

CALIFORNIA COASTAL COMMISSION

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W7c

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COASTAL DEVELOPMENT PERMIT APPLICATION

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Application number3-05-001, Landslide Disposal Sites for Big Sur Coast Highway

Applicant.....California Department of Transportation (Caltrans)

Project location.....East side of Hwy.1 at approx. Post Miles 10.4 & 11.0, respectively, within Los Padres National Forest, near Gorda, Big Sur Coast Area, Monterey County. Please see Exhibit A.

Project descriptionEstablishment of two terrestrial permanent disposal sites for soil and debris generated by landslides and other naturally occurring events. Sites may also be utilized for landslide materials processing and recycling. The purpose of the project is to provide terrestrial disposal options in anticipation of future landslides and storm events, as necessary for restoring service on the Big Sur Coast Highway. The two disposal sites, identified as **Tree Bones** and **Willow Springs**, will have a total capacity of 95,000 cu.meters (about 120,000 cu.yds.) Project includes widening & drainage improvements to upgrade existing unpaved access roads.

Agency approvalsU.S. Forest Service Special Use Permit, dated December 28, 2004.

File documents.....CCC Coastal Development Permit Files 3-02-051 & 3-05-001; Mitigated Negative Declaration, December 2000; USDA--Forest Service Special Use Permit MRD1012P, Dec.28, 2004.

Staff recommendation: Approval with Conditions



California Coastal Commission
August 10, 2005 Meeting in Costa Mesa

Staff: L. Otter Approved by: C. Z. Y. 7/28/05

Summary of Staff Recommendation: The California Dept. of Transportation (Caltrans) proposes to establish several terrestrial disposal sites for landslide debris and other natural materials. Two of these sites, identified as the Tree Bones and Willow Springs disposal sites, are located within Los Padres National Forest and are analyzed in this staff report. The purpose of the project is to facilitate the reopening of the Big Sur Coast Highway when it is disrupted by landslides or other naturally occurring events. Specifically, this project will provide: 1) a planned (i.e., non-emergency) alternative for disposal of such materials, for utilization under circumstances when other means of disposal are not feasible or are environmentally inappropriate; and, 2) a “platform” for Caltrans to sort landslide debris and other natural materials for beneficial re-use elsewhere.

Why these sites were selected. A large number of potential disposal sites were identified, and systematically evaluated by a panel of experienced agency and community representatives (including Caltrans, County, U.S. Forest Service and Coastal Commission staff)—see table of candidate sites, attached as Exhibit D. The Tree Bones and Willow Springs sites, as well as five other sites located within the County’s CDP jurisdiction, were selected for final environmental review.

These locations were selected not only for their operational suitability, but also because they would be the most likely to be consistent with Coastal Act and Local Coastal Program policies that protect public views, environmentally sensitive habitat areas, archaeological features, public access, and other resources. The Tree Bones and Willow Springs sites are the only selected locations that will serve the southern Big Sur Coast, where the most landslide activity occurs and the need is greatest. The five other selected sites are all in the northern half of the Big Sur Coast, and are at various points in the County’s CDP process.

Project coastal resource benefits. The Big Sur Coast is a dramatic, but ever-shifting landform. Every storm season brings its share of landslides, debris flows and other instabilities. When these land on Highway 1, they must be removed. A range of landslide disposal alternatives, for use in response to a wide variety of circumstances, has been developed in the Coast Highway Management Plan (CHMP). A particular focus is the need to avoid harm to marine resources within the Monterey Bay National Marine Sanctuary, which bounds the shoreline of the Big Sur Coast.

Recommended measures range from salvage and reuse of materials, to establishment of pre-planned, prepared terrestrial disposal sites--for use when no other feasible option is available. By meeting this need, the project will allow for better advanced planning and enhance options available to protect coastal resources. Compared to long-haul disposal, disposal sites *within* the Big Sur Coast area will provide an option that offers: shorter hauls; correspondingly reduced energy use, air and water pollution; fewer traffic impacts that negatively affect public access on Highway 1; substantially reduced cost to the State; and, the possibility of more rapid restoration of normal traffic flow along the coast.

An additional consideration is that excavated landslide materials often have to be placed on the unpaved shoulder alongside the highway, or in the many unpaved pullouts. Such stockpiling is necessary when there is no approved, feasible destination for the landslide materials. However, stockpiled materials can



impair views from the highway, and displace pullout capacity. Because this project will provide a potential off-highway alternative for stockpiling and disposal, it will improve the range of options available to Caltrans for protecting motorist safety, scenic viewing opportunities, and parking capacity for public access.

Geologic hazards issue. While the extremely steep, unstable landmass of this region of the California coast produces Big Sur's spectacular scenery, it also means that geologic instability is a fact of life for Caltrans. Therefore, the issue of geologic hazards needs to be considered in the context of overall benefits and risk management.

The southern two-thirds of the Big Sur Coast is dominated by landslides, ranging from ancient to active. Both the Tree Bones and Willow Springs sites are located on a portion of the Gorda landslide complex, an ancient, large-scale feature that could potentially be reactivated, given the right conditions. After an extensive, multi-agency evaluation, no other environmentally suitable sites with sufficient disposal capacity, and not involving a landslide, were identified along the southern Big Sur coastline. Additional material placed on the ancient landslide surface at Treebones and Willow Springs disposal sites will add to the total weight of material poised on the hillside above Highway 1.

Coastal Act Section 30253(2) requires that new development shall "Assure stability...and neither create nor contribute significantly to ... geologic instability..." The project benefits must be weighed in light of the reality that the project will result in the addition of more landslide-generated materials to existing, but currently stationary landslides. Will this significantly contribute to geologic instability?

Stability: applicant's calculations. According to applicant's calculations, project design and mitigation measures are expected to result in a reasonable degree of safety, equivalent or better than comparable locations along the Highway 1 corridor. The increased risk posed by the added material is acknowledged in applicant's "factor of safety" calculations. That is, the factor of safety against landsliding is reduced by the project, but even the reduced calculated factor of safety is higher than industry standards for new development. Applicant's testing and monitoring program, submitted for interagency peer review, demonstrates that both proposed disposal locations have not moved since instruments were installed in 2002. Based on this data, Caltrans believes the added weight will not pose a significant risk.

Instability: Commission's staff conclusions. The Commission's own staff geologist has inspected the proposed disposal sites, collaborated in the design of the testing program, reviewed the applicant's geotechnical data, and *has arrived at a different conclusion.*

Specifically, staff believes that when the weight of the additional landslide material is added to the old landslide surface at either of the disposal sites, there is a risk that this could contribute to renewed movement of the underlying landslide mass. In particular, the amount of resistance along the surface where the landslide mass rests on the bedrock slide plane is difficult to ascertain in this formation. The amount of resistance, or rock strength, is one of the key parameters in estimating the "factor of safety" for a project. In this case, the staff geologist does not agree with the rock strength estimates provided by Caltrans, and therefore believes that the projected factor of safety is too high. These considerations are



detailed in his review report, attached as Exhibit F.

Staff believes that some of this risk may be mitigated by installing a subsurface drainage system to offset the additional weight of materials deposited in the approved disposal site. However, the available and obtainable data will still leave some uncertainty. Therefore, staff recommends that the Commission find that the evidence is *not* sufficient to make a finding of conformance with Coastal Act Section 30253(2).

Non-approval would increase risk to significant coastal resources. When landslides block the highway, they must be removed and deposited--somewhere. A multitude of critical resources are found along the Big Sur Coast. Some of these resources would be particularly vulnerable to deposition of landslide materials. These should not be subjected to landslide disposal impacts if there is an environmentally superior alternative available.

Particularly vulnerable marine resource examples include, but are not limited to, tide pools, seabird nesting colonies, marine mammal haul-outs, and nearshore kelp and eelgrass beds. Terrestrial examples include, but are not limited to, concentrations of seacliff buckwheat, the host plant for the endangered Smith's blue butterfly; wetland, dune, native grass, maritime chaparral, and rare plant habitat; highly scenic views, the signature resource of the Big Sur Coast Highway; and public access features, including roadside pullouts and trailhead parking.

To the extent that Caltrans handles landslide materials before they enter the marine environment, the agency already prevents impacts to highly sensitive intertidal and subtidal environments. Handled landslide materials can be re-used or placed where they will do the least harm to on-shore coastal resources. But, Caltrans' capacity to do so is dependent largely on the availability of disposal options. This project is the culmination of a comprehensive effort to identify an environmentally acceptable disposal option that can be used in those instances where vulnerable resources would otherwise be unavoidably impacted by landslide disposal activities. No other equally-suitable, feasible disposal site alternatives have been identified along the southern Big Sur Coast.

Without a full range of available disposal measures, Caltrans' ability to reopen the Big Sur Coast Highway after a blocking landslide event will be compromised. Such an outcome would be inconsistent with Coastal Act policies that specifically protect marine resources, environmentally sensitive habitat areas, water quality, public access, scenic views and recreational values.

Coastal Act conflict resolution provisions necessary for approval. Accordingly, staff recommends that the Commission adopt findings that explain these circumstances, and find that the available evidence is *not* strong enough to make a finding of conformance with Section 30253(2). Staff further recommends **approval** of the project, in reliance on the conflict resolution ("balancing") provisions of Coastal Act Section 30007.5, on the basis that the project represents a prudent approach to risk management, and on the whole is more protective of significant coastal resources than the alternative of not allowing this terrestrial landslide disposal option.



