



February 14, 2007

TO: Santa Barbara County Park Commission

FROM: Jason Stilwell, Director of Parks  
Coleen Lund, Project Manager

RE: Goleta Beach Environmental Impact Report (EIR)  
**Co-Equal Project Presentation**

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**RECOMMENDATION:**

- A. Receive presentation on the two co-equal projects to be evaluated in the Goleta Beach EIR.

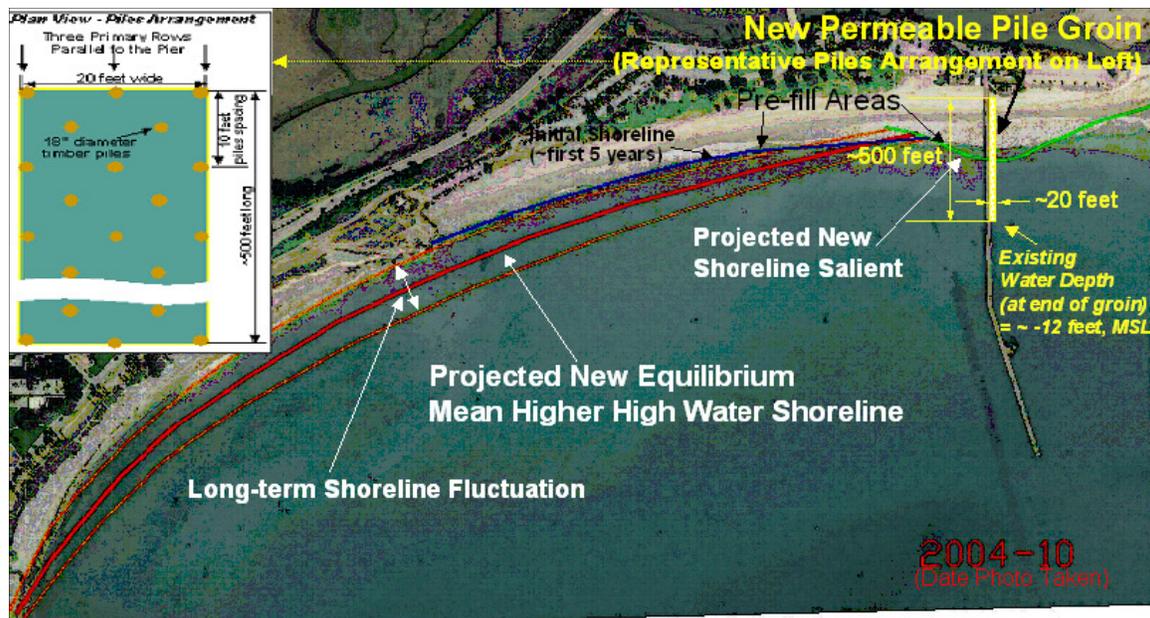
**DISCUSSION:**

At the January 18, 2007 Park Commission meeting, staff provided an update on the preparation of the EIR for Goleta Beach Long Term Protection. The Commission, at that meeting, requested additional information on the two projects to be evaluated within the EIR with co-equal environmental review. These two projects are Managed Retreat and Permeable Pile Groin. A presentation will be made by the EIR consultants that will include a detailed discussion on each of the two project's elements. The presentation will include the engineering details of the project and the resultant beach and park. This meeting is not a hearing to consider detailed environmental affects of the two projects.

**Permeable Pile Groin**

The Permeable Pile Groin alternative would build a coastal structure that would create and maintain a wider beach for shore protection and recreation, while minimize or eliminate potential adverse down coast effects. Several sand retention structural concepts were evaluated, and a single permeable pile groin was chosen as the best solution. The permeable groin would be perpendicular to the shoreline, adjacent to and immediately east of Goleta Pier (Pier). It would consist of several rows of surface-piercing timber piles driven into the seabed, and it extending seaward approximately 500 ft from the landward end of the Pier. The density of the maze of piles would be greater than that of the existing Pier. The exact design of the piles arrangement to meet the intended permeability factor will be determined during final design (if this project is selected), but the footprint would be approximately 20 ft wide by 500 ft long.

