

**CITY OF DANA POINT  
BLUFFTOP EDUCATION PROGRAM**

# IMPORTANT PUBLIC NOTICE

## I. Introduction

The coastal bluffs in Dana Point are a fragile resource. While homeowners enjoy the fabulous coastal views from these properties, the bluffs below are constantly moving and shifting under natural and man-made pressures. The location of existing homes near the bluff edge makes corrective construction difficult. Grading, berms or walls may not be appropriate due to the existing erosion and groundwater problems that contribute to bluff failure. For Coastal Bluffs, California Coastal Commission Requirements apply as well. Recent avoidable irrigation system failures and rain events have cost residents dearly.

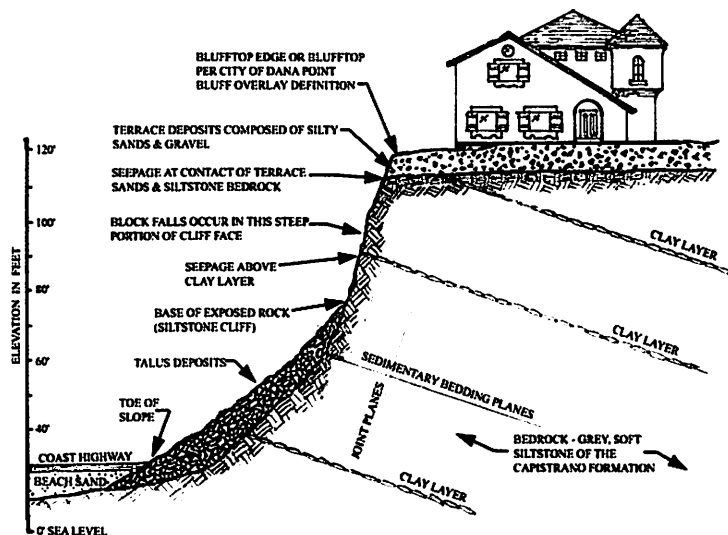
The City of Dana Point would like to offer suggestions that will help you, the homeowner, reduce the chances of bluff failures on your property.

## II. Bluff Make-Up

Bluff failures and erosion (i.e. the bluff erosion process) are linked to the bluff geology. For example, the core of the Capistrano Beach Coast Highway bluff is made up of weak siltstone bedrock (see Figure 1). The siltstone exists in layers referred to as bedding, which are bisected by joints and fractures. Both the bedding and the joints and fractures are planes of weakness that further reduce the strength of the siltstone. Although the bedding largely dips into the slope for a majority of the bluff, where the bedding dips out of the slope, larger bluff failures (i.e. such as La Ventana) are more likely.

The siltstone bedrock is overlain by a thin layer of terrace deposits which are largely composed of silty sands, sands and gravels. These materials readily transmit water and are highly susceptible to erosion at the bluff face. Overlying the bedrock at the base of the bluff are debris deposits known as talus. This material is derived from previous bluff failures and thus contains blocks of siltstone as well as debris from the terrace deposits.

Bluff geology varies along the coast and inland but can be identified specifically for your residence by a geologist.

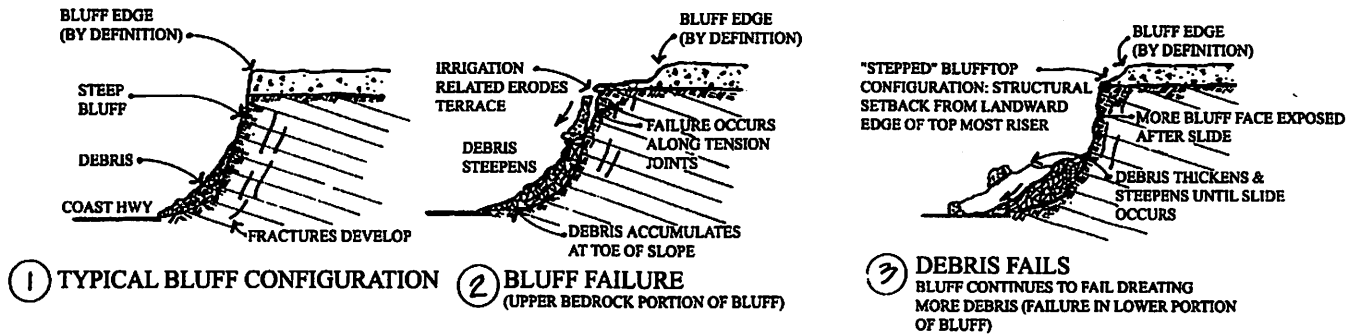


**FIGURE 1: CAPISTRANO BEACH EXAMPLE**

## III. Typical Bluff Failure Mechanism

The bluffs erode due to chemical (chemical breakdown resulting in strength loss) and physical mechanisms (i.e. such as wind, expansion and contraction, water). These same forces can also lead to larger bluff failures. The typical mechanism for a bluff failure is illustrated in Figure 2. Generally, water from irrigation and rainfall enters joints and fractures causing outward pressures which tend to force out large blocks which deposit onto the talus debris pile below.