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 - Exhibit E: U.S.Forest Service Special Use Permit (inc. USF&WS and Caltrans mitigation measures)
 - Exhibit F: Commission Staff Geologist Review memo
 - Exhibit G: Coastal Records Project air photos
- VI. Attachment: USGS Big Sur Landslides Fact Sheet

I. Staff Recommendation

The staff recommends that the Commission, after public hearing, **approve** the proposed coastal development permit subject to the standard and special conditions below. Staff recommends a **YES** vote on the following motion:

***Motion.** I move that the Commission approve the Coastal Development Permit Number 3-05-001 pursuant to the staff recommendation.*

***Staff Recommendation of Approval.** Staff recommends a YES vote. Passage of this motion will result in approval of the permit as conditioned and adoption of the following resolution and findings. The motion passes only by affirmative vote of a majority of the Commissioners present.*



Resolution to Approve a Coastal Development Permit. The Commission hereby approves the coastal development permit on the grounds that the development as proposed and subject to conditions, will be in conformity with the policies of Chapter 3 of the Coastal Act. Approval of the permit complies with the California Environmental Quality Act because either: (1) feasible mitigation measures and/or alternatives have been incorporated to substantially lessen any significant adverse effects of the amended development on the environment; or (2) there are no feasible mitigation measures or alternatives that would substantially lessen any significant adverse effects of the amended development on the environment.

II. Conditions of Approval

A. Standard Conditions

- 1. Notice of Receipt and Acknowledgment.** The permit is not valid and development shall not commence until a copy of the permit, signed by the Permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.
- 2. Expiration.** If development has not commenced, the permit will expire two years from the date on which the Commission voted on the application. Development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.
- 3. Interpretation.** Any questions of intent or interpretation of any condition will be resolved by the Executive Director or the Commission.
- 4. Assignment.** The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.
- 5. Terms and Conditions Run with the Land.** These terms and conditions shall be perpetual, and it is the intention of the Commission and the Permittee to bind all future successors in interest to the terms and conditions.

B. Special Conditions

1. Wetland Delineation requirements for Tree Bones site. PRIOR TO COMMENCEMENT OF CLEARING OR GRADING ACTIVITIES ON THOSE PORTIONS OF THE TREE BONES DISPOSAL SITE WITHIN 300 FEET OF THE FLOOR OF THE TREE BONES DEPRESSION, permittee shall insure that the lowest part of the Tree Bones depression is evaluated by a qualified wetlands delineator. If the delineator discovers substantive evidence that this occasionally flooded area constitutes a wetland habitat, the mitigation measures incorporated in this project shall be reviewed and if necessary, adjusted to insure protection of the wetland resource. Any of these three wetland indicators may constitute evidence of wetland habitat: consistent seasonal inundation;



hydrophytes; or hydric soils. The adjusted avoidance and mitigation measures, including any site plan revisions that may be needed to increase the setback distance from the occasional water body, shall be submitted for review and approval by the U.S. Forest Service as well as the Coastal Commission Executive Director.

2. Revised/updated site plans for Tree Bones and Willow Springs disposal sites. A revised/updated site plan shall be submitted for Executive Director review and approval PRIOR TO DEPOSITION OF TRANSPORTED MATERIALS at the Tree Bones site, and similarly for the Willow Springs site. Revised/updated plans may be submitted at different times for each respective site. Such revised/updated site plans shall:

- a. provide a minimum setback of 100 ft. from the floor of the Tree Bones depression to the toe of the fill slope (a greater setback may be necessary, of up to 300 ft., based on the recommendations of the U.S. Forest Service and Coastal Commission biologists, *if* the occasional flooded area is determined to constitute a wetland habitat);
- b. show placement of horizontal drains, hydroaugers and other measures for dewatering the landslide formation, overall, for the Tree Bones site; this subsurface drainage system shall be placed and designed to offset the additional weight of materials deposited in the approved disposal site, without impacting the level of any water that may naturally accumulate within the Tree Bones depression;
- c. show placement of horizontal drains, hydroaugers and other measures for dewatering the landslide formation, overall, for the Willow Springs site; this subsurface drainage system shall be placed and designed to offset the additional weight of materials deposited in the approved disposal site;
- d. indicate how non-business vehicle access to each site will be controlled; subject to consent by the Forest Service, vehicle exclusion barriers may be placed on the access roads to protect the integrity of each disposal site;
- e. not result in any new barren surfaces visible from Highway 1 following any given disposal season; and,
- f. show a finished fill surface that, upon completion of all allowable disposal, will have gently rounded forms that closely resemble the existing slope angles and contours around the site--so as to be virtually indistinguishable from the natural hummocky landscape in this area. (This provision is not intended to preclude future reentry to extract deposited landslide materials for reuse. And, subject to Executive Director review and approval of a subsequently revised site plan, final grading may be further modified to accommodate future uses approved by the Forest Service. Examples of such potential uses include access roads, a flat area suitable for materials handling and recycling operations by Caltrans, and/or graded surfaces suitable for a campground or trailhead parking.)

3. Permanent deposition limited to natural materials from Big Sur Coast area. Subject to the



limitations of the Forest Service special use permit, it is intended that the approved disposal sites be available for all necessary operations required for response to landslide events, including sorting and recycling of materials. However, any materials permanently placed at the authorized disposal sites shall be limited to natural substances such as rock, earth, topsoil, woody debris and other organic matter. All such materials placed in the disposal site shall be exclusively from the Big Sur Coast area (Carmel River through San Carpoforo Creek). Asphalt, concrete and other man-made materials shall be reprocessed for use elsewhere, or removed from the Big Sur Coast area for recycling or disposal at an approved sanitary landfill.

4. Permanent deposition reserved for use only when there is no reasonable alternative. The approved disposal sites shall be available for landslide materials handling, sorting and recycling purposes, at applicant's discretion. However, in order to retain as much reserve disposal capacity as possible, landslide materials shall not be *permanently* placed at these terrestrial disposal sites unless there is no suitable, timely, feasible, less environmentally damaging alternative available.

Suitable alternatives to be considered include, but are not limited to: on-site reuse; erosion and storm damage repair; restoration of graded landforms; stockpiling (at this site or elsewhere) for future repair or construction purposes; beach/shoreline sand and rock replenishment; construction of earthen buttresses to increase stability at landslide-prone locations; berming to contain rock fall; disposal through slope detention; disposal through reprofiling the highway surface; Scenic Byway recreational and roadway safety enhancements, consistent with the Big Sur Coast Highway Management Plan (CHMP); and, export to locations outside the Big Sur Coast, including Corps of Engineers-approved marine disposal sites.

Alternatives that will not accomplish the necessary disposal purpose, or that are infeasible, or are not consistent with applicable Coastal Act or Local Coastal Program policies, or that are otherwise patently unreasonable, need not be considered. While each reasonable disposal alternative shall be considered, the actual selection of alternative for any given storm event or disposal cycle shall be made in consultation with the relevant regulatory and resource management agencies (e.g., Monterey Bay National Marine Sanctuary, Corps of Engineers, U.S. Fish & Wildlife Service, U.S. Forest Service, State Parks, California Coastal Commission, Calif. Dept. of Fish & Game, Monterey County Planning & Building Inspection Dept., or others, as applicable). The export alternative shall be considered the least desirable.

Disposal at other locations in the California Coastal Zone may be subject to the coastal development permit process. Placement on beach or shoreline areas will be additionally subject to authorization from the Monterey Bay National Marine Sanctuary.

5. Notice of intent to use site required for permanent deposition. No notice is required for temporary placement of materials at either disposal site, unless permanent deposition is anticipated. On those occasions when permanent deposition *is* anticipated, **PRIOR TO COMMENCEMENT OF EACH PERMANENT DISPOSAL EPISODE** at one or both of these permitted sites, the Caltrans District Director, or his or her designated representative, shall give notice to the Executive Director of the Coastal Commission (via e-mail or similar immediate means, attention to the Coastal Commission



district office). Such notice shall provide the type and estimated amount of material to be deposited and summarize the reasons that it is necessary to use this terrestrial disposal site alternative. Permittee shall also briefly demonstrate that each of the reasonable alternatives, identified pursuant to Special Condition no. 4 above, was considered, and give the reason that such alternative was not selected. The standard Emergency Highway Repair Interagency Notice form, developed in the Big Sur Coast Highway Management Plan process, may be adapted for this purpose.

Unless the Executive Director determines that such demonstration is substantially flawed, and responds accordingly to the Caltrans District Director, the disposal work may commence (subject to the terms of the U.S. Forest Service Special Use Permit). Under non-emergency conditions, permittee shall allow a minimum of 10 regularly scheduled State working days for such Executive Director response, following the day of receipt of notice. Under emergency conditions, the response period may be reduced as circumstances warrant, at the discretion of the Executive Director.

6. Annual Report Requirement for permanent deposition. On an annual basis, Caltrans shall submit to the Executive Director a short-form report of the types and volumes of materials that have been permanently deposited at each site. The types and volumes of any materials that remain temporarily stockpiled at the sites shall also be reported, along with an indication of their intended final deposition and the timing anticipated for this deposition to occur, if known.

