



Surfrider Foundation, San Diego County Chapter

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March 6, 2014

Delivered via email

To: Eric Stevens
California Coastal Commission
7575 Metropolitan Drive Ste 103
San Diego, CA 92108-4402

Re: Item W21c Application 6-13-0948, William S. Bannasch Living Trust

Dear Mr. Stevens,

The Surfrider Foundation San Diego County Chapter recognizes beaches as a public resource held in the public trust. Surfrider Foundation is an organization representing 250,000 surfers and beach-goers worldwide that value the protection and enjoyment of oceans, waves and beaches. For the past decade, San Diego Chapter has reviewed and commented on coastal construction projects and policy in San Diego County. We appreciate the opportunity to provide comments to the California Coastal Commission about these important issues.

We object to the staff report concerning the expansion and repair of 5 existing seacave/notch infills for the following reasons:

1. Project alternatives outlined in the staff report do not include moving the house back from the bluff's edge, even though the house was explicitly designed to be moved if it was ever threatened by erosion.
2. Seacave and notch infills fix the back of the beach, halting the natural erosion of the bluffs. When seacaves and notches are filled, the bluff line is moved seaward relative to the natural bluffs. Infills prevent replenishing sand from reaching the beach via erosion as opposed to unprotected bluffs that continue to erode and create beach space. Because of the passive erosion impact caused by fixing the back of the beach, and the infills encroachments on City and State Lands, the CDP should also be subject to land lease and recreation fees, as well as sand replenishment fees.
3. "Erodible concrete" is a myth with no data to support the claim that it erodes at the same rate as the bluff. Erodible concrete lacks scientific evidence of erodibility. Without

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any evidence of seacave infill erodibility, the CDP should be subject to an encroachment removal agreement.

4. The proposed expansion of the seacave infills goes beyond simple maintenance, and is creating a de facto seawall, which is not permitted by the property's deed restriction

5. The CDP applicants have not demonstrated good faith in the past when working with Solana Beach and the Coastal Commission. Encroachment removal agreements should be required and specific guidelines set to ensure that if and when the seacave infills do not erode as hypothesized, the applicants will need to remedy the situation.

6. By allowing such a large expansion beyond simple maintenance of seacave infills, the Commission is setting a bad precedent that contributes to a pattern and practice of allowing for armoring of the entire coast especially in Solana Beach.

1. Project alternatives outlined in the staff report do not include moving the house back from the bluff's edge, even though the house was explicitly designed to be moved if it was ever threatened by erosion.

Potential project alternatives are all found infeasible in the staff report (page 20):

"Alternatives to the proposed seacave and notch infills could include no project, rock riprap, a much larger seacave/notch infill totaling 160 feet in length, chemical grouting, and underpinning of the existing bluff top structure. In this case, these alternatives have been determined to be infeasible"

One obvious alternative is not even discussed in the staff report: moving the house further back from the cliff's edge. This residence was explicitly designed to be moved back from the cliff's edge if threatened by erosion: (see <http://www.craigawoods.com/Dtlbannasch.html>)

"Bannasch Bluff Residence, Two-story plus Basement, 4,555 square feet, on the bluffs overlooking the Pacific Ocean. The site was underlain by sea caves, which required grouting and was built on caissons and grade beams at 525 Pacific Ave., Solana Beach. Because of it's [sic] location, the Coastal Commission required that it be *designed to be relocated when bluff erosion becomes intrusive on it's [sic] foundations*. Exterior elevations were dictated, in large part, but [sic] the regulatory process." (emphasis added)

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Back in 1991, the homeowners were given two options concerning the placement of the new development relative to the cliff's edge (page 13):

"At the time of the Commission action, the applicant was provided an option of either locating the home at least 40 feet from the bluff edge or locating the home closer than 40 feet from the bluff edge, subject to special conditions incorporating planned retreat from the bluff edge if the home was threatened by erosion in the future. The applicant chose to site the home 29 feet from the bluff edge and designed the home so that it could be removed if necessary."