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**FIGURE 2**

## IV. Impacts to Bluff Stability

Residential development of the coastal bluff area can increase the bluff erosion process. Negative impacts can be caused by the following practices:

- Residences or improvements too near the edge of the bluff (i.e. adding weight to the edge of the bluff)
- Irrigation that introduces water below the surface.
- Release of water along the bluff face and into the bluff itself.
- Channeling or directing surface water over the bluff face.
- Removal of natural groundcover.

## V. Recognizing At-Risk Bluff Areas

Along with high rainfall, the previously mentioned practices may result in unstable bluff conditions. The following checklist can assist you in determining at risk areas. The appearance of several indicators may result in the need for professional evaluation by a registered Engineering Geologist and or a registered Geotechnical Engineer with local experience.

- Seepage of water on the bluff face.
- Wet conditions on the lot.
- Surface drainage directed toward or onto the bluff face.
- New or enlarging cracks in patios or foundation slabs.
- Landscaping on the bluff top that requires irrigation (including lawns and shrubs).
- Patio slabs on or near the edge of the bluff.
- Proximity to recent bluff failures.

## VI. Options to Reduce Potential for Bluff Failures.

Bluff failures are part of the natural erosion process and would be present to a certain degree even without blufftop development. The following options are suggested to aid in reducing the potential for future bluff failures and/or reducing the impact of future failures on existing structures.

### Use of Professional Consultants

It is highly recommended that professional consultants (i.e. landscape architect, a registered engineering geologist and/or geotechnical engineer with local experience) be used to evaluate the conditions around your home and make recommendations.

### Structural Improvements

There are several structural type improvements that could be implemented to reduce the impact of future failures. One of which is to underpin the house with deep caissons. However, any structural improvement will require both a detailed, site specific evaluation performed by both a geotechnical

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engineer and engineering geologist as well as a City permit from the Planning Division (see below).

### **Drainage**

Yards should drain to the street gutters via non-erosive drainage devices such as area drains or side yard patio slabs. Properly designed sump pumps could be installed in yards where gravity flow to the street is not possible. Design of installation of sump pumps should be designed by professionals and will also require a City permit from the Planning Division (see below).

### **Plumbing**

Plumbing associated with house pools, spas and landscaping should be inspected for leaks. A cursory check of leakage can easily be done by homeowners by checking the water meter after shutting off water from all sources. To assist the homeowner in determining leakage and/or to find the location of a leak, there are numerous leak detection companies that could be of service. Also, there are leak alarm systems that can alert homeowners to a new leak.

### **Planting and Irrigation**

Drought tolerant and/or other native landscaping should be used throughout the entire lot. Any type of vegetation or ground cover that requires extensive watering (i.e. lawns) should be avoided. It is highly recommended that a landscape architect with expertise in drought tolerant plants and a general knowledge of local geotechnical issues be utilized to develop an appropriate and effective planting plan. Irrigation sensor controllers that only provide water on demand are available to prevent over watering. Because irrigation valves can “stick” on, they are prohibited for installation in backyard bluffs and should be removed if they currently exist. Residents are being charged tens of thousands of dollars for failure cleanup of preventable landslides caused by faulty irrigation and drainage systems.

### **Planning Permits**

As you consider options to reduce the risk of erosion, please be mindful that your properties are more than likely located within the City’s Coastal Overlay District as established by the California Coastal Commission. Coastal bluffs are determined to be scenic resources and the Cities Local Coastal Program (LCP) as well as the California Coastal Act contain provisions to ensure that they are maintained as scenic resources. Although certain improvements such as leak detection systems, irrigation moisture sensors, existing drainage system repairs and existing irrigation system repairs are allowed without permit adjacent to coastal bluffs, other improvements such as new irrigation systems, new landscaping/hard scape, new drainage systems, and structural or grading improvements require review and possibly permits from the City. This is to ensure adherence to policies contained in this City’s LCP and the requirements of the California Coastal Act.

Section 9.27.030(c) (Development Adjacent to Coastal Bluffs) of the City’s Zoning Code can be accessed on the City’s website. These Code sections outline the provisions for review of coastal bluff top development and provide the context for which improvements can be undertaken. For specific questions regarding your property you are encouraged to contact City Planning staff to discuss the particular characteristics of your property related to topography, bluff edge, bluff edge setbacks, drainage, irrigation, landscaping, and other improvements.

For those property owners with inland lots containing hillsides and significant slopes, there are also limitations and requirements related to improvements and you are encouraged to contact Planning and Public Works and Engineering Services staff to ensure items related to hillside development are accounted for in any proposed improvement plan.

Please contact planning staff at 949-248-3563, if you have Planning questions or Engineering staff at 949-248-3562 for engineering concerns or would like to discuss particulars of your property related to coastal bluffs hillside improvements.