7. Special Geotechnical Monitoring Requirement. In addition to any other monitoring that may be conducted pursuant to Caltrans' or U.S. Forest Service standards, permittee shall:

- a. PRIOR TO THE INITIAL DISPOSAL EPISODE at each respective disposal site, submit for Executive Director review and approval, a geotechnical monitoring and response plan; such plan shall:
 - 1) identify an appropriate geotechnical monitoring system for detecting ground movement and subsurface water levels at, and downslope from, each disposal site; this system may include the existing instrumentation together with any necessary additional motion sensors or other means of detecting ground movement and indications of impending ground failure;
 - 2) specify quantitative risk thresholds that would indicate a need to halt disposal operations, or a need to remove recently added materials, or a need to initiate an emergency response, based on monitored indicators (e.g., elevated water levels on the slide plane, accelerated ground movement, new tension cracks);
 - 3) specify when and under what circumstances the various components of the monitoring system can be reasonably phased out, assuming no accelerated landslide movement is detected (or if detected, does not warrant continued active monitoring);
 - 4) detail an emergency response plan in event sudden movement is detected, or the indicators point to a significantly elevated risk of sudden movement. Such plan should include at a minimum: installation of warning signals; immediate telephone notification



of the appropriate emergency authorities; interagency notification via the standard Emergency Highway Repair Interagency Notice form; and, as necessary, evacuation of any personnel that do not need to be in the area of potential landslide impact, including but not limited to employees at Caltrans' Willow Springs Maintenance Station, occupants of the Treebones Rustic Campground facility, and/or the public on the adjacent segment of State Highway Route 1.

- b. PRIOR TO THE INITIAL DISPOSAL EPISODE, provide and maintain the approved geotechnical monitoring system.

8. Special Botanical Monitoring Requirement. In addition to any other monitoring that may be conducted pursuant to Caltrans' or U.S. Forest Service standards, permittee shall:

- a. PRIOR TO COMPLETION OF THE INITIAL ACCESS ROAD AND SITE PREPARATION WORK for each respective disposal site, submit for Executive Director review and approval, an invasive plant monitoring and response plan; such plan shall provide for the detection and timely removal of undesirable non-native invasive plants that may colonize the disposal site surfaces, the access road corridors leading to the sites from State Highway Route 1, or any adjacent areas disturbed by disposal operations;
- b. Identify the targeted undesirable non-native invasive plant species; such identification shall be conducted in consultation with the assigned Forest Ecologist, shall be updated from time to time in response to new, increased or diminished threats; and, shall be subject to confirmation by the U.S. Forest Service District Ranger;
- c. Periodically inspect each utilized disposal site and respective access road for the presence of any genista, pampas grass or other undesirable non-native invasive plants, not less than once per year prior to the time that the targeted species would (if present) go to seed;
- d. Eradicate, by mechanical removal, non-persistent herbicides or other means acceptable to the U.S. Forest Service, all detected occurrences of the subject non-native invasive plants, prior to the time that the subject species would produce viable seed;
- e. Provide for the transfer or termination of monitoring responsibilities when satisfactory conditions are achieved, i.e., when the presence of invasive non-native plants is approximately the same or less than prior to commencement of the project, or the same or less than found on surrounding similar lands.

9. Public Access. The entirety of each site shall continue to be open to public entry, whether on foot or on horseback. Nothing in this permit shall be construed as limiting public access to National Forest lands, as normally allowed and regulated by the U.S. Forest Service. Provided, permittee may temporarily redirect public use within the approved sites at such times that site preparation activities or active disposal operations would constitute a potential hazard to visitor safety; or, when active public use would damage erosion control measures or seacliff buckwheat plantings.



10. Project limits and criteria for acceptance of future amendment requests. The total amount of fill that may be placed in the disposal sites pursuant to this permit is 120,000 cubic yards (100,000 at Tree Bones; 20,000 at Willow Springs).

However, the Executive Director may *accept* a future request for amendment of this permit to allow placement of additional materials above these limits, or for use as a borrow site, if he or she determines that:

- a. there is no feasible, less environmentally damaging alternative;
- b. the appropriate environmental assessments demonstrate that there will be no significant disruption of environmentally sensitive habitat areas on or near the disposal sites;
- c. with respect to Smith's blue butterfly or other endangered species habitat, the necessary consultations with the U.S. Fish and Wildlife Service and U.S. Forest Service have been completed;
- d. the Critical Viewshed, as seen from Highway 1, will not be degraded (beyond the construction period);
- e. a geologic risk assessment has been completed, supported by the appropriate testing and monitoring, that demonstrates that the additional quantity of materials is not likely to significantly increase the risk of damaging earth movement in the Gorda area;
- f. an on-going geologic monitoring program is in place, and is designed to detect any unexpected sudden or accelerated earth movement;
- g. applicant agrees to immediately halt disposal activities if such accelerated movement is detected;
- h. by means of wetting or other appropriate methods, fugitive dust will be controlled so as to minimize impacts on nearby visitor-serving commercial and recreational facilities;
- i. upon cessation of earthmoving activities for the season, all barren areas will be hydroseeded with a non-invasive groundcover approved by the USDA-Forest Service District Ranger;
- j. the fill placement is designed so that, upon completion of all allowable disposal, all fill surfaces (except those approved for campground development or other allowable uses) will all have gently rounded forms that closely resemble the existing slope angles and contours around the site—so as to be virtually indistinguishable from the natural hummocky landscape in this area; and,
- k. any such additional operations within Los Padres National Forest have been approved by the appropriate USDA-Forest Service authorities.

11. Revisions and Amendments. No changes to the approved final plans (as revised in accordance with Special Conditions no. 1 and 2 above) shall occur without a Commission amendment to this coastal



development permit, unless the Executive Director determines that the change is immaterial or that no amendment is necessary.

This project is subject to U.S. Forest Service Special Use Permit no. MRD1012P, expiration date 12/31/2009 (see Exhibit A, attached). Any revision or amendment of the terms or conditions of this Special Use Permit or the associated mitigation measures shall be reported to the Executive Director. Any such changes shall be reviewed by the Executive Director for determination of materiality, and if found material, shall be submitted to the Commission for consideration as an amendment to this coastal development permit.

12. Assumption of Risk.

By acceptance of this permit, the applicant acknowledges and agrees (i) that the site may be subject to hazards from geologic instability, including but not limited to landslides and other earth movement; (ii) to assume the risks to the applicant and the property that is the subject of this permit of injury and damage from such hazards in connection with this permitted development; (iii) to unconditionally waive any claim of damage or liability against the Commission, its officers, agents, and employees for injury or damage from such hazards; and (iv) to indemnify and hold harmless the Commission, its officers, agents, and employees with respect to the Commission's approval of the project against any and all liability, claims, demands, damages, costs (including costs and fees incurred in defense of such claims), expenses, and amounts paid in settlement arising from any injury or damage due to such hazards.

III. Recommended Findings and Declarations

The Commission finds and declares as follows:

A. Project Background

1. Project Location and Description

The project is located within Los Padres National Forest, near Gorda, in the Big Sur Coast Area of Monterey County. This location is near the southerly end of the Big Sur Coast landform, which is generally considered to start in the northern extremity of San Luis Obispo County and extend northwards approximately 75 miles through Monterey County.

The proposal includes the preparation of two landslide materials handling and disposal sites on the east side of State Highway Route 1, in natural depressions referred to as the Willow Springs depression and the Tree Bones depression. These sites are located at approx. Post Miles 10.4 & 11.0, respectively. The project will also necessitate repair and improvements to the existing graded, unpaved access roads that connect the sites to the highway, located at approx. Post Miles 10.6 & 11.2, respectively. The proposed total amount of fill, excluding fill placed to upgrade the approach roads, is 120,000 cubic yards (20,000 at Willow Springs; 100,000 at Treebones). An estimated additional 1,300 cubic yards of fill is expected to be utilized in bringing the Willow Springs approach road up to standard.



This permit will allow preparation of the sites for placement of this fill, and the use of the sites for landslide materials handling and sorting. However, it is anticipated that long-term fill will be placed within the disposal sites only when circumstances exist that preclude other feasible means of restoring Highway 1 to operational service. This parsimonious approach is necessary because suitable, environmentally acceptable terrestrial disposal sites are extremely scarce along the Big Sur Coast. Therefore, Caltrans and the other involved public agencies have agreed that it is important to carefully conserve remaining disposal capacity. Accordingly, it is possible that it will be some time before permanent fill completely occupies either or both sites.

Besides Highway 1 itself, the developed context of Gorda is minimal: Caltrans' Willow Springs Maintenance Station, near the Willow Springs disposal site; a privately-owned "rustic campground" featuring overnight stays in yurts, recently completed adjacent to the Tree Bones site; and the Gorda Springs Resort, an established visitor serving development with a café, gasoline, a general store, and several overnight rooms, about 0.2 miles south of the Willow Springs site. Surrounding Gorda are the rugged slopes of Los Padres National Forest, culminating at Alder Peak (elev. 3744'), on the Coast Ridge Divide about 4 miles to the east. And, to the west is the extremely steep, loosely-consolidated bluff face where the National Forest abuts the waters of the Monterey Bay National Marine Sanctuary.

2. Permit/Project History

Early in the development of the Coast Highway Management Plan (CHMP) for the Big Sur Coast Highway, it became apparent that there was a pressing need for ways to clear landslides without harming marine resources below the roadway, or incurring astronomical hauling costs and substantial traffic burdens to remote landfill sites far away from Big Sur. The CHMP interagency technical working group (including Caltrans, National Marine Sanctuary, Monterey County and Coastal Commission staff) responded by suggesting a robust range of alternatives for landslide management and disposal. Each of these has its respective environmental and engineering feasibility advantages and issues, depending on local context and temporal circumstances in any given year. An especially important "critical circumstances" measure within this range of studied alternatives proved to be the terrestrial disposal option.

In July 2002, with encouragement from these CHMP steering committee members, the California Dept. of Transportation submitted coastal development permit applications for several potential terrestrial disposal sites, including the currently proposed two disposal sites near Gorda within Los Padres National Forest. The applications were supported by an Initial Study and CEQA Mitigated Negative Declaration (Dec. 2000), which evaluated the various possible terrestrial disposal sites along the entire Big Sur Coast. The application to the Coastal Commission, originally no. 3-02-051, could not be filed as originally received. Additional geotechnical monitoring was undertaken, and biological consultations with the U.S. Fish and Wildlife Service pursuant to the federal Endangered Species Act were completed. These steps were necessary before landowner (USDA-Forest Service) consent could be attained for purposes of filing the application.