The applicant chose the riskier route by placing the new home closer to the bluff edge, and because of that decision they are now asking to greatly expand their seacave infills. Instead of being allowed to expand seacave infills, the logical alternative is to move the house back from the cliffs edge.

Additionally, Policy 4.50 of the Solana Beach LUP states the following:

A Seacave/Notch Infill shall be approved only if all the findings set forth below can be made and the stated criteria satisfied. The permit shall be ~~valid for a period of 20 years commencing with the date of CDP approval and...~~subject to an encroachment removal agreement approved by the City.

(A) Based upon the advice and recommendation of a licensed Geotechnical or Civil Engineer, the City makes the findings set forth below:

(2) The bluff property owner did not create the necessity for the Seacave/Notch Infill by unreasonably failing to implement generally accepted erosion and drainage control measures, such as reasonable management of surface drainage, plantings and irrigation, *or by otherwise unreasonably acting or failing to act with respect to the bluff property* (emphasis added)

The homeowners have clearly acted unreasonably by placing their new development closer to the bluffs edge, and have therefore forfeited their right to new seacave infill. They are entitled to maintenance, but filling 92 feet of previously unarmored bluff hardly seems like a maintenance project.

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2. Seacave and notch infills fix the back of the beach, halting the natural erosion of the bluffs. When seacaves and notches are filled, the bluff line exists at a more seaward location than natural bluffs, while unprotected or filled bluffs continue to erode and create beach space. Infills also prevent replenishing sand from reaching the beach via erosion. Because of the passive erosion impact caused by fixing the back and the infills encroachments on City and State Lands, the CDP should also be subject to land lease and recreation fees, as well as sand replenishment fees.

The infilling of caves does fix the beach in a more seaward location. As discussed on pages 17-19 of the Staff Report, collapse of the caves will occur without the project. According to the material in these pages,

“...due to cave formation and collapse processes, bluff face recession is rapid and on the order of 1 foot per year below the subject property. Due to the current degree of overhang and cave re-opening along existing cave plug lateral margins, significant failure events and accelerated upper bluff recession is imminent.

“The collapse of the outer approximately 10 feet of the sea cave causes an immediate 12 percent reduction in bluff stability, suggesting an immediate failure propagating up to the top of the bluff, and with the likely immediate failure scarp located about 10 feet from the residence, with likely additional failure scarps quickly propagating to within possibly 5 feet of the residence...”

Under the predictions made by the applicants’ engineers, tens of feet of public beach on publicly owned bluffs will be prevented from forming. It is the collapse of these caves and the subsequent washing away of material that creates beach space. Under the Recreation and Access Policies of Chapter 3 of the Coastal Act, an impact analysis is required and mitigation is required if an alternative impacting beach access is selected. Further, the City had originally asked the fee be assessed for the use of their land and impacts. It is appropriate to assess Land Lease and Recreation Fees and to impose an encroachment and removal agreement.

As part of Case No. GIN 020308, Surfrider Foundation (Petitioner and Plaintiff) v. Bannasch (Real Parties), the Superior Court of California decided in 2003 in relation to the same residence and a similar application for seacave and notch fills, that in addition to a lack of evidence concerning concrete erodibility, “erodible concrete” does NOT mitigate the impacts of passive erosion and that seacave infills in effect fix the back of the beach, in the same way that a seawall fixes the back of the beach:

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"[Surfrider Foundation] provided substantial evidence, through both lay persons and experts, that erodible concrete will not mitigate the impacts of passive erosion. [See e.g., AR at 728]. Comments by the public challenged the Real Parties or City to come up with any peer reviewed literature demonstrating that erodible concrete will somehow mimic the erosion characteristics of the bluff. [AR 43] In addition, CalBeach provided detailed logical comments pointing out the many reasons that erodible concreted will not mimic erosion characteristics of the existing bluffs, and is unlikely to erode as expected. [AR 44-45]