Pile groins, different from rock or other non permeable surface piercing groins, reduce the along shore sediment transport rate by reducing the longshore current velocity through them. They do not appreciably reduce wave heights. The number and arrangement of the piles within the footprint determine the permeability of the groin. In order to create and maintain a desired salient, it may be necessary to adjust the number of piles and their arrangement over time. Physical modeling of the groin would be performed prior to construction to determine the pile density that would provide optimum effects. Based on the modeling, the groin would be constructed with an initial piles arrangement. The resultant salient would be observed and then piles would be added or removed over time. During this adjustment period, the timber piles would be structurally supported by an adjustable bracing system. Following the adjustment period, a wooden deck would be built over the piles as an extension/widening of the eastern side of the existing Pier.



With the placement of sand (“pre-fill”) from an offshore borrow site, the groin would form a shoreline bulge of sand (salient) in its lee and, in turn, create a new small hook-shaped bay nested within the western two-thirds of Goleta Bay, up coast of the Pier. The desired salient would be about 200 ft seaward of the pre-Project shoreline and would extend between 750 and 1,000 ft to either side of its midpoint, which is located at the Pier. With this salient, a wider beach would be formed all the way to the western end of Goleta Beach County Park. This dynamic equilibrium position is a long-term Mean Higher High Water (MHHW) position after the shoreline has reached a state where its seaward evolution is complete. Thereafter, the shoreline will fluctuate about this position over the decades. The shoreline will also fluctuate seasonally about these contours. The projected effects of the proposed groin are based on analyses performed by Dr. Craig Everts (2006) and Moffatt & Nichol (2006) which will be presented as an appendix to the EIR.

The pre-fill sand nourishment would be completed as part of the project in order to proactively prevent potential down coast sediment transport impacts. This pre-fill would be in the footprint of the salient and fillet area. The pre-fill amount is estimated to be on the order of 500,000 cubic yards (cy). This amount of sand represents the quantity needed to meet the shoreline needs after construction. Pre-filling with sand accomplishes the goal of artificially forming the sand deposits (i.e., salient and fillet) at the time of construction, rather than waiting for them to form naturally over time after construction. In this way, sand that would naturally move along the coast from west to east past the Park, during and after construction, will continue to move past the positions of the fillet and salient to downcoast areas, continuing natural patterns of nourishment east of the Park.

In the absence of pre-filling, sand moving east along Goleta Beach would be trapped in the salient and fillet and would not be able to continue moving east past the Park. The effect of this process would be to rob downcoast beaches of sand and potentially cause significant downcoast impacts. Pre-filling essentially sets the position of the shoreline at the time of construction, thereby allowing sand to bypass the structure and associated pre-fill area, thus continuing to “feed” downcoast beaches.

The pre-fill sand for Goleta Beach would be dredged from an offshore source and then hydraulically pumped onshore to Goleta Beach via a submerged pipeline. An offshore borrow site, approximately one mile to the southeast of Goleta Pier, has been identified as the probable sediment source. The borrow site is in water depths ranging from approximately -60 to -75 feet, relative to Mean Lower Low Water (MLLW). The boundaries of dredge area would be over an east-west trending rectangle of approximately 400 by 4,500 ft.

The most recent example of pre-filling at shoreline structures is at Bolsa Chica State Beach in Orange County where one million cubic yards of sand was placed just offshore in a delta off a new tidal inlet. One hundred thousand cubic yards of sand was placed at fillets of two new jetties at the inlet to establish the new sand formations and to maintain longshore transport of sand downcoast to an eroding bluff area of Huntington Beach.

While the shoreline at Goleta Beach reaches its equilibrium form with the pre-fill sand, it would be necessary to retain the existing west-end and east-end revetments and the mid-Park emergency revetments to ensure protection of critical Park infrastructure. The east-end and mid-Park revetments would not be repaired and it is anticipated that a majority of this rock will remain buried during this process. The west-end revetment would be repaired to continue to provide protection to existing critical utilities and infrastructure into the long term.

### **Managed Retreat**

The concept of the Managed Retreat alternative is to allow the shoreline position to evolve naturally over time. In general, it involves landward relocation of some Park facilities and utilities, removal of sections of the existing rock revetments, and creation of a lawn/sand “buffer zone.” A short reach of the existing eastern revetment would be left in place and lengthened to protect the restaurant and sewer outfall vault. The Park area west of the sewer outfall vault would be allowed to naturally retreat, while the Park area east of the sewer vault would be maintained in its existing condition to preserve the existing restaurant, restrooms, and parking lot.