Once this work was completed, the Forest Service approved a Special Use Permit for the project, in December 2004. Subsequently, the original application was merged with revised project plans and the



Forest Service-required conditions and mitigation measures, and filed in January 2005 as application no. 3-05-001. The analytical process since then has proceeded cautiously, and an extension of time for Commission action has been granted by the applicant.

3. Review authority and Standard of Review

Coastal Development Permit authority within Los Padres National Forest. Both of the proposed disposal sites are located on federal lands within Los Padres National Forest. The subject application involves a development project, by a State agency, on land under the sole ownership of the Federal government. Pursuant to the Granite Rock decision, the State regulates non-federal development activities on such coastal lands, through the coastal development permit (CDP) process. This CDP application is therefore being reviewed directly by the Coastal Commission, rather than through the County of Monterey.

Standard of Review. Review of the CDP application will address the State's responsibilities for federal consistency review under the requirements of the (Federal) Coastal Zone Management Act of 1972 (CZMA). The standard of review for this project will be conformity with the California Coastal Act of 1976, in particular the Chapter 3 coastal resources planning and management policies contained therein.

4. Relationship to other Plans

Local Coastal Program (LCP). The Monterey County Local Coastal Program (LCP), including the Big Sur Coast Land Use Plan (LUP), has been certified by the Coastal Commission. The LUP includes a "National Forest" land use designation, which the County applied to both federal and a few isolated non-federal lands within the exterior boundary of Los Padres National Forest. Certification of the LCP resulted in assumption of coastal development permit (CDP) authority by the County in 1986. However, the delegation of CDP authority does not apply to federally owned lands.

While the Coastal Act's Chapter 3 policies (not the LUP) comprise the legal standard of review for uses on these federal lands, it is acknowledged that the LUP is nonetheless a helpful tool for the task of determining the appropriate application and interpretation of the Coastal Act's Chapter 3 policies. Therefore, it is relevant to note that both the State Highway Route 1 right of way, and the proposed landslide disposal sites near Gorda fall within the "National Forest"(NF) land use designation; and, that LUP policy 5.4.3.A.4 provides that non-federal uses within the "National Forest" land use designation should be subject to the same criteria and standards as for the LUP's "Watershed and Scenic Conservation"(WSC) land use designation. Caltrans maintenance stations are specifically cited as an example of allowable non-federal development in the NF land use designation.

Coast Highway Management Plan (CHMP). The Coast Highway Management Plan (CHMP) is a collaborative and comprehensive corridor planning effort, that was guided in its development and ratified by a 19-member stakeholder Steering Committee. This group included Caltrans, National Marine Sanctuary, US Forest Service and Coastal Commission staff representatives. Funded in part by a Scenic Byways grant from the Federal Highway Administration, it yielded a rich array of dividends that will have scientific and practical application for many years to come.

The basic Corridor Management Plan is supported by guidelines documents for Corridor Aesthetics,



Vegetation Management, and Landslide Management & Storm Damage Response. As such, it represents a strategic plan for the management of the highway corridor rather than a regulatory document. For example, this project is part of Strategy A-2.8 for Handling Excess Material: "Identify, evaluate and seek approval for terrestrial sites available to receive excess material." It will also support Strategy A-2.7: "Follow best practices for material handling that includes reduction, recycling and beneficial re-use."

Along the Big Sur Coast, landslide closures of Highway 1 are a certain and recurring phenomenon. In the past, the customary response to landslide disposal has been to deal with it on an emergency basis—including Emergency Coastal Permits from the County and Coastal Commission. What this means is that decisions are crisis-driven, the options for disposal are often narrowed to the most expedient, the opportunity for considered environmental analysis is minimal, and the opportunity for public notice and input to the decision-making process is severely curtailed.

Accordingly, a unique aspect of the CHMP's management strategies and Landslide Management Guidelines, and this application in particular, is that it represents a completely different approach, i.e., the establishment of carefully-selected disposal options in advance of actual need. This allows the candidate sites to be methodically studied, to be deliberated without compromising public notice and input opportunities, to be properly permitted according to the normal public decision-making process, and to be prepared in advance with normal (not expedient) construction practices and precautions. Then, when an event occurs and the CHMP management strategies are followed, the most environmentally sound disposal option may be selected and employed by decision-makers.

Monterey Bay National Marine Sanctuary (MBNMS). The management plan for the MBNMS is currently being updated, and will presumably be harmonized with the applicable CHMP strategies. Nonetheless, a key stimulus in finding suitable terrestrial disposal sites can be found in the text of the Sanctuary Superintendent's comments on the Caltrans environmental review document: "Disposing of material in the ocean, or placed above the shoreline but in a manner where it would subsequently enter the ocean, is regulated by the National Marine Sanctuaries Act. Disposal is strictly prohibited by the regulations for the Monterey Bay National Marine Sanctuary..."¹

Los Padres National Forest Land Management Plan (LMP). For land use management direction on the federally-owned lands of Los Padres National Forest (LPNF), the USDA-Forest Service relies on its adopted Land and Resource Management Plan (LRMP). The LRMP establishes long range direction for 10 to 15 years, specifies standards and practices necessary to achieve that direction, and specifies evaluation and monitoring requirements to ensure that the direction is being carried out effectively. It defines particular management zones, with allowable uses ranging from unroaded Wilderness to developed recreational sites, resource extraction and conservation, and supporting public works facilities.

¹ Letter of February 18, 2000, from Superintendent Wm. J. Douros to Aileen Loe, Caltrans Dist. 5.



The LRMP was drafted subsequent to the certification of the Monterey County LCP, including the Big Sur Coast LUP. This enabled Forest Service, County and Coastal Commission planners to work together to insure compatibility between the plans. The LRMP's management zones and land use direction provide a greater level of distinction than the LUP, which uniformly lumps these lands (which are not within the County's land use regulatory jurisdiction) into the "National Forest" land use designation. A consistency determination for the Los Padres National Forest LRMP, designated CD-18-88, was reviewed and concurred with by the California Coastal Commission, dated June 7, 1988.

Currently, the Forest Service has undertaken a periodic revision of the LRMP as required by the National Forest Management Act of 1976. The updated version will be known as the LPNF Land Management Plan (LMP). The LPNF LMP, in conjunction with its supporting FEIS, is a programmatic document that contains a hierarchy of strategic direction for the management of the Forest. Project-level decisions about roads, campgrounds, or other facilities and activities are then required to be consistent with the direction given in the LMP, and are subject to project-specific environmental review pursuant to NEPA requirements.

It is expected that a Coastal Program Consistency Negative Determination for the LMP will be submitted in compliance with Sections 930.34 and 930.35 of the National Oceanic and Atmospheric Administration Federal Consistency Regulations (Title 15, Code of Federal Regulations, Part 930). According to Forest Service staff, this negative determination is based on an evaluation of the relevant enforceable policies of Chapter 3 of the California Coastal Act, as amended, and the Big Sur Coast Land Use Plan (LUP) relative to the land use zones, management emphasis, desired condition, and design criteria (standards) of the revised LPNF management plan (i.e., the LMP), and on past Coastal Commission review of the existing LPNF management plan (i.e., the LRMP).

As indicated by the terms of the Forest Service's Special Use Permit (condensed version attached as Exhibit E), when new permits are issued, the uses authorized must be "compatible with the land use allocation in the Forest Land and Resource Management Plan." As well, the project is consistent with the proposed LMP and will not prejudice the Commission's ability to evaluate the pending federal consistency action on this updated National Forest management plan.

B. Coastal Development Permit Determination

1. Geologic Hazards: Living with Landslides

a. Policies

Each sub-part of Coastal Act Section 30253 applies to this project. This policy provides as follows:

Section 30253. New development shall:

(1) Minimize risks to life and property in areas of high geologic, flood, and fire hazard.



(2) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs

(3) Be consistent with requirements imposed by an air pollution control district or the State Air Resources Control Board as to each particular development.

(4) Minimize energy consumption and vehicle miles traveled.

(5) Where appropriate, protect special communities and neighborhoods which, because of their unique characteristics, are popular visitor destination points for recreational uses.

b. Context: Landforms in Motion vs. the Big Sur Coast Highway

“What makes it [the Big Sur Coast Highway] so scenic, also makes it one of the most difficult and expensive roads in the World to maintain”-- Caltrans geologist John Duffy²

Southwards from Hurricane Point, much of the Big Sur Coast Highway is unavoidably aligned on landslides, or landslide-generated landforms. In support of the CHMP planning process, these landslide features were recently and comprehensively mapped by the California Geological Survey³. Big Sur’s landslides were found to range from ancient and inactive, to continually creeping, active instabilities. Ancient and more recent landslides often adjoin one another. As mapped, it gives the impression of a landscape utterly dominated by landslides.

Projected need for landslide disposal. The overall landslide volume on the Big Sur Coast varies greatly from year to year, ranging from only a few thousand cubic yards in a dry year to millions of cubic yards in a severe storm season. A retrospective study determined that landslides and similar land instabilities that affect the Big Sur Coast Highway amount to roughly 100,000 cubic yards per year, on average. Some of this volume continues uncontrollably downslope and enters the marine environment (as it did before there was a highway). Some gets hung up on the highway. Left there, it blocks the highway, or causes it to collapse, and—apart from the potential for economic and environmental impacts--represents a serious public safety issue.