"In a responsive e-mail to one of CalBeach's experts, Real Parties consultant stated, "erodible concrete mixes are a bit difficult to design, and most engineers, and ready-mix plants for that matter, do not possess a lot of experience in its design. After all, the purpose of most concrete is to create a durable, rigid surface, i.e., one that does not erode." Id. After describing the litany of obstacles to creating and working with erodible cement, he concludes that "all of this is doable. It does however, require a bit of effort in fine-tuning the mix design to achieve the desired results." [AR 560-561]

"On the other hand, as pointed out by CalBeach's expert Dr. Benoumof, only if the proposed landfill is designed with faults and schisms, and designed to erode in blocks, will it mimic the Torrey Sandstone present at the site. [AR at 44] In addition, Dr. Benoumof, near the end of the presentation, addresses why the use of erodible cement "will not mitigate the adverse impacts of the proposed project." He states:

"While I'm not a coastal engineer and do not profess to know much about erodible cement, you all have a number of photos before you that shows that this erodible cement doesn't erode as the natural bluff erodes, it does not mimic it. And part of the reason for that from a geologic perspective is that the Solana Beach bluffs erode by via block fall. Large blocks fall onto the beach, ...Cement, as far as I know, erodes grain by grain. Unless you build structural discontinuities into the cement such that it will fail via block, it's just not going to mimic the natural erosion." [Testimony before City Council, AR at 728.]"

To reiterate the findings of this case:

"Based on the Court's review of the Administrative Record, the Court concludes that Petitioner raised substantial evidence supporting a fair argument that passive erosion may not be adequately mitigated by erodible concrete, as proposed. Therefore, the Court finds

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that Respondent City abused its discretion by certifying the Mitigated Negative Declaration. An appropriate EIR must be prepared."

Again, while the Real Parties (including Bannasch) have had over 10 years to provide an Environmental Impact Report (EIR) to document their claims concerning the erodible properties of concrete, and that such a material would mitigate passive erosion, they have not provided any documents to back up their claims. Without such a document, it must be assumed that the seacave infills will fix the back of the beach in a similar fashion to a seawall. Therefore, there will be impacts to access/recreation as well as a loss in natural sand replenishment, so land lease and recreation fees, as well as sand replenishment fees, should be assessed. Furthermore, since this large seacave maintenance and expansion project will essentially mimic a seawall, the CDP application should consider moving the house back as one of the alternatives to this project since the house was designed to accommodate a move and the homeowners assumed those risks when the house was built within the 40 ft setback.

Without any credible American Society for Testing and Materials (ASTM) or American Concrete Institute (ACI) documentation concerning the erodibility of the proposed materials, or an EIR to demonstrate the properties of erodible concrete, there is no reason to assume that the seacave infills will erode at the same rate as the natural bluffs. However, no sand mitigation fees are being required for this project since it will supposedly "erode at the same rates as the bluffs". In addition to the lack of evidence concerning the erodibility, sand mitigation and land lease and recreation fees should still be assessed as part of this CDP. What about the loss of beach that would have been gained if the seacave was allowed to collapse? These seacaves would have eroded to create more usable beach, so there will be an impact to access and recreation.

Seacave notchfills have the same impact in fixing the back beach. Some seacaves for example are up to 80 feet deep. The filling of these seacaves prevents 80 ft of beach from being created when the cave collapses. Other caves/notches proposed for filling are on the order of 4-15ft. Given that the driplines of these caves notches remain in place, the net effect is fixing the beach at the dripline. Furthermore, if a the seacave notchfill is consistently maintained, it will have the same overall impact as a seawall in terms of fixing the back beach. Hence mitigation fees should be assessed for seacave notchfills, much as they are for seawalls. Without an encroachment removal agreement, what guarantee is there that the seacave infills will be removed in the future when the impacts to access/recreation are realized?

