**Student Name:** **Grade:**

# COASTAL PROCESSES - FIELDTRIP #3 WORKSHEET
## OBSERVATIONS AND ANALYSES OF ENCINITAS SHORELINE

**WAVE CONDITIONS**

**1. Observations and Interpretation of the Swell(s)**

Swell height? _____ Surf height? _____ Wave period? _____ Swell direction? _____

**2. Observations and Interpretation of the Tides**

**a)** Last tide: H or L?__ Height? ____ Time? ____ **b)** Next tide: H or L? __Height? ___ Time? ___

**c)** Ebb, flow or slack? _____ **d)** Neap or Spring? _____ **e)** Diurnal, Semidiurnal, or Mixed?

**3. Observations and Interpretation of the Littoral and Rip Currents**

**a)** Longshore current present?_____ If yes: Direction?: _____ Speed?:_____

**b)** Does longshore current direction related to the swell direction (angle)? _____

**c)** What affects might longshore currents have on the beach sand (drift)?

**d)** Rip currents present? _____ If yes: Number?____ Spacing? _____ Intensity? _____

**e)** What affects might rip currents have on the beach sand?

**BLUFF ROCK GEOLOGY AND ERODABILITY:**

**4.** List the geologic names and ages for the two rock formations making up the bluff.

| | Formation Name | Age (myo) | Rock type(s) | Erodability Factor |
|---|---|---|---|---|
| Top Fm. | _____ | _____ | _____ | _____ |
| Bottom Fm. | _____ | _____ | _____ | _____ |

**b)** Which rock unit is considered the most erosion-resistant (steepest part of bluff)? _____

**c)** Which rock unit is considered the most erosion-prone (angled part of bluff)? _____

**d)** Any evidence of active weathering and erosion occurring on the bluff? In other words, does it appear that the bluffs are a significant source of sand for the beach? Yes? No? _____
Describe and explain below your conclusions using your observations as evidence:

**PROCESSES AND ACTIVITIES THAT AFFECT THE RATE OF SEA BLUFF EROSION**

**5.**List four (4) processes (natural and human-related) that **help cause** bluff erosion?

**a)** _____ **b)**_____ **c)** _____ **d)** _____

Which process above appears to be the most affective in causing local bluff erosion? Why?

**6.** List four (4) processes (natural and human-related) that **help reduce/prevent** bluff erosion?

**a)** _____ **b)**_____ **c)** _____ **d)** _____

Which process above appears to be most affective in eliminating or reducing bluff erosion? Why?

**HUMAN-MADE SEAWALL STRUCTURES:**

**7.** What types of materials are used in the construction of seawalls?

**a)** _____ **b)** _____ **c)** _____, **d)** _____

**8. a)** What appears to be the seawall's primary intended purpose? _____

**b)** Does it appear that they are doing their job? Explain in some depth.

**9.** List advantages that rip-rap has over seawalls in protecting bluffs.

**a)** _____ **b)** _____

**10.** List disadvantages that rip-rap has over seawalls in protecting bluffs.

**a)** _____ **b)** _____

**11.** List the three (3) adverse (negative) effects (direct or indirect) that seawalls have on the beach. In other words, how could seawalls affect the beach sand supply and beach stability?

**a)** _____ **b)** _____ **c)** _____

**12.** Estimate the cost to construct one of these seawalls. $ _____ to $_____ per linear foot

**13.** If you were a bluff-top homeowner with a failing bluff, what types of actions would you take?

**POST TRIP REFLECTION:**

**14)** What did you learn on this trip? How does that relate with what you are learning in this course?

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**15)** What did you find interesting and/or important? What did you find difficult and/or challenging?

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