Student Name: Grade:

SCRIPPS BEACH GEOLOGY FIELD TRIP WORKSHEET

A. Field stop: Scripps Coastal Reserve - North of Scripps Pier

1. Observations of the Bluff Rocks and Terrace Deposits:

a) List the geologic names, ages, and rock types for the major rock formations making up the stratigraphic package exposed in the bluff.

	Formation Name	**Age (m.y)**	**Rock Type(s)**	**Depositional Setting**
1)				
2)				

b) What is the structural thickness and orientation of these layered sedimentary units?

1) Thickness: _____ Orientation: _____

2) Thickness: _____ Orientation: _____

3) Thickness: _____ Orientation: _____

c) Compare the present day depositional settings of this area with that of the bluff rock units.

d) What was the regional tectonic setting of San Diego when the Eocene rock units deposited.

e) Describe the texture and composition of the rock that makes up the dark-colored dike

Texture: _____ Composition: _____

f) Name the specific rock type that makes up the dike: _____

g) What is the age of this igneous intrusion? Numeric: _____M.Y. Epoch: _____

h) What is the structural dimensions and orientation of this igneous intrusion?

Dimensions: _____ Orientation: _____

i) What was the regional tectonic setting in SD when this dike intruded the sedimentary units?

j) Describe the change in San Diego's tectonic setting between the Eocene and Miocene.

k) Has the tectonic setting of San Diego changed since the Miocene? How so?

2. Observations of Present-day Weathering and Erosion of the Bluffs:

a) Is there evidence of active weathering and erosion occurring on the bluff? **Yes? No?**

b) List the sorts of weathering processes that are breaking down the bluff rocks.

1) _____ 2) _____ 3) _____

c) List the sorts of erosion that are recently removing and transporting the bluff material.

1) _____ 2) _____ 3) _____

d) Observe any mass wasting features? Landslides? Slumps? Flows? Briefly Describe

e) Observe any bluff material infringing and/or mingling with the beach deposits. **Yes? No?**

f) Based on your observations. do you think that the bluffs are a significant source of sand for the beach? **Yes? No?**

3. Observations of Tectonic Activity and Seismic Risks at La Jolla Shores:

a) Name the major active fault that runs under Mt. Soledad, La Jolla Shores, and offshore.

_____ Note: It runs from Southeast to Northwest with a left “kink”.

b) What kind of fault is it? _____

c) What sort of earthquake magnitude and frequency is this fault capable of?

Maximum magnitude _____ Frequency of “Big Ones” _____

d) Name the Southern California transform fault system that this fault zone is part of.

e) Name and describe at least one fault-related structure that you can observe.

f) Has there been any recent land movement that may be related to the tectonic activity of this area? If so, where and what sort of earth movement?

g) Is the left-jogging ”kink” in the RCF the likely cause of the uplift of Mount Soledad? Explain.

4. Discussion of Local Tsunami Hazard

a) What factors make this stretch of coastline most vulnerable to tsunami?

1)

2)

3)

b) Briefly describe the most likely scenario for the local generation of a tsunami.

c) What is the estimated max size and warning time of a locally generated tsunami that could strike this beach?

d) What other natural hazard related to locally generated tsunamis poses a major threat to the La Jolla Shores area?

e) Describe what you'd see right before a tsunami was to hit our shore? What would you do?

B. Post Trip Reflection

Each student must write a lab reflection (minimum of 120 words in length) about your experience in doing the exercises in the field lab today. Include the following: 1) The central purpose of this fieldtrip; 2) What was the most important thing that you learned from doing this excursion? 3) What was the most interesting aspect of the lab? 4) What was the biggest problem or challenge that you encountered while doing this lab? 5) Provide some constructive criticism of the fieldtrip design. Hand write (if you're neat) or type.

1) Purpose of lab: _____

_____

2) What actually learned? _____

_____

3) Most interesting aspect(s)? _____

_____

4) Most difficult or challenging aspect(s)? _____

_____

5) Thoughts on trip design and execution _____

_____

_____