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The staff report recommends removal of the Sand Mitigation and Encroachment Removal Agreements as stated on page 17 of the staff report:

“...Policy 4.50 of the City’s LUP requires that impacts to coastal resources be assessed and mitigated...and that infills be subject to an encroachment removal agreement. However, on January 9, 2014 the Commission approved a suggested modification to the certified LUP to remove the requirement to impose a Sand Mitigation Fee for erodible concrete seacave/notch infills. In addition, the Commission approved a suggested modification to the certified LUP to remove the requirements to authorize the permit...be subject to an encroachment removal agreement. As detailed below, the proposed erodible concrete seacave/notch infills are designed to erode landward at a rate comparable to the adjacent bluffs and will therefore not adversely impact coastal resources and will naturally deteriorate, thus making a permit authorization period or encroachment removal agreement unnecessary.”

As we have demonstrated above, there is no evidence to support the claim that the infills will erode landward at a rate comparable to the adjacent bluffs. As such, Sand Mitigation and Encroachment Removal Agreements should remain in place.

3. “Erodible concrete” is a myth with no data to support the claim that it erodes at the same rate as the bluff. Erodible concrete lacks scientific evidence of erodibility. Without any evidence of seacave infill erodibility, the CDP should be subject to an encroachment removal agreement.

A fundamental and critical issue with this entire CDP is the fact that it relies on the existence of “erodible concrete”. Even though there are accepted standards to demonstrate the erodibility of concrete, the applicant has never supplied any evidence to support their claims that the seacave infills will erode at the same rates as the bluffs. The applicant should produce either Journal reviewed material or in-situ data of the performance of the proposed concrete mix design in the intended application. The data must demonstrate the material mimics the erosion rate of heavily jointed and faulted Torrey Sandstone.

Concrete has not been demonstrated to erode in the manner stated by the applicants. In order for concrete to be removed without backhoes or similar equipment, it must be designed to be removed with minimal disruption. According to our review of ACI documents on Controlled Low Strength Materials (CLSM), there is no data to support that concrete will erode at the rates promised in the engineering reports supplied by Bannasch. Without any

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evidence or data to support the engineers' claims of erodibility, there is no reason to assume these claims will prove valid in the environment.

Literature from standard setting organizations (ACI 229R-99 as approved in 2005) shows that in the event that the concrete does not erode as specified, it may be difficult to remove it. <http://www.azmag.gov/Documents/pdf/cms.resource/ACI229 - CLSM46175.pdf>) offers the following:

"2.7—Erosion control

"Laboratory studies, as well as field performance, have shown that CLSM resists erosion better than many other fill materials. Tests comparing CLSM with various sand and clay fill materials showed that CLSM, when exposed to a water velocity of 0.52m/s (1.7ft/sec), was superior to the other materials, both in the amount of material loss and suspended solids from the material.

"CLSM is often used in rip-rap embankment protection and in stilling basins below dam spillways, to hold rock pieces in place and resist erosion."

Flow rates of 0.52m/s are vastly different than forces and flows expected in the harsh and unpredictable marine environment.

Additionally the fact that the testing indicates that CLSM resists erosion as compared to clay and sand fill materials seems contrary to the intended application. The bluff itself consists of sand, clay, and sandstone. So the fact that we are requesting more data on the erosion characteristics is particularly relevant and necessary to judge the performance of the proposed mitigation measure. Please require that the project engineers provide this data before approving the project.

The ACI 229R-99 goes on to discuss excavation of CLSM:

"4.3.7 Excavatability— The ability to excavate Controlled Low Strength Material (CLSM) is an important consideration on many projects. In general, CLSM with a compressive strength of 0.3 MPa (50 psi) or less can be excavated manually. Mechanical equipment, such as backhoes, are used for compressive strengths of 0.7 to 1.4 MPa (100 to 200 psi) (Fig. 4.1). The limits for excavatability are somewhat arbitrary, depending upon the CLSM mixture. Mixtures using high quantities of coarse aggregate can be difficult to remove by hand, even at low strengths.

