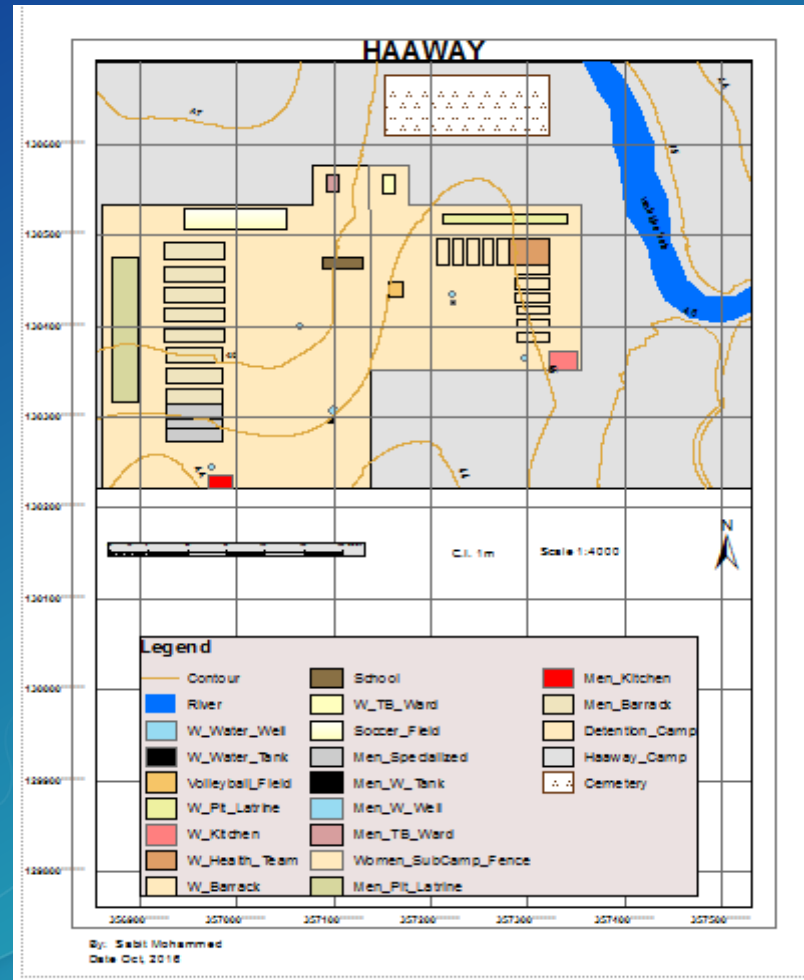
5- Products and Method of Verification Cont'd...

5.2. Map with contour overlay



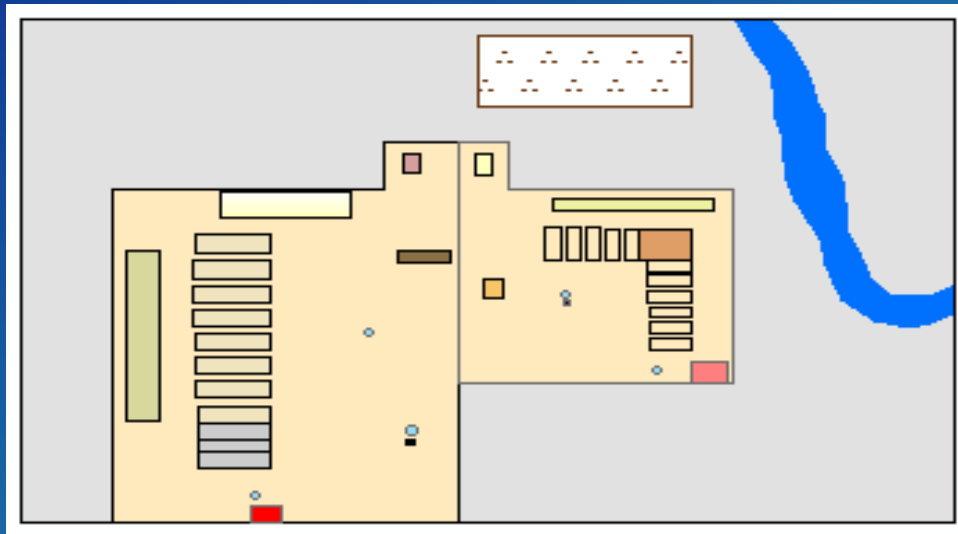
5- Products and Method of Verification Cont'd...

5.3. Final Archeological Map (1979-1988)



6- Temporal Analyses

POW detention camp site



before 1990



in 2003

7- Location verification

A) Map verification

7.1. Visual analysis (Satellite image)

7.2. Analysis on Topographic map NA-38-100

(Source: University of Texas Libraries)

<http://www.lib.utexas.edu/maps/topo/somalia/>

7.3. Map verification with respect to sheet NA-38-100

B) A.P. Dempster's (1968) Theory of Evidential Belief Function was used.

- Belief
- Disbelief
- Uncertainty

8- Conclusion and Recommendation

7.1. Conclusion

Arc Map enabled the historical incidence participatory mental map project to be successful both in terms of geo location, non spatial information and for future purpose.

7.2. Recommendation

The finding reveals that it is recommended to follow the procedures for similar archeological mental mapping projects to preserve history and to conduct in depth research of similar types by national and international research centers as a contribution for World Peace!



MAY PEACE PREVAIL ON OUR WORLD!

THANK YOU

Q & A