

Activity #3 - Bathymetric Mapping

Concepts # 1, 2

- #1 The floor of the ocean is composed of hills, plains, ridges, trenches, and seamounts.
- #2 Oceanographers have developed methods for mapping the ocean floor, illustrating what cannot be seen.

Objective:

Students will draw contour lines based on NOAA soundings on a nautical chart. They will color the contours and glue label tags for topographic features.

Materials:

- nautical chart 1 with soundings in fathoms (1 fm = 6 ft) for student activity
- nautical chart 2 with contour lines (for reference)
- nautical chart 3 with shaded contours (for reference)
- nautical chart 4 with topographic labels (for reference)
- nautical chart 5 - actual NOAA chart of same region
- label tags for topographic features
- scissors
- colored pencils, water colors or crayon
- pencil
- bonus activity map (see last evaluation item)

Procedures:

1. On nautical chart 1 use a PENCIL to draw contour lines for the following depths (in fathoms): 50, 250, 500, 750, 1000, 1250, 1500, 1750 and 2000. Draw the 50 fathom line by keeping all the soundings less than 50 on one side of your line and all the soundings larger than 50 on the other side. Do the same thing at 250 fathoms and every 250 fathoms as you go deeper. Remember that contour lines do not cross each other. When done your teacher may want you to check your contours with chart 2.
2. After you have finished drawing your contour lines, color in each contour by using light blue for the first depth contour (around the land and islands), then darker and darker blue colors, until you end up using black for the deepest contour (bottom left corner). When done your teacher may want you to check your contours with chart 3.
3. Finally, cut out the label tags for the topographic features you have drawn and colored in. Glue them in place to identify the basins, banks and submarine canyons on your chart. When done your teacher may want you to check your contours with chart 4.

Evaluation:

- How might the geologic formations shown on your map have been formed ? (along fault lines; some crustal blocks sink to form basins, other are uplifted to form mountains, islands or banks.)
- Where is the continental shelf? slope? abyssal plains? (The continental shelf here is not flat, it is interrupted by islands, basins and banks. The shelf runs to the Patton Escarpement, which is the continental slope. The abyssal plains are in the lower left corner).
- Suppose you are the captain of a fishing boat. You hear a report of good fishing near San Miguel Island and sail to the area. Give at least two reasons for studying a nautical chart with bathymetric information before fishing? (To keep from running aground and to keep from getting your fishing gear caught on the bottom.)
- How is the map you drew similar to the nautical chart drawn by professionals? (soundings are the same; some contour lines are barely visible beneath the other data)
- How can you account for the differences? (nautical charts show other important navigational information such as the shipping lanes for large commercial vessels, the LORAN grid for older navigational units, the details of every lighthouse, buoy and other markers, areas for military testing, dumping and other information)
- Students complete map 3 for homework. If the map is done correctly a dolphin fish will appear.

Activity #3 - Bathymetric Mapping

Label Tags for Topographic Features

Cut out each tag as close to the lettering as you can.
Try NOT to leave too much white space around the edges of the label.