Prolonged highway closures mean that Big Sur residents, as well as emergency response vehicles and through traffic, must detour for the duration. For example, UC Santa Cruz graduate research assistants had to travel more than 180 extra miles round trip to reach the UC Big Creek Reserve, when a large landslide in J.P.Burns State Park closed the highway for more than a year, 1983-1984. The implications include greatly increased miles of vehicle travel, increased energy consumption, and exclusion of the public from a very popular visitor destination. Thus, long term closures are inconsistent with Coastal Act Sec. 30253(4) and (5), cited above. This impact can be substantial, because when Highway 1 is open, the Big Sur Coast records an annual visitation rate of approximately 3 million per year. Therefore,

² The History Channel, “Modern Marvels: Pacific Coast Highway” (July 7, 2005)

³ *Landslides in the Highway 1 Corridor: Geology and Slope Stability along the Big Sur Coast* (Calif. Div. of Mines and Geology, 2001)



it becomes imperative for Caltrans to remove or correct landslide impediments, as expeditiously as possible.

Available landslide disposal measures. Typically, a substantial amount of landslide material gets redistributed on-site as part of repairing the roadway. The excess landslide materials are otherwise stored in pullouts, bermed along the shoulder of the highway, backfilled into eroded gullies, or can be placed on selected seaward highway slopes under an experimental "slope detention" program (authorized through County-issued coastal development permits only at Pitkins Curve and Big Slide, at present).

The alternative of direct beach/shoreline replenishment, although supported in concept by the Coastal Act, is currently *not* available due to other regulatory considerations, including those of the Monterey Bay National Marine Sanctuary. In the future, this *could* become a viable option, pending completion of marine habitat and sediment transport studies that will indicate where (or if) landslide materials can be placed without harm to National Marine Sanctuary resources.

Emergency and desperation measures. Less desirable alternatives are presumably still possible, but may have unpalatable environmental or economic consequences. For example, under emergency circumstances landslide materials might have to be pushed directly over the side, if no feasible alternatives are available. Rock slope protection or rip-rap might theoretically retard the movement of such materials into the marine environment, but to date shoreline protection works have generally been successfully avoided along the Big Sur Coast. The obvious concern with these disposal methods is the potential for collateral damage to sensitive terrestrial and marine habitats below, as well as negative impacts to scenic resources.

Also highly problematical is the alternative of hauling the landslide to established landfill sites. The nearest established landfills are 33 miles south or 80 miles north of the Gorda landslide complex—and filling these distant sites with clean landslide material reduces their capacity to accommodate more critical needs such as municipal waste disposal. Experience has clearly demonstrated that landslide disposal by means of long-distance truck hauling is (generally speaking) prohibitive in cost, results in long delays in reopening the highway, impairs use of the public access corridor while the hauling operation is active, and potentially requires repaving and other repairs of the highway after the haul operation is completed.

In the 1998 storm season, for example, the available highway space was dominated by 150 trucks making multiple trips per day, and all the above-listed impacts were apparent. For the duration, the special community character of Big Sur was degraded; and, the highway corridor experienced significant cumulative air pollution impacts from diesel exhaust emissions—which, according to the State Air Resources Board, is one of the most serious threats to California's air quality. Thus, the large-scale, long-haul disposal option is contrary to the purposes of Coastal Act Section 30253(3) and (5), cited previously. Nonetheless, direct over-the-side disposal and long-distance hauling are the unavoidable alternatives when Caltrans has no other choice for reopening the highway.



Planning ahead for landslide management. The California Geological Survey has recently mapped the known extent of landslides along the Big Sur Coast. A just-released U.S. Geological Survey fact sheet summarizes: "In all, more than 1,500 landslides have been mapped along the Big Sur Coast."⁴ At the approximate 83 particular sites⁵ where continued land movement can be anticipated, Caltrans has pursued long-term solutions that respond to the circumstances of each of the known landslide locations with a history of impacts to the Highway. These measures include separating the highway from the unstable landform (e.g., the Forest Boundary viaduct project), re-profiling the roadway on top of the landslide material (e.g., south of Big Creek Bridge), realigning the roadway away from the instability (e.g., north of Little Sur), removing driving forces (e.g., at Hurricane Point), increasing resisting forces (e.g., at Grey Slip), dewatering the landslide (many locations) or simply "living with the landslide" by continually resurfacing the roadway as the supporting fill gradually creeps downhill.

In addition to known landslide areas, a great many other landslides occur at times and locations and in volumes that cannot readily be predicted. Nonetheless, we can take reasonable measures to prepare for the inevitable instabilities. Terrestrial disposal sites are a cornerstone component of these advance preparations. They allow for necessary sorting and temporary stockpiling of landslide material and represent a planned alternative for use when long-haul trucking, or emergency direct marine disposal, would be the only other reasonable options for restoring service along Highway 1.

c. Analysis of Proposed Project

What is proposed? The project involves establishment of two terrestrial permanent disposal sites for soil and debris generated by landslides and other naturally occurring events. Until these sites are filled to capacity, they may also be utilized for landslide materials processing and recycling. The purpose of the project is to provide terrestrial disposal options in anticipation of future landslides and storm events, as necessary for restoring service on the Big Sur Coast Highway.

The two disposal sites, identified as Tree Bones and Willow Springs, are located less than a half mile apart, but are served by two different access roads easterly from Highway 1. Together, they will have a total capacity of 95,000 cu.meters (about 120,000 cu.yds.). These sites would receive earthen materials such as rock, soils and incidental vegetation, trucked in from landslide locations elsewhere along the Big Sur Coast Highway. The concept is to permit and prepare the sites in advance, to utilize them as needed to facilitate recycling or reuse of landslide materials, but to use their limited capacity as sparingly as possible when it comes to permanent disposal of landslides.

Both proposed disposal sites are located in depressions, within a major ancient landslide complex. As documented by the CGS mapping effort, much of the southern Big Sur Coast landscape comprises a nearly continuous series of landslide-generated landforms. These are a mix of ancient, often well-vegetated landslides dating back to 10,000 years before present or more, landslides of intermediate age,

⁴ USGS Fact Sheet: *Rates of Landsliding and Cliff Retreat Along the Big Sur Coast, California—Measuring a Crucial Database* (2005).

⁵ California Department of Transportation: *Mitigated Negative Declaration for Disposal Sites for Storm Damage Repair on Highway 1, near Big Sur, California* (Dec. 2000). Tables 1 and 2 list, respectively, rockfall locations and landslide locations.



and currently active, relatively "young" instabilities. The proposed disposal sites are both located in natural depressions, comprising a total area of less than 7.5 acres within the very large (approx. 1,000 acre) Gorda landslide complex.

What makes a landslide slide? While the overall characterization of the Gorda complex is "ancient landslide," we need to be mindful that old landslides can be reactivated in various ways. For example, if the toe of the landslide (at the shoreline) were to be eroded to the point that it no longer was sufficient to hold back the material further upslope, then we might expect renewed movement. Similarly, groundwater saturation of material above the slide plane reduces frictional resistance and can lead to renewed slide movement. The opposite of these resisting forces would be the driving force, that is, the forces that push on the landslide formation and—when the resisting forces are overwhelmed—cause the landslide to move until a new equilibrium of forces is reached.

This project, over time, will potentially result in up to 100,000 cubic yards of imported landslide material to be placed on top of an existing landslide formation at the Tree Bones site, and another 20,000 cubic yards at the Willow Springs site. The weight of this additional material will, to some degree, increase the driving forces on their respective portions of the Gorda landslide complex. The concern is that the additional weight might be enough to reach a threshold or tipping point where the existing overall equilibrium would be upset. The antidote to such an increase in driving forces would of course be to proportionately increase resisting forces—for example, by dewatering the landslide with hydroaugers or similar measures.

Alternatives for disposal: past experiences. A conventional approach to managing landslides is removal of the entire slide mass, with direct marine disposal. This is the method employed to clear the McWay landslide, within J.P. Burns State Park, following the El Nino storm season of 1983. Highway 1 was closed for 13 months, while 3,750,000 cubic yards of material were moved. So much material was deposited in the ocean below the slide, that a new peninsula was formed and the USGS quadrangle map had to be revised to show the new shoreline. This mass of sediment is still working its way through the local system. This alternative is undesirable because of extreme impacts on marine resources, extremely long time to reopen the highway, and extreme costs—and in any case is no longer available due to Monterey Bay National Marine Sanctuary regulations.

In order to avoid ocean disposal, long-distance hauling was employed in the 1998 El Nino season. That year, the Big Sur Coast Highway was cut in 40 different places, including by four different large-scale landslides of more than 100,000 cubic yards apiece. A fleet of large (10-yard capacity) earthhauler trucks was employed to move this material to distant approved landfill sites, outside the Big Sur Coast area, 10 cubic yards at a time. Travel times ranged up to 2 hours per load, per truck, for a 38-mile round trip. Over 1,000,000 cubic yards were transported altogether, and the total cost of major repairs exceeded \$29,000,000.



This alternative also proved undesirable, not only because of direct hauling expense⁶, but also the hidden cost of having to repave the entire highway after being broken down by heavy truck convoys. Other, more hidden effects included air quality impacts from some tons of diesel particulate emissions, asphalt-laden runoff from the broken pavement, and a more than three month delay before the highway could be reopened to through visitor traffic. Even local trips were impaired for several months, until truck traffic slacked enough to allow normal travel to resume along the public access corridor.