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Mixtures using fine sand or only fly ash as the aggregate filler have been excavated with a backhoe up to strengths of 2.1MPa (300 psi). When the re-excavatability of the CLSM is of concern, the type and quantity of cementitious materials is important. Acceptable long-term performance has been achieved with cement contents from 24 to 59 kg/m³ (40 to 100 lb/yd³) and Class F fly ash contents up to 208 kg/m³ (350 lb/yd³). Lime (CaO) contents of fly ash that exceed 10% by weight can be a concern where long-term strength increases are not desired. Because CLSM will typically continue to gain strength beyond the conventional 28-day testing period, it is suggested, especially for high cementitious-content CLSM, that long-term strength tests be conducted to estimate the potential for re-excavatability. In addition to limiting the cementitious content, entrained air can be used to keep compressive strengths low."

If the intended application does not perform as specified, excavation would be required. There is no data to demonstrate the PSI of the fill as specified to determine an excavation method.

It would seem appropriate to create a standard based on scientific data in the record instead of just relying on claims of engineers in saying the concrete erodes at the same rate as the bluffs. If no standard or data exists, it may be appropriate to test smaller amounts of different types of "erodible" concrete, since concrete takes 28 days to cure to its compressive strength, before large amounts are used to armor the bluffs. This material must be shown to erode in a similar fashion to the bluffs in the surrounding area.

Additionally, homogeneous fills do not mimic erosion rates in heavily faulted and geologically heterogeneous bluffs. In Solana Beach the Torrey Sandstone present at the site erodes by block fall (for example, Whale Rock). Homogenous fills like the one proposed, so-called "erodible concrete", would erode grain by grain.

The history concerning this stark lack of evidence concerning the properties of "erodible" concrete goes back to 2003. We have been waiting for an appropriate EIR to be prepared concerning the properties of erodible concrete for over 10 years. No such EIR has ever been created by the Real Parties of Interest. There is no reason to suddenly accept, in 2013, that these parties (Bannasch) have created an erodible concrete with the desired properties, without the appropriate engineering report and EIR to back up these claims.

4. The proposed expansion of the seacave infills goes beyond simple maintenance, and is creating a de facto seawall, which is not permitted by the property's deed restriction.

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As the staff report states on page 2, no seawall will ever be permitted to protect this new residence, and only maintenance of the existing seacave infills is allowed:

"In the case of the subject property, the property owner has waived any rights to construction of a seawall or a mid or upper bluff wall to protect the subject bluff top structure. However, the prior approval of the bluff top structure allows for maintenance of the existing seacave infills fronting the subject site."

Section 30235 of the Coastal Act may permit seawall construction only for existing development (prior to passage of the Coastal Act). However, this property is new development (constructed in 1991), so does not have any rights to seawall construction.

The project outlined in this CDP proposes to cover a lot more of the bluff's face, far beyond simple maintenance of the existing seawalls. An additional 92 feet of currently unspoiled bluff will be covered by the proposed development, in addition to the existing seacave infills. Such a large expansion of the seacave infill is essentially creating a de facto seawall. Additionally, as there is no evidence to support to claim that the seacave infill will erode at the same rate as the bluffs, and this infill is being projected out on the beach, in some ways the proposed seacave infills will have an even worse visual and environmental impact than a seawall. Previous seacave infills at this location have not eroded with the bluffs, and have failed as the concrete from previous infills is currently sitting on the beach. These concrete blocks from previous infills have not been removed as they should have been.

There may be rebar or material other than CLSM in the existing seacave fills which again makes the existing fills behave as a seawall. The proposed notch fills with CLSM are to be tied to the existing notch fills (seawalls). Given these have rebar and concrete that does not erode at the same rate as the bluff, if they are to be maintained then the entire maintained project will function as a seawall.

We wish to refer to the drawing notations from a project as proposed for the same property in 2001:

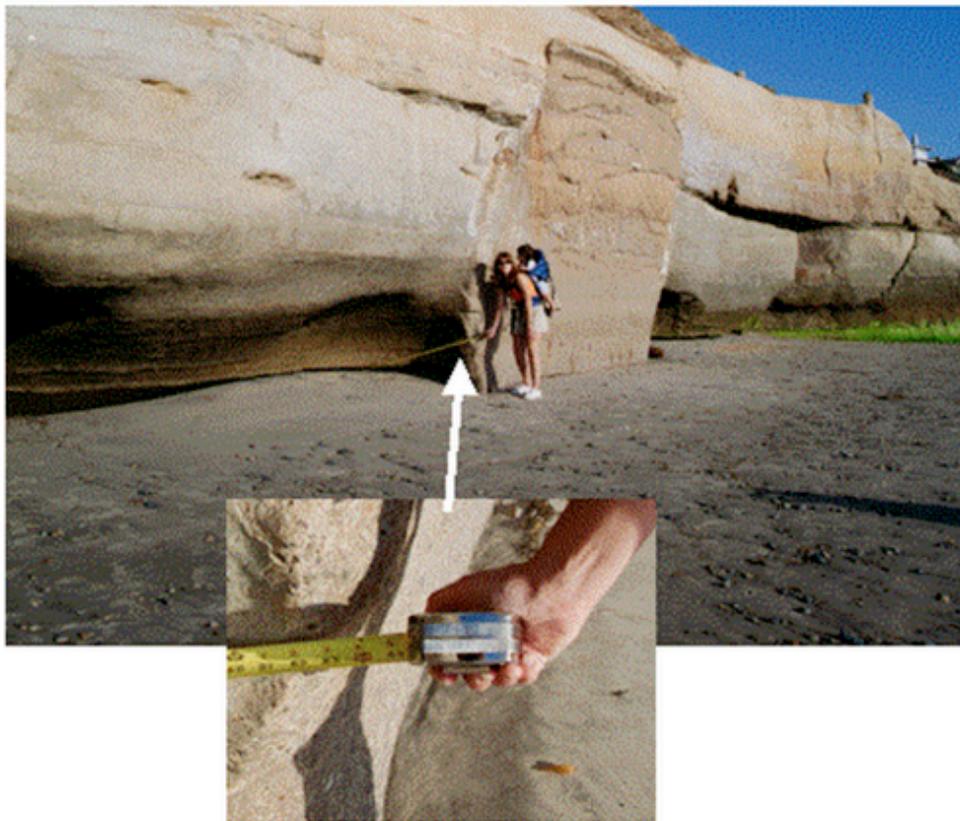
"Typical Seacave Infill Section 3

"Where existing infill occurs, remove any exposed reinforcing steel and resurface infill with carved and colored concrete. Minimum 4 inches thick."

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It is anticipated that to maintain the integrity of the existing seawall, adjacent fill will have to be replaced even if the erosion rate of the new fill matches that of the existing bluff, thereby negating its effectiveness as erodible mix and making the entire structure function as a seawall.

In the picture below of the existing wall from 2001, it was flanked at least 64" at the surface indicating the existing fill did not erode at the same rate as the bluff. The fill is in the same location today and erosion has persisted. In fact this means adjacent to the existing seawalls (aka seacave fill), the bluff is actually fixed at its 1991 location.



(tape measure measuring 64" in 2001)

5. The CDP applicants have not demonstrated good faith in the past when working with the Coastal Commission. Specific guidelines should be set to ensure that if and when the

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seacave infills do not erode as hypothesized, the applicants will remedy the situation immediately.

Past actions by the applicant do not demonstrate that they have acted in good faith, as outlined in the staff report on the following pages:

Page 2: "Currently, one of the existing infills (Infill "C") extends beyond the bluff on the beach and adversely impacts public access. In order to prevent such an issue, CDP #6-87-391 approved a seacave infill design that incorporated joints into the concrete, which would break off onto the beach as the adjacent bluff naturally eroded landward. Removal of the portion of the existing infill "C" is necessary because *it does not appear that the applicant constructed the existing seacave infills consistent with the seacave infill design previously approved by the Commission*" (emphasis added)

Page 12: "In August of 1987, the Commission approved CDP #6-87-391 for the filling of five seacaves located on the beach below the subject site....The Commission recognized that the seacave infill would potentially have various adverse impacts to natural shoreline processes, including temporarily stopping bluff retreat, steepening the beach profile, and increasing beach erosion adjacent to the concrete infills. However, the seacave infills were proposed to be designed with joints which would result in segments of the seacaves breaking off as the surrounding bluff weathered and retreated.*However, instead of completely filling the seacaves consistent with the Commission approval, the seacaves were only "plugged," a void was left behind the "plugs," and the fill did not include "joints," as proposed.*" (emphasis added)