Santa Barbara Basin

Santa
Cruz
Basin

Santa Rosa - Cortes Ridge

Patton Escarpement

Tanner
Basin

Tanner
Bank

Santa Monica Basin

San
Pedro
Basin

Lasuen
Bank

Osborn
Bank

Santa Catalina Basin

San Nicolas Basin

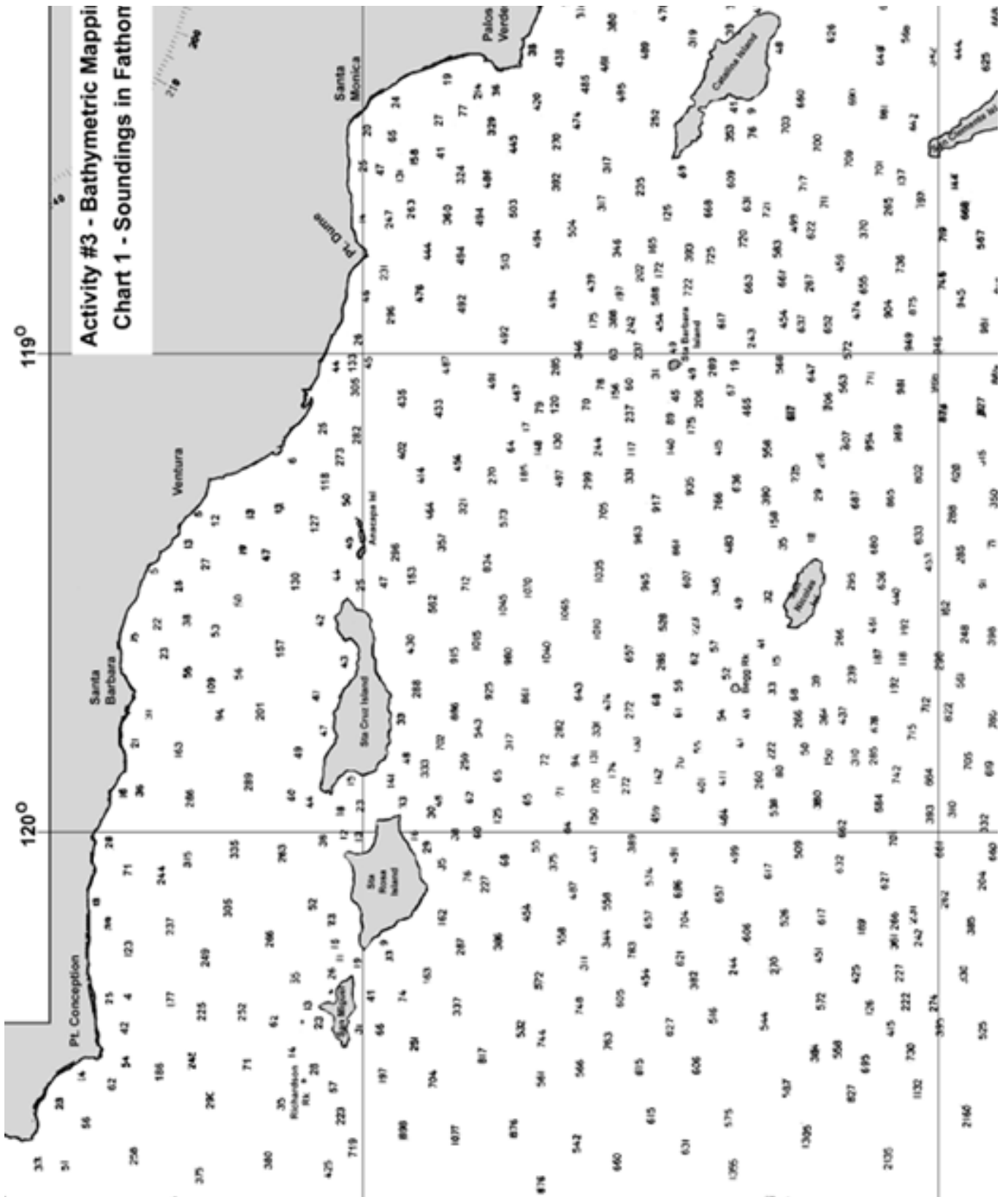
San
Fernando
Basin

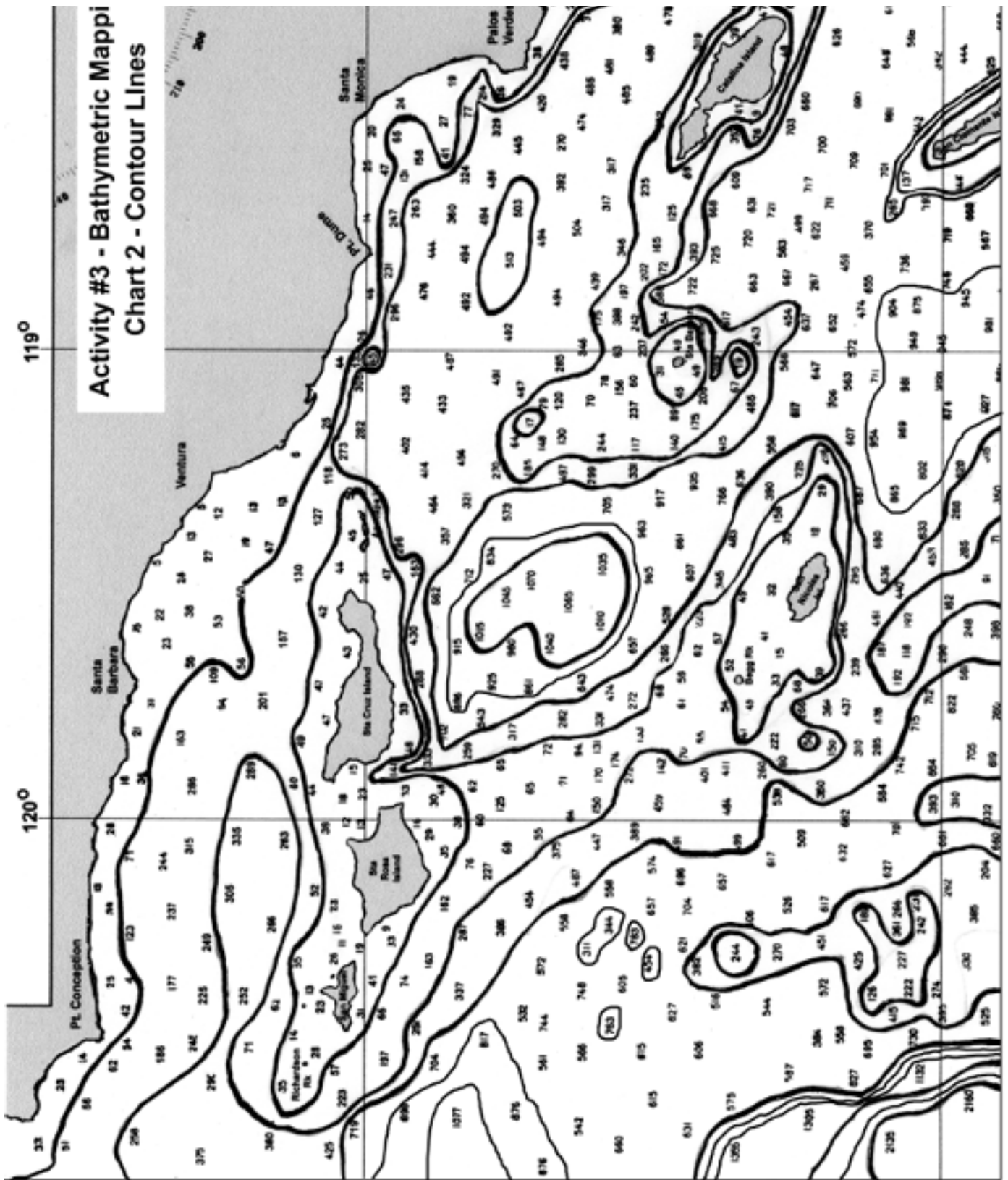
Los
Angeles