Another reason to avoid hauling Big Sur's landslides to distant landfills, is that the export of sediments from the local system can have unintended consequences. For example, when the toe of the slope is deprived of fresh sediments to buffer wave attack, shoreline erosion is exacerbated. The resisting forces that buttress against landslide movements are reduced, potentially triggering landslide movement further upslope. Or, the highway fill slope can be undermined, causing collapse of the roadway into the nearshore environment. Therefore, because of its potential to aggravate shoreline erosion and cause new instabilities, export of sediments suitable for shoreline replenishment should be avoided where possible.

Is there a better way? This question provoked the quest for more environmentally sound disposal alternatives, advanced planning for landslide disposal, and a more complete hierarchy of options for responding to storm events. This is one of the primary purposes of the Coast Highway Management Plan (CHMP) undertaking.

CHMP-recommended landslide disposal strategies. Each of the strategies for landslide disposal identified in the CHMP has its particular advantages and drawbacks, depending on the circumstances of each individual landslide event. In the majority of instances, reuse/recycling of the materials will be the most desirable option. To facilitate this alternative, more space is needed to perform the handling, temporary storage and sorting operations. This project will provide two off-highway locations where such operations can be carried out without unnecessarily occupying roadside shoulders and pullouts (which are needed for traffic safety, scenic viewing, and public access parking).

The CHMP identified a number of other landslide management/disposal strategies as well. These included shoreline replenishment, slope detention, highway realignment, etc. However, in particular instances, neither the reuse/recycle alternative, nor the CHMP's other preferred alternatives will be feasible. Such circumstances may include, for example, extremely large slide volumes, overly long haul distances, the presence of highly sensitive marine habitats or terrestrial environmentally sensitive habitat areas, or lack of time to obtain regulatory permits.

Apart from their potential for facilitating the preferred reuse/recycling alternative, the Tree Bones and Willow Springs sites are designed to accommodate long-term or permanent deposition of excess landslide materials. While there are many locations where such terrestrial disposal could physically happen along the Big Sur Coast, the studies conducted in support of the CHMP planning effort demonstrated that the potential for environmentally acceptable terrestrial disposal is extremely limited.

⁶California Department of Transportation: *Mitigated Negative Declaration for Disposal Sites for Storm Damage Repair on Highway 1, near Big Sur, California* (Dec. 2000). Caltrans states that the costs for handling landslide material can be as high as \$11 per cubic yard, plus another \$1 per mile, one way, for each cubic yard transported.



What capacity has been identified will therefore need to be used extremely sparingly, where there is no other feasible, environmentally acceptable alternative. Accordingly, terrestrial disposal will *not* be the preferred alternative disposal method. Nonetheless, when the chips are down, having this alternative available is essential to our ability to spare critical coastal resources.

Terrestrial disposal alternatives considered. After the 1998 experience was reviewed, a concerted effort was undertaken by Caltrans to locate suitable terrestrial disposal sites *within* the Big Sur Coast area. Working in concert with the community and land management agencies, a list of about 45 likely candidate sites was identified and evaluated (see listed sites in Exhibit D, attached). These sites were further screened according to a number of criteria. Some of these are: geographic distribution (sites are needed in the north, central and southern sectors of the Big Sur Coast); construction feasibility; useful capacity; avoidance of wetlands and environmentally sensitive habitat areas; avoidance of Critical Viewshed impacts; avoidance of archaeological sites; and, availability from landowner.

Some sites were withdrawn during the review process (e.g., Coffeeberry Flat due to potential impacts to an intact archaeological site, Garrapata #4 because some 300 seacliff buckwheat plants would be buried, Naval Facility Pt. Sur for viewshed reasons and prejudice to the State Park planning process). After in-depth technical and public review, the final list of 7 candidate sites emerged.

Five of these, all in the central or northern Big Sur Coast, were subject to County CDP approval—but none are currently being pursued. Of these finalists, the three small sites in Garrapata State Park were dropped due to potential impacts to habitat for the endangered Smith's blue butterfly. The site in the El Sur Ranch was withdrawn due to likely wetland impacts, and poor prospects for ACOE Section 404 permit approval. The Gurries Gulch site was withdrawn because the costs to meet the demands of the private landowner exceed the value of the site for disposal purposes. The other two locations, Tree Bones and Willow Springs, are the top candidate sites in the southern sector, and are the subject of this permit application. Their importance is now underlined by the fact that none of the other candidate sites will be available.

Selection process for suitable disposal sites. An exhaustive process of identifying and evaluating potential disposal sites was conducted; see attached Exhibit D (Table 4 from the Dec. 2002 Mitigated Negative Declaration). Each of the candidate sites was evaluated not only for engineering and geotechnical feasibility, but also for conformance with Local Coastal Program and Coastal Act policies. No single site met every criterion. For example, some would have involved access road construction in highly visible areas of the Highway 1 Critical Viewshed. Some would have impacted native coastal terrace grasslands, or emergent seasonal wet meadows, or riparian redwood forest. Others would have been on sites that are vulnerable to shoreline or streambank erosion, and might in the future require armoring to hold back the deposited sediments.

In selecting the best of these candidates, protection of Big Sur's spectacular views, marine habitats, steelhead streams, environmentally sensitive terrestrial habitats, and public access features were the highest priority environmental considerations. Selection on this basis was considered more protective of coastal resources than, say, avoiding ancient but presently-stable landslide areas. As the recently-



completed California Geological Survey mapping has so well demonstrated, the majority of the Big Sur Coast landscape is in fact comprised of, or is subject to, geologic instabilities such as debris flows and landslides (ranging from ancient and stable, to modern and active). Finding a suitable disposal site under such circumstances becomes an exercise in risk management. The challenge is to find reasonably stable sites that are otherwise environmentally acceptable.

Although the Tree Bones and Willow Springs sites are located on ancient landslides, applicant's instrumented test borings show no evidence of present-day movement. The sites are located in natural depressions, well-concealed from Highway 1 views. Potential impacts to endangered Smith's blue butterfly habitat are mitigated to the satisfaction of the US Forest Service, and US Fish & Wildlife Service. Other environmental issues can be addressed through mitigating cautionary measures, such as water quality Best Management Practices (BMPs). Accordingly, these sites were found to be the best of the remaining available landslide disposal opportunities along the southern Big Sur Coast.

Can we be confident that the project will not "contribute significantly to...geologic instability"? Caltrans has undertaken an extensive testing and data monitoring program that helps us understand the relative degree of risk at the Tree Bones and Willow Springs sites. These measures included drilling test borings to a depths beyond 160 ft., to probe the depth of the slide plane beneath the surface; testing rock strengths from similar landslide formations nearby; installing recording gauges to monitor any ground movement within the landslide; and, continually measuring the variations in groundwater depth. No movement has been detected to date.

This data has been made available in a series of monitoring reports, which were submitted to the Coastal Commission's staff geologist for review, and was also made available to geologists at the US Forest Service, US Geological Survey, and California Geological Survey. There appears to be consensus that the addition of material high on an ancient landslide will increase the driving forces that act on the landslide. At some point, continued placement of imported materials would induce renewed movement of the underlying old landslide.

Based on the available data, as well as very extensive practical experience, Caltrans estimates that any increased risk is still within acceptable limits, especially considering the overall context of the generally not-too-stable Big Sur Coast. However, the Commission's staff geologist believes the rock strength parameters used in the applicant's analyses are too high; other issues were noted as well. His review findings are attached as Exhibit F.

Factors of Safety. The degree of risk is expressed as a ratio between driving forces and resisting forces; this ratio is sometimes termed the "factor of safety" or FOS. Caltrans calculates that even when filled to permitted capacity, the amount of added materials (driving forces) would be far less than the old landslide's inherent resistance to movement (resisting forces). The ratio of driving forces to resisting forces can be stated as the "factor of safety" (FOS). (When the FOS is less than 1.0, the structure is clearly unstable and is likely in the process of failing.)

The Coastal Commission, when reviewing new structural development, has generally considered a FOS of 1.5 or better to be the minimum desirable value. Caltrans estimates that the FOS for the Tree Bones



site is currently 2.39, and 3.45 if stronger rock strengths are assumed. They estimate that full placement of landslide material at Tree Bones will result in values of 2.35 and 3.36, respectively. For Willow Springs, these values are 1.62 and 2.80, respectively, for the existing conditions. Caltrans calculates that adding the full amount of landslide material will result in values of 1.59 and 2.70, respectively.

However, the Commission staff geologist states in his review: "Although the modeled factors of safety are very high, far in excess of the usual 1.5 required for new development, I am concerned that they may be overstated." He points out that if a more conservative rock strength value is assumed, and there is a substantial rise in groundwater, the values for Tree Bones could drop to less than 1.5—down to 1.1 when fully loaded. He concludes: "Accordingly, it is my opinion that the proposed project will decrease site stability, and has the potential to instigate or accelerate movement on the existing slide planes."

For the Willow Springs site, with certain assumptions about weaker rock strengths and similarly elevated ground water levels, "...the calculated factor of safety actually drops below 1.0 ... And as at the Treebones site, seismic slope stability is not addressed, nor are the effects of marine erosion on the stability of the slide in the future. Accordingly, it is my opinion that the proposed project will decrease site stability, and has the potential to instigate or accelerate movement on the existing slide planes." See the Commission staff geologist's Geotechnical Review Memorandum of June 2, 2005 (Exhibit F, attached) for a more complete explanation.

What is at risk? A primary risk management consideration is the proximity of people, property and sensitive resources that could be harmed in event of renewed landslide movement. For both sites, the issue is the vulnerability of people, property and sensitive resources, in event that renewed movement of the landslide occurs. The only developed feature directly downslope from either site is Highway 1 itself. There are no roadside vista points, maintained trails or other public recreational facilities or gathering places downslope. The cobble and boulder "beaches" at the toe of the bluff are physically inaccessible to public use.