Page 28: "The project proposed by the applicant and approved in CDP #6-87-391 required that the seacave infills were to be constructed with joints that would allow the infill to break off as the adjacent natural bluff eroded landward. As detailed in the project history section of this staff report, *the permittee did not construct the seacave infills consistent with the Commission's approval and instead only plugged the openings to the seacaves. Had the permittee constructed the seacave infills with joints in the concrete, as originally proposed, the seacave fill would break apart as the bluff eroded landward, and the debris could be easily removed from the beach. Thus, had the applicant constructed the seacave fill as originally proposed and permitted, it would likely not be necessary for the Commission to require removal of infill "C" as part of this permit.*" (emphasis added)

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Page 29: "In an email dated December 11, 2013, the applicant's engineer stated that removing the portion of existing infill "C" that protrudes approximately 7 feet seaward of the adjacent bluff would not destabilize the bluff. In addition, in the December 11, 2013 email, the applicant's engineer states the following in regards to the technical feasibility of removing of the concrete encroaching on the beach:

"...To address the practicality of actually removing the protruding Infill No. C, we have also attached information on a hydraulically powered, hand- operated, rotary percussion drill that could easily drill a series of 1 1/2 inch holes through the 1991 concrete infill along any desired and possibly curvilinear line, say on 1 foot centers, that could then be relatively easily wedged off or hydraulically split with a chemical splitting compound like S- Mite, Dexpan, or RockFrac..."

"The applicant, however, opposes removal of the portion of existing infill "C" that is currently located on and interfering with public beach access."

Additionally, on page 31, staff makes the following comment:

"Requiring the maintenance of seacave/notch infills to remove material that is located greater than 6 inches seaward of the natural bluff face has been required by the Commission in previous applications. Although actual removal of seacave/notch infill material occurs rarely..." (emphasis added)

What will these applicants oppose next when they are not in line with the Commission's direction? If the Commission's staff fully admits that seacave infill removal rarely occurs, some guarantees are required to ensure that those who have acted in bad faith in the past will be forced to take responsibility for proper maintenance of their seacave infills.

6. By allowing such a large expansion beyond simple maintenance of seacave infills, the Commission is setting a bad precedent that contributes to a pattern and practice of allowing for armoring of the entire coast.

In previous hearings the Coastal Commission has been very careful to make the distinction that certain protections are allowed for existing structures, but that those protections are not allowed for new development. If this permit is approved with the gross expansion of the seacave infills, it is allowing "armoring" for new development, despite a deed restriction stating that this will not be allowed. The homeowners knowingly created the necessity for the

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seacave infill expansion by rebuilding 29 ft from the bluff's edge, despite recommendations that the development be placed 40 ft from the bluff's edge. It's like the applicant is being allowed to have his cake and eat it too.

If this CDP is approved, the Coastal Commission will be contributing to a pattern and practice that could allow for the armoring of entire coast. This kind of armoring for NEW development should not be allowed since it is expressly not permitted in the Coastal Act.

To summarize, the applicants have not acted in good faith in the past, and are looking to the Coastal Commission to approve the construction of de facto seawalls to protect new development rather than relocating the structure further from the bluff's edge. The applicants also propose to use a material, "erodible concrete" with absolutely no scientific or standardized data to demonstrate that the material they describe will behave in the desired manner. We ask that the Commission avoid setting a poor precedent by contributing to a pattern and practice of allowing for armoring of the entire coast, especially in Solana Beach.

Thank you for reviewing our concerns and objections.

Sincerely,

Jim Jaffee
Co-chair of the Beach Preservation Committee
San Diego County Chapter of the Surfrider Foundation
Resident of Solana Beach

Kristin Brinner
Beach Preservation Committee Member
San Diego County Chapter of the Surfrider Foundation
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