Basin

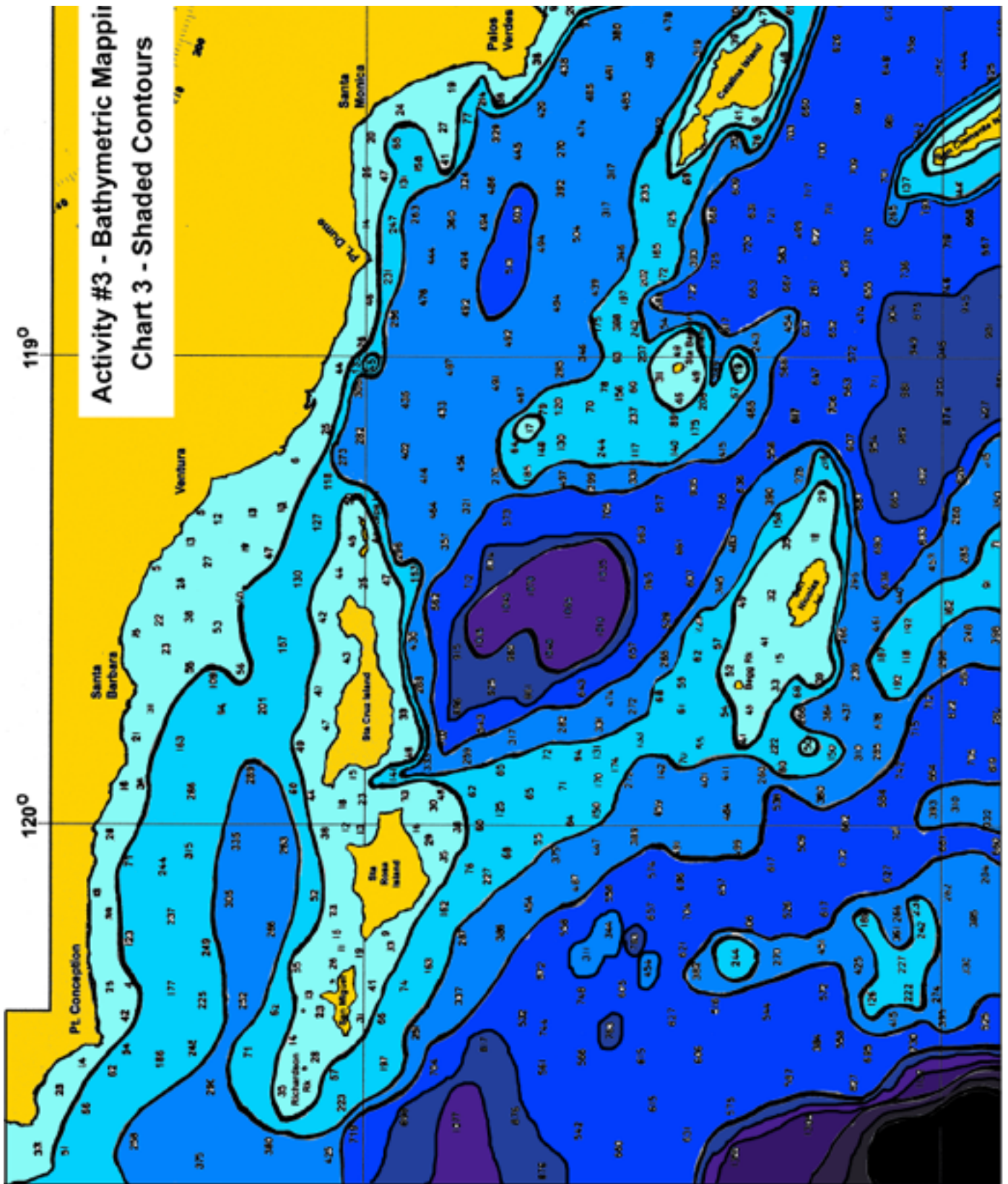
Sant Cruz Canyon

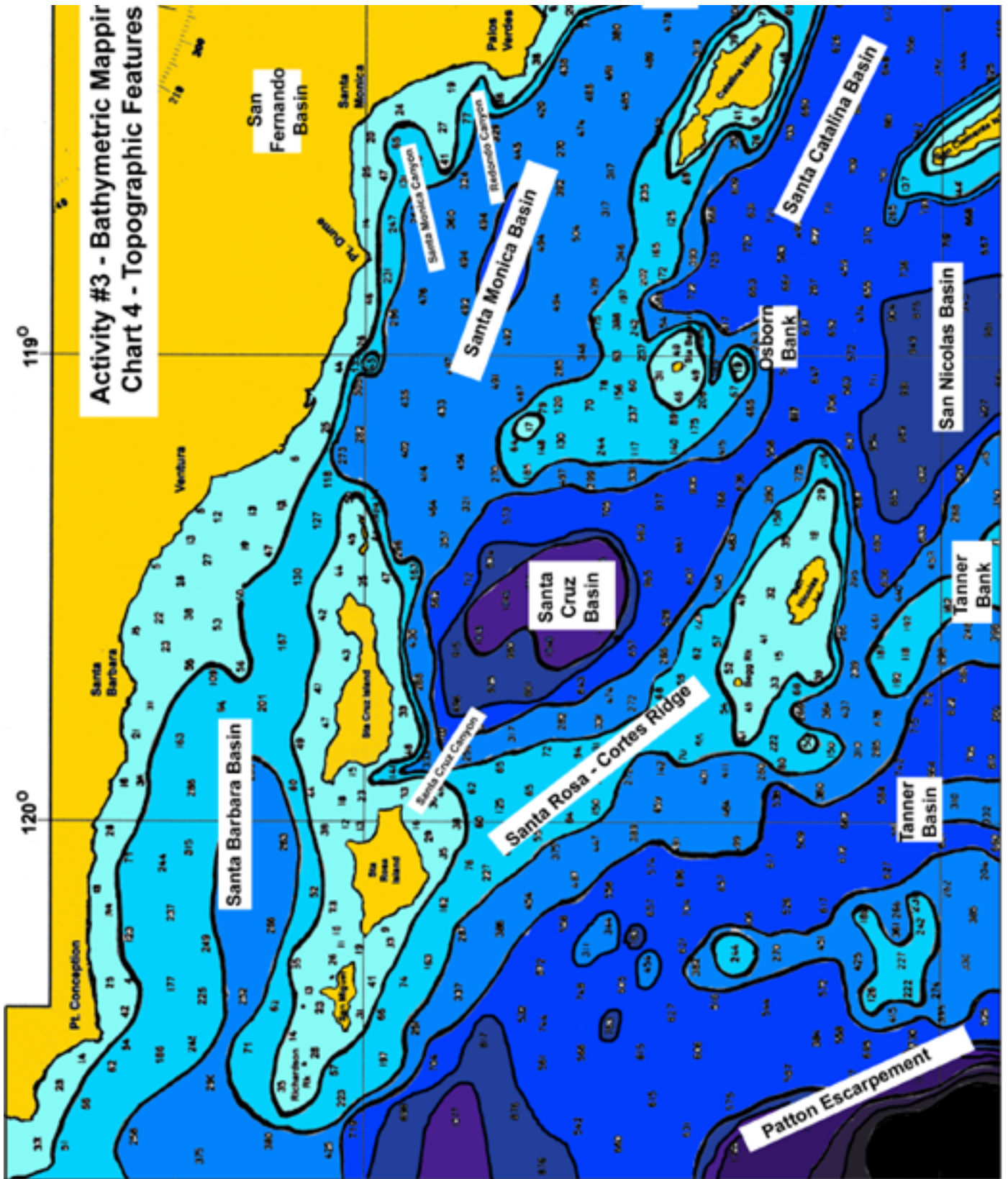
Santa Monica Canyon

Redondo Canyon