Also downslope, but offset from the most likely direction of potential landslides originating at the Tree Bones disposal site, is the Tree Bones "rustic" resort camp. Similarly offset relative to the Willow Springs disposal site, is the Caltrans Willow Springs Maintenance Station, which shows evidence of previous slowly-creeping earth movement. The boundaries of sub-units within the Gorda landslide complex are indistinct, so it is difficult to establish any cause and effect relationship between the driving forces at the disposal sites and earth movement elsewhere. These neighboring facilities are also built on landslides, and could be unexpectedly damaged by future earth movement.

This permit approval includes a special condition that provides for applicant to assume the risk in connection with this permit approval. This condition provides for applicant to acknowledge the geologic hazards that are present; to unconditionally waive any claim of damage or liability against the Commission, its officers, agents, and employees for injury or damage from such hazards; and to indemnify and hold harmless the Commission, its officers, agents, and employees with respect to the Commission's approval of the project.



Another consideration is any sensitive coastal resources that could be damaged by renewed movement of the landslide. Based on examination of biologic data already available, together with examination of Coastal Records Project air photos and Commission staff's binocular survey from the bluff edge⁷, nearshore indicators of environmental sensitivity are minimal. No sea bird use of the bluff face was evident, and there were no observable tidepools or marine mammals present. There is only minimal marine algae development on emergent rocks, probably due to severe sediment scour produced by natural bluff erosion. An elephant seal haul-out was observed about 0.3 miles to the south of the Willow Springs landslide path, but none of these animals were utilizing this part of the shoreline.

The concentration of seacliff buckwheat, the host plant for Smith's blue butterfly, is documented as "medium" in the highway corridor below the Tree Bones disposal site, and "low" below the Willow Springs disposal site⁸. However, this species seems to thrive on Big Sur's large, slow-moving landslide surfaces. Therefore, the risk to sensitive habitat features appears minimal.

Can mitigating measures offset the increased risk? In each scenario, the added landslide material will make the landslide less stable. Whether or not this will be significant, depends on what assumptions are used to derive the FOS values. Dewatering measures could potentially offset these decreased FOS values, but this mitigating effect cannot be reliably quantified at present. Nonetheless, in the opinion of the Coastal Commission staff geologist, as well as the Caltrans and Forest Service geologists, such dewatering measures would be a wise investment if the project is approved⁹.

Compensatory dewatering of portions of the ancient landslide, continued geotechnical monitoring, and implementation of an emergency response plan as conditioned, will all serve to offset the increased risk. Nonetheless, the net effect of these compensatory measures cannot be readily quantified. Therefore, it will not be possible to ascertain that the increased risk will be entirely offset, nor that it will definitely be less than significant within the meaning of Coastal Act Section 30253(2).

Would having more data likely resolve these differing perspectives? Additional testing would entail substantial additional expenses and delay, with only diminishing returns—we would still not know the degree of resistance to movement/rock strength at all points within the landslide mass. Complete knowledge of the formation is not feasible, so complete accuracy of prediction is not feasible either. Additional subsurface test drilling would also mean that the terrestrial disposal sites would not be available if needed this coming winter season.

Therefore, there is no practical, timely way to be certain that the increased risk will be less than significant, within the meaning of Coastal Act Section 30253(2) regarding geologic hazards. Commission staff therefore recommends that the Commission err on the side of caution, and avoid making such a finding in this case.

⁷ L. Otter, April 15, 2001 (CHMP Recreation & Public Access inventory data collection records).

⁸ CHMP Corridor Intrinsic Qualities Inventory—Natural Qualities report, Dec. 2001 (Vegetation Map 11 of 58).

⁹ Geotechnical experts & planners meeting at Coastal Commission Central District office, June 16, 2005. Among the attendees were John Duffy, Caltrans geologist; Allen King, USFS geologist; Mark Johnson, Coastal Commission staff geologist; Mike Manson, CGS geologist.



d. Conclusion: Not Possible to Make the Geologic Stability Finding

Commission staff has reviewed applicant's submitted geotechnical monitoring reports, and has noted that the FOS estimates are based in part on assumptions regarding rock strength, ground water and other factors that cannot be completely known. Therefore, while the assumptions are not unreasonable, neither do they prove that the project will not "contribute significantly to...geologic instability" as intended under Coastal Act Section 30253(2). *Accordingly, the Commission finds that it lacks the necessary factual information necessary to make a finding of conformance with Section 30253(2).*

2. Environmentally Sensitive Habitat Areas & Marine Habitats

a. Issues: Offsite, Onsite

There are several types of terrestrial and marine environmentally sensitive habitat areas (ESHAs) that need consideration with respect to this permit application. These considerations can be divided into two categories: avoiding ESHA impacts *offsite*, and avoiding ESHA impacts *onsite*.

Offsite: protection of environmentally sensitive habitats along the Highway 1 corridor. The early-day methods for landslide disposal were essentially to bulldoze the unwanted material over the side of the Highway 1. These "over-the-side" disposal methods proceeded with little apparent awareness of the impacts on the bluff face and marine environment below. Even in recent decades, crisis-driven decisions under emergency procedures have precluded detailed advance evaluation of sensitive habitats downslope from the highway. Now, Caltrans has taken a very different approach that seeks to avoid impacts to environmentally sensitive marine and terrestrial habitats—or, where such impacts are unavoidable, to minimize adverse impacts.

A primary purpose of the project is to offer an alternative mode of landslide disposal where there would be no other reasonable or available way to prevent adverse impacts on the ESHAs found along the Big Sur Coast Highway. In other words, if the project is implemented, from time to time circumstances will arise where use of the proposed disposal sites will spare offsite ESHAs that would likely otherwise be unavoidably impacted. This is why National Marine Sanctuary and Coastal Commission staff supported the applicant's post-1998 initiatives to identify and seek approval of suitable terrestrial disposal sites.

The main types of ESHAs that will potentially benefit from the project include, but are not limited to, the following: environmentally sensitive marine habitats, seabird nesting sites on coastal cliffs, riparian forest along coastal streams near the highway, two areas of coastal dune habitat, the southernmost natural groves of Coast redwood forest, Coastal Terrace Prairie (native grasslands), Central Maritime Chaparral habitat, and concentrations of seacliff buckwheat (*Eriogonum parvifolium*) plants that are host plants for the endangered Smith's blue butterfly¹⁰. Alongside the highway and on the bluffs below are many places that provide habitat for sensitive native plant species. About 100 special-status plant

¹⁰ Federally listed, June 1, 1976. The CNDDDB lists 38 records of Smith's blue butterfly along the Big Sur Coast Highway corridor. The Coast Highway Management Plan (CHMP) *Corridor Intrinsic Qualities Inventory--Natural Qualities* report (Dec. 2001) mapped numerous concentrations of seacliff buckwheat along the highway, in places that might otherwise be considered for landslide disposal.



species potentially occur within the highway corridor¹¹; Little Sur manzanita, for example, is found nowhere else in the world. Additionally, reintroduced California condors, American peregrine falcons and Bald eagles have all been released into the wild along the Big Sur Coast, and forage along the coastal cliffs and shoreline that are episodically impacted by landslides.

Marine & wetland habitats, offsite. The nearshore environment of the Big Sur Coast is justly famous for its rich array of marine life. Sea otters, nesting seabirds and marine mammal haul-out areas are readily viewed from or near the edge of Highway 1. Kelp beds not only support sea otters, but also function as nurseries for rockfish. Intertidal life forms crowd tide pools and compete for space on rocky substrates. Pockets of eelgrass cling to the more protected spots where suitable sediments collect. All of these species and habitats are protected within the Monterey Bay National Marine Sanctuary, which extends the length of the Big Sur Coast.

Landslides, and disposal activities that mimic landslides, have the potential to impact the shoreline and marine environment in a number of ways. The most obvious include direct burial, devegetation of the bluff face (making it more susceptible to surface erosion), and smothering by the settling out of suspended sediments that find their way into the marine environment and are moved about in nearshore currents.

For example, deposition of material below the highway could displace shoreline areas used as marine mammal haul-out areas (Northern elephant seal, Steller sea lion¹², California sea lion, Harbor seal). Nearshore shallow water environments, including tidepools and eelgrass beds, could be buried. Rocky substrates favored by several different marine algae and abalone species could be scoured by drifting (large-grain) sediments. And, offshore features such as kelp beds that could be smothered in suspended (fine-grain) sediment plumes. A reduction in kelp bed vitality, for example, could have unknown consequences for those species dependent on, or utilizing this kind of habitat. In this regard, attention has particularly focused on the Southern sea otter population¹³, and the kelp beds' role as rockfish nursery habitat.

In the past, not only the seaward side of the highway, but also low-lying areas such as ephemeral drainages were inviting locations to dispose of excess landslide materials. However, many of these qualify as wetlands. The Coast Highway Management Plan's Corridor Natural Qualities Inventory¹⁴ identified and mapped a total of 368 potential wetland (jurisdictional) features near the highway. Sensitive freshwater species that utilize these streams and wet areas could be impacted by direct burial

¹¹CHMP: *Corridor Intrinsic Qualities Inventory--Natural Qualities*, Dec. 2001 (Table 5).

¹² Federally listed as Threatened, April 5, 1990. Monterey Bay National Marine Sanctuary staff conducted pinniped surveys along the Big Sur Coast in 1998; 74 separate haul-outs and 171 Steller sea lions were identified.

¹³ Federally listed as Threatened, Jan. 14, 1977. The Southern sea otter's home range is the Big Sur Coast, where it was rediscovered (after being thought extinct) on April 15, 1938, from vantage points along the then-new Big Sur Coast Highway. Population now fluctuates around 2,000 animals, from Santa Barbara to Half Moon Bay.