Utilities and structures would be moved landward of the defined coastal erosion hazard zone. The coastal hazard zone was defined by the 1947 back-beach shoreline, the most landward shoreline observed in the past 70 years, with an additional buffer of 30 to 50 feet (ft) to account for potential flood limits. A proposed “backstop” rock revetment, located at the landward edge of this zone, would provide a last line of defense for the relocated utilities, lawn, parking areas, and amenities. The width of the buffer is a compromise between providing space for the beach to evolve, the constraints posed by existing utilities (i.e., the high pressure gas line), and the desire to maintain recreation facilities and parking capacity. The area between the landward edge of the buffer zone and the existing shoreline approximates the coastal erosion hazard area whereby erosion is anticipated to occur over the next 20 years.

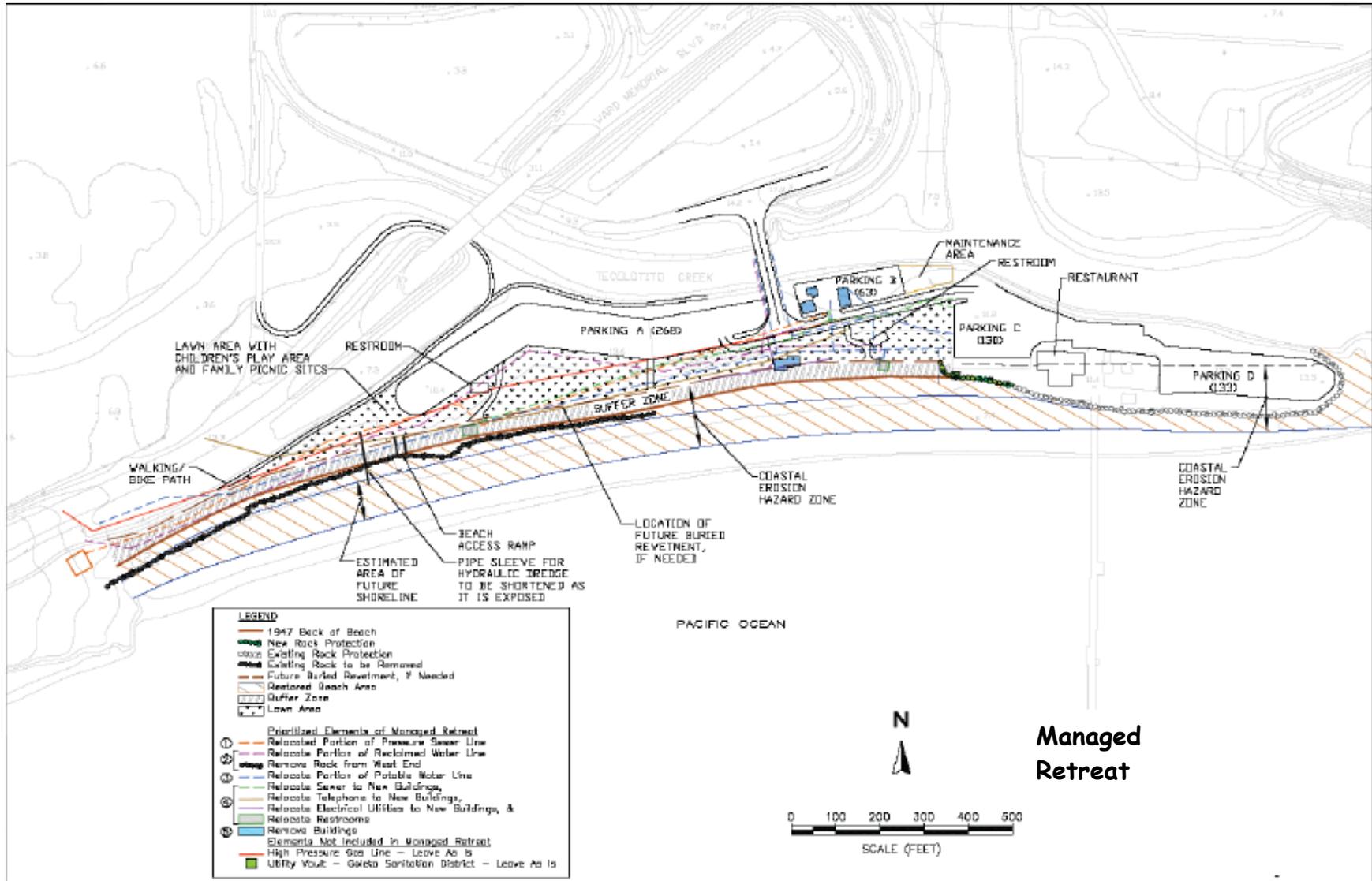
The detailed components of the Managed Retreat alternative are as follows :