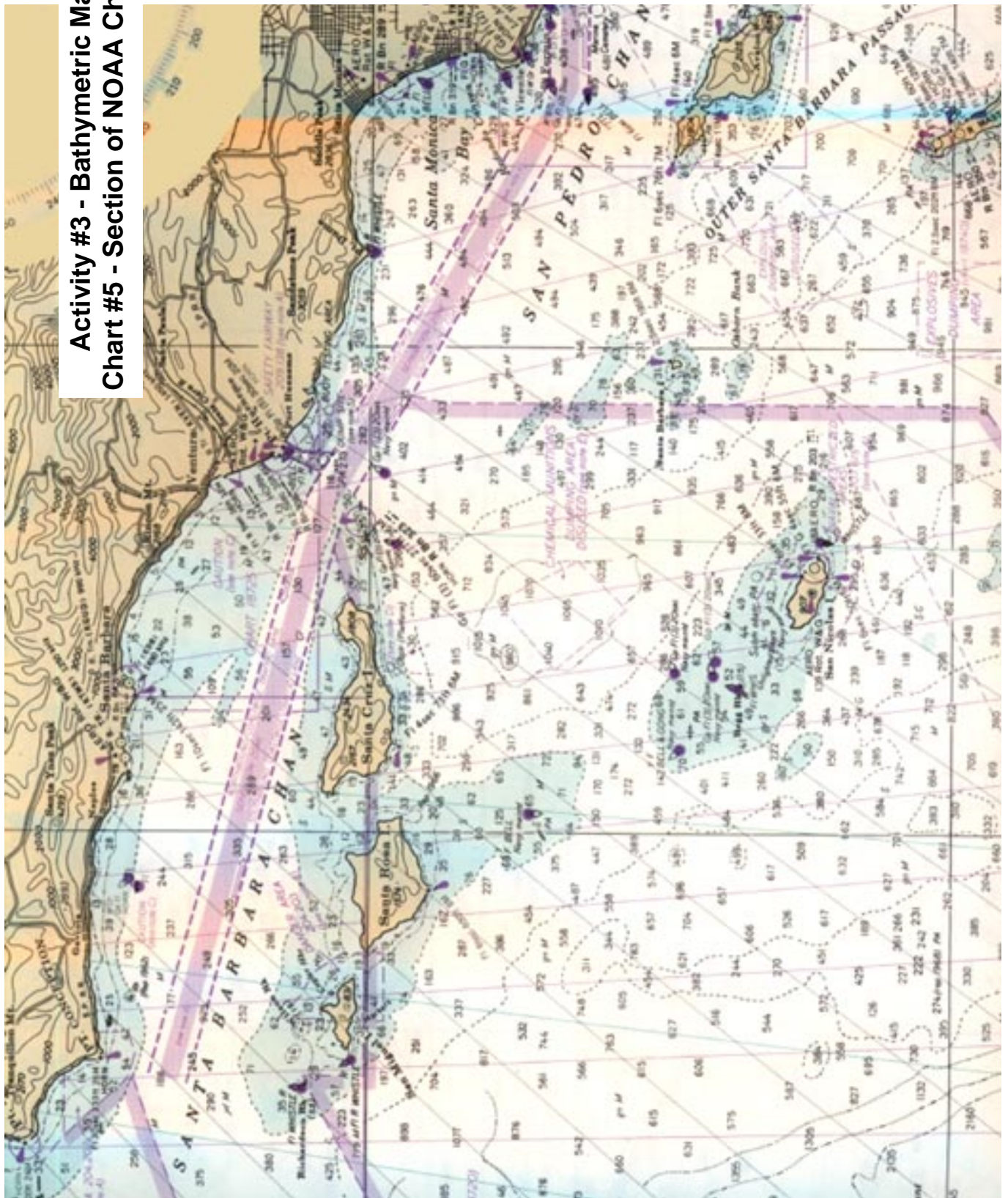








Activity #3 - Bathymetric Mapping
Chart #5 - Section of NOAA Chart 18022



Activity #3 - Bathymetric Mapping

Bonus Activity Map