¹⁴ Coast Highway Management Plan (CHMP): *Corridor Intrinsic Qualities Inventory--Natural Qualities*, Dec. 2001.



of habitat or by excessive sediments. These include the threatened South-Central California Coast steelhead population¹⁵, and the California red-legged frog¹⁶.

Lest all sediment be mistakenly considered negative, the role of landslides must be considered in the context of the overall natural system of inputs to the marine environment. For example, minerals and nutrients are released into the marine environment by the mechanisms of coastal erosion and landslides. Many organisms in the food chain are adapted to soft bottom conditions, and require fresh sediment inputs where currents periodically sweep suitable sediments from the sea floor. Examples include clams, a preferred sea otter food item when available; glass eels, hunted by the marbled murrelet; and eelgrass, which provides habitat for colorful nudibranchs.

By supplying a steady stream of boulders, cobbles and sand, landslides provide a natural buffer that protects cliffs from erosion by wave attack¹⁷. When such shorelines are starved for sediment input, the bluff is undermined and eventually there is a greater risk of catastrophic collapse. The issue that we are now addressing is the need to provide reasonable alternatives for use in those instances where the sensitivity of the resource outweighs the efficiency of allowing or assisting the landslide material to continue downslope, towards the marine environment.

Potential for onsite impacts. A second realm of consideration is the need to avoid *onsite* impacts at the proposed landslide disposal sites. The Tree Bones and Willow Springs sites were each evaluated for the presence of ESHAs.

About 80% of the 4.7-acre Tree Bones site is covered with Central Coast Scrub, a brushy mix dominated by coyote bush and poison oak. The balance of the site is mostly disturbed ground, invaded by weedy/ruderal species. The project design was modified to avoid impacting an adjacent patch of about 50 seacliff buckwheat plants, the host plant for Smith's blue butterfly.

About 75% of the Willow Springs site is covered with Central Coast Scrub, with the balance being mostly French broom (*Genista*), an invasive weedy pest. About 200 seacliff buckwheat plants were found on the slope above the proposed disposal site, safely out of the way. About 18 more plants were found along the dirt approach road; these are likely to be impacted when the road is repaired and regraded to make it ready for hauling landslide material. No sensitive species were found in the vicinity other than seacliff buckwheat¹⁸.

Because of the potential take of a plant species essential to the endangered Smith's blue butterfly, Section 7 consultations were undertaken with the U.S. Fish & Wildlife Service, as required under the

¹⁵ Federally listed, Oct. 17, 1997. At least 20 steelhead streams cross under the Big Sur Coast Highway (NMFS & CDFG & CHMP data, 2000-2001).

¹⁶ Federally listed as Threatened. The Draft Recovery Plan for the California red-legged frog (USFWS, 2000) states: "nearly all coastal drainages [along the Big Sur Coast] from Garrapata Creek south to Salmon Creek...support [California red-legged] frogs"

¹⁷ USGS Fact Sheet: *Rates of Landsliding and Cliff Retreat Along the Big Sur Coast, California—Measuring a Crucial Database* (2005).

¹⁸ California Department of Transportation: *Mitigated Negative Declaration for Disposal Sites for Storm Damage Repair on Highway 1, near Big Sur, California* (Dec. 2000).



federal Endangered Species Act. The project includes implementation of 7 specific mitigation measures detailed in Caltrans' CEQA document; these include site boundary marking to preclude disturbance beyond the designated construction limits; temporary exclusionary fencing around the most sensitive buckwheat populations; installation of silt fencing and barriers in accordance with Best Management Practices; relocating buckwheat plants growing in harm's way; gathering of seed-laden duff from beneath any buckwheat plants that will be impacted, and incorporating into the replanting program.

Upon completion of disposal operations, these efforts will be supported by erosion control plantings, replanting with seacliff buckwheat and Monterey paintbrush, monitoring for--and eradication of--invasive exotics for at least 3 years following seeding/planting¹⁹. The resultant recommendations, precautionary and mitigation measures have been incorporated in the US Forest Service Special Use Permit (Exhibit E, attached).

Potential wetland near Tree Bones disposal site. Because the proposed disposal sites comprise natural depressions on the upper surface of an ancient landslide, preliminary observations looked for evidence of wetland habitat. The Willow Springs depression was found to be devoid of any such indicators of seasonal standing water or other wetland characteristics.

In past decisions, the Commission has recognized the presence of any of these three wetland indicators as presumptive evidence of wetland habitat: consistent seasonal inundation; hydrophytes; or hydric soils. At Tree Bones, standing water has on occasion been observed in the lowest portion of the Tree Bones depression, an area of 0.65 acres. However, despite a slight notched shoreline mark (i.e., a "bathtub ring"), no wetland plant species are in evidence, and standing water has not been reported in recent years. Therefore, the evidence so far has been inconclusive. The most cautious approach would be to treat the lowest part of the Tree Bones depression as a *possible* wetland feature. Accordingly, Caltrans' mitigation measures include temporary exclusionary fencing between the construction site and the 0.65-acre potential wetland area in the floor of the depression²⁰.

b. Policies for environmentally sensitive marine and terrestrial habitat areas

Applicable Coastal Act policies include the wetlands and water quality sections, as well as the policies specifically applicable to environmentally sensitive habitat areas. Coastal Act Sections 30230, 30231 and 30240 require that:

Section 30230. Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.

Section 30231. The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for

¹⁹ Ibid.

²⁰ Ibid.



the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

Section 30240. *(a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.*

(b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.

c. Analysis of Marine Resources

With the adoption of the California Coastal Act, and the subsequent establishment of the Monterey Bay National Marine Sanctuary, there has come a dawning awareness that a more sensitive, better-informed approach to landslide disposal is needed. Further, Coastal Act policies severely restrict placement of fill in open coastal waters, and Sanctuary Regulations prohibit dumping into the marine environment. Therefore, it is necessary for Caltrans to find alternative ways to manage landslides and the disposal of landslide debris.

The terrestrial disposal alternative is important for the protection of ESHAs. Under certain limited sets of anticipated circumstances, impacts to ESHAs along the Highway 1 corridor can be avoided by removing the landslide to a location where there will be no significant adverse impacts. Thus, a full range of alternative disposal modes and locations is important, so that Caltrans will have the ability to respond to each landslide episode in the way that best protects coastal resources and public access. Without a full range of viable options, the choices for restoring service on Highway 1 are narrowed, and environmentally sensitive marine and terrestrial habitats will be more vulnerable.

For example, when there is an on-going earth movement towards the end of a disposal season, and no other reasonably close by disposal options are available, all nearby shoulder space and pullout spaces tend to become filled with excavated landslide materials. Even before this undesirable threshold is reached, Caltrans will be faced with the dilemma of allowing the earth movement to continue into the ocean and leaving the Highway closed for the duration—or, invoking emergency procedures to clear at least a minimal public safety access corridor. This scenario has been played out on more than one occasion already; in each case, there is the potential for unavoidable downslope impacts to marine habitats or other ESHAs.

Even where earth movement has come to a halt, timely reopening of the highway corridor—the sole life line for the Big Sur Coast—will always be a priority. This means there will often be an unpleasant choice, between quick restoration of public access along the highway corridor and the economic well-being of the community on the one hand, and coastal resource impacts on the other hand. Provision of



terrestrial materials handling and disposal options at prepared sites will be good for the environment as well as the community, because it will reduce the pressure for crisis-driven, ad hoc landslide disposal decisions. And, it will minimize the delays inherent in gathering environmental impact and geotechnical data prior to allowing disposal at a previously unstudied site.

Tree Bones and Willow Springs sites represent the best remaining available terrestrial disposal alternative for the southern Big Sur Coast. As noted above, the Monterey Bay National Marine Sanctuary encompasses the entire shoreline of the Big Sur Coast. Highway 1 also extends the length of the Big Sur Coast, only occasionally dodging inland. Often perched atop steep slopes and cliffs that extend right down to the shoreline, the highway is subject to frequent landslides, slip-outs and other storm event emergencies.

When a landslide blocks the way, reopening the highway is no longer a matter of simply pushing the excess material over the side. Instead, a carefully considered framework for removal of such materials has evolved, culminating in the Management Strategies developed for the Big Sur Coast Highway Management Plan (CHMP)²¹. These strategies stress the importance of avoiding anthropogenic impacts to protected terrestrial and marine resources, while maintaining mobility and public access along the coast. The CHMP strategies also seek to keep naturally generated materials within the Big Sur Coast area in support of overall ecosystem health, rather than exporting them from the local system as has happened in the recent past. The CHMP identifies a spectrum of measures for reopening Highway 1 after blockage by landslides or similar events, with particular attention to the disposition of rock, soil, and other natural materials.

Reuse/recycling of materials is emphasized, however there are limited options for these. It is not unusual for the amount of material generated in a year to exceed 100,000 cubic yards, far beyond the capacity of reuse/recycling options, so additional measures are essential. Long distance hauling is generally undesirable due to impacts on sanitary landfill capacity at the receiver site, loss of natural material from the local system, air pollution and water quality concerns from intensive haul truck traffic, and long completion cycles and consequent extended periods of loss of public access and recreation opportunities, and very high expense. Moreover, use of the material for direct beach replenishment²² will not be available until better information becomes available about the specific locations of sensitive marine habitats, and the impact of sediment flux from landslide/road collapse events²³.

²¹ *Big Sur Coast Highway Management Plan: Corridor Management Plan* (Caltrans, 2004). Ratified by representatives of Caltrans, the National Marine Sanctuary, U.S