- Relocation of a portion of the pressurized sewer line, at the west end of the Park; the new location would be landward of its existing position and the buffer area while still terminating at the existing pump/lift station located offsite on UCSB property;
- Relocation of a portion of the reclaimed water line at the west end of the Park; the new location would be landward of its existing position and the buffer area;
- Relocation of a portion of the potable water line, at the west end of the Park; the new location would be landward of its existing position and the buffer area and connect with lateral lines to the relocated restroom buildings;
- Relocation of two restroom buildings (i.e., west-end and mid-Park restrooms) and their other associated utilities (i.e., sewer, telephone, electrical); relocation of the children’s playground equipment;
- Removal of 950 ft of rock revetment in the mid section of the Park (i.e., the “emergency” revetments);
- Removal of 300 ft of rock revetment at the west end of the Park;

- Construction of an approximate 150 ft extension of the east-end rock revetment to the west of the restaurant to encompass the existing sewer outfall vault;
- Repair of the existing section of the east-end revetment, including filling in gaps along the revetment's length, installing filter fabric, and increasing the crest elevation;
- Removal of the group picnic area shelter (by the Park entrance) and Park ranger buildings;
- Removal of the west-end parking area and a section of the mid-Park parking area;
- Creation of new grassy lawn areas at the locations of the existing west-end parking area and a section of the mid-Park parking area;
- Removal of the grassy area to the west of the Park entrance road;
- Reconfiguration of the mid-Park parking area and expansion of this parking area into the location of the removed grassy area to the west of the Park entrance road and the creation of a new parking area in the location of the existing Park ranger buildings in order to maintain existing number of parking spaces;
- Construction of an approximately 1,900-foot-long "last-line-of-defense" rock revetment, approximately 30 to 50 ft landward of the 1947 back-beach line. At the west end of the park approximately 300 feet of this rock would be placed initially to ensure immediate protection of utilities in this location;
- Re-grading the vertical scarp that forms in the winter at the seaward edge of the grassy lawn area. A flatter re-graded slope would be created by excavating into the lawn area;
- An initial beach fill of 97,000 cy to restore the beach to its condition prior to the winter storms of 2005.

The west-end and mid-Park rock revetments would not be removed until after the utilities and restrooms are relocated to their new landward location. After the revetments are removed, the grassy lawn area would be allowed to erode naturally over time. Eventually, the lawn area would naturally be replaced with sandy beach. Irrigation lines within the erodable lawn area would be removed/relocated as retreat occurred.

The utilities noted above would be moved landward to the maximum extent possible and spaced according to County standards. The new revetment would be located at an appropriate minimum distance seaward of these relocated utilities. At the west end of the Park, the location of the backstop revetment and the width of the buffer zone would be dictated based on the locations of relocated utility lines. There is limited Park property space at this end of the Park. The new backstop revetment would be designed to fully protect all utilities behind the structure and, thus, prevent any damage under design storm wave events or conditions (i.e., the 100-year storm wave event). This section of backstop revetment would be installed concurrently with relocation of the utilities.



Damage could potentially occur from larger and more rare events, as could occur under existing conditions, and is the risk to any coastal infrastructure. Beach nourishment would help to maintain the beach in front of the revetment if the beach erodes to the backstop revetment line. The Managed Retreat alternative would include an initial one-time nourishment effort of up to 97,000 cy of beach quality sand. The initial beach nourishment amount would reinstate the beach to its condition prior to the winter storm event of 2005, declared as a Federal emergency.

This initial nourishment is anticipated to use sand dredged from an offshore source and then hydraulically pumped onshore to Goleta Beach via a submerged pipeline, as would occur under the Permeable Groin Alternative.