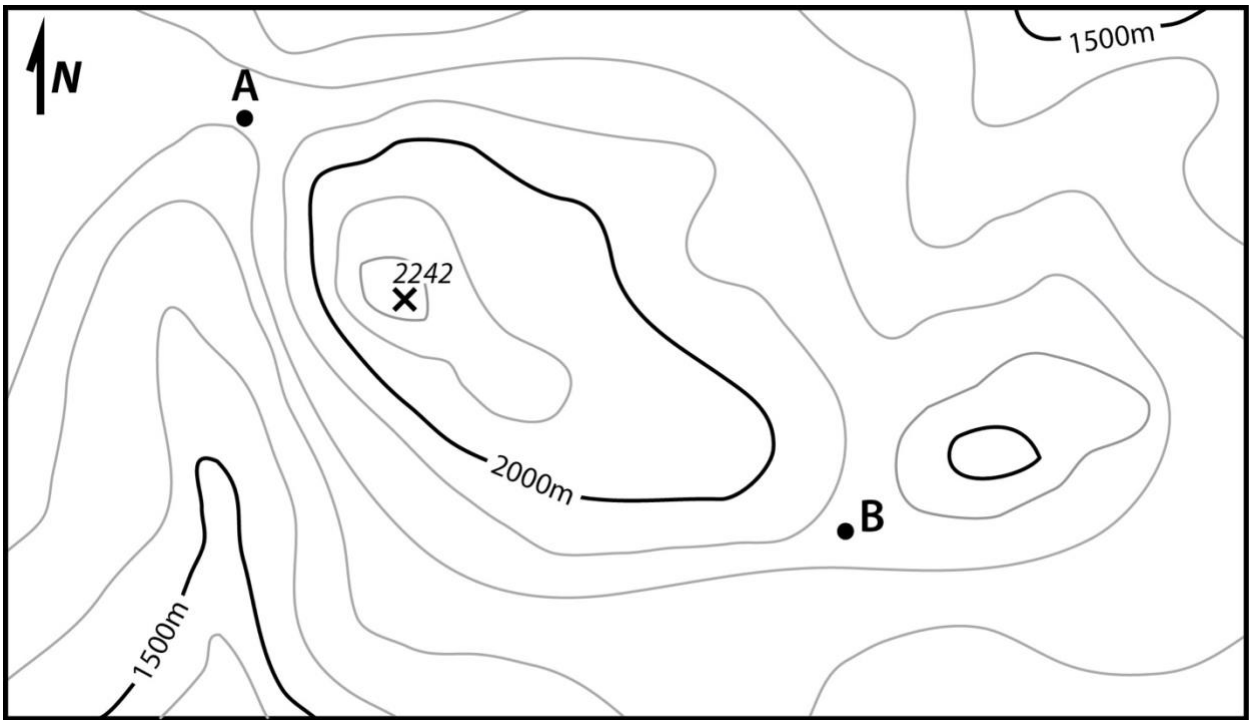
Geology 50L: Lab 6 -Topographic Maps and Air Photos

LAB 6: TOPOGRAPHIC MAPS AND AIR PHOTOS [50 Points] Name: _____

Please read Laboratory 9, pages 227-258 in your lab manual prior to answering the following questions.

For questions 1-6, refer to the map below:



1) What is the contour interval on this map? What is the index contour interval? [2]

2) As best you can tell, what is the elevation of point A? [1]

3) If you are standing at point A and looking southeast, can you see someone standing at point B? [1]

4) What is the easiest route of travel between point A and point B? Trace the route on the map using a solid line. [2]

5) There is a stream flowing in the valley south of point A. Trace the most likely path of that stream on the map, using a dashed line. [2] Which direction does the stream flow? [2]

6) Imagine you are a novice skier, standing atop peak 2242 at the center left of the map. Which side of the mountain should you probably ski first, the southwest side or the northeast side? Why? [2]

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Refer to the Williams Hill, CA Special Map to complete the following exercises.

7) Which organization collected, compiled and revised data to produce the map? When? How? [2]

8) What is the contour interval on this map? What is the index contour interval? [1]

9) a) What is the fractional scale of the map? [1]

b) Convert the map scale to miles and meters on Earth (1" = x miles, 1cm = x meters) Show your work! [2]

10) How long is the NE-SW trending runway at the airfield located in section 11 of Township 23S, Range 8E? [2] Show your work!

11) a) If you were to hike north along Wildcat Canyon, beginning at the windmill (northeast corner of section 2, Township 23S, Range 8E), would you be traveling uphill or downhill? [1]

b) A small creek goes up a side valley just to the east of the windmill. Is this creek steeper or more gradual than the creek in Wildcat Canyon? [1]

12) a) On a separate sheet, draw a topographic profile (vertical cross-section) from the Williams Hill Lookout Station (section 4, Township 23S, Range 9E) to the red "32" of section 32, (Township 22S, Range 9E) [35°57'00'N, 121°00'00"W to 35°58'15'N,121°01'15"W]. Be sure to include the following information on your profile: Title, elevations (on side), directions on each side (i.e. north, south, east, west), streams and major landmarks along the profile. [10]

b) Calculate the vertical exaggeration of your profile (see pg. 248) [4] Show work!

c) Based on your topographic profile, define quantitatively and geographically the highest and lowest elevations along the profile line. [2]

Highest elevation and location:

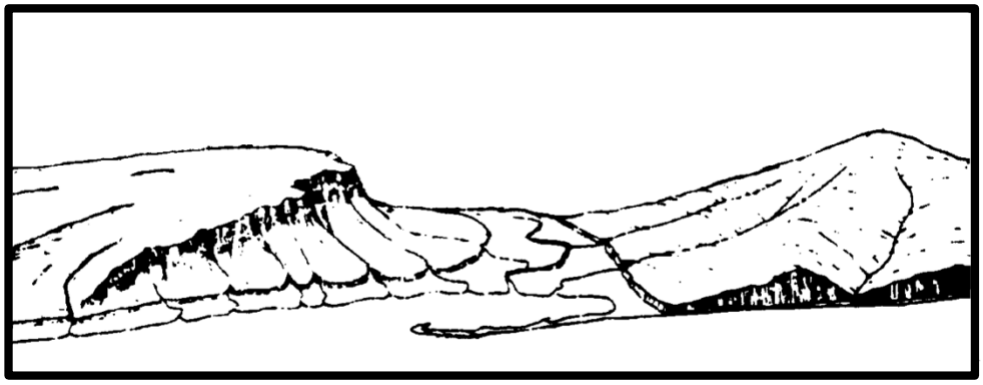
Lowest elevation and location:

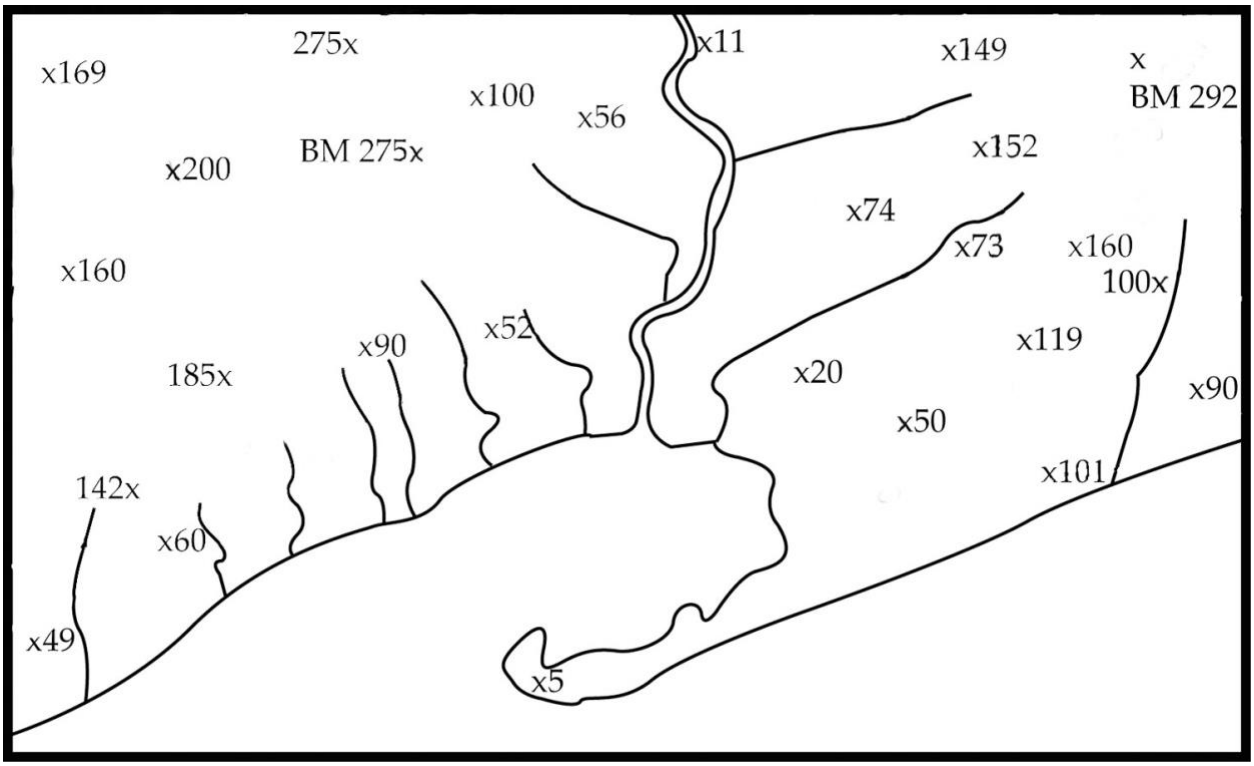
13) In 1954 the Army Map Service printed a 1947 composite aerial photograph of the Williams Hill topographic map, documenting essentially the same area at essentially the same scale. This air photo is printed on the back of the map. The map and photo show many of the same features, yet each emphasize different data.

a) What time of day (morning or afternoon) was the photograph taken? (Hint: use shadows!) [2]

b) What information do you obtain by studying the air photo that is not apparent on the topographic map? Be thorough and specific! [2]

14) Using the figures on page 4 of this lab handout, draw contours on the map (lower figure) that show the landforms seen in the the oblique view of the same landscape (upper figure). The lines currently drawn on the lower figure represent streams and the coastline of the landscape. All elevations are in feet. Use a 50 foot contour interval, and label all contours. [8]




275x
x11
x149
x
BM 292
x169
x100
x56
BM 275x
x200
x152
x74
x73
x160
x160
100x
x52
x90
x119
185x
x20
x90
x50
x101
142x
x60
x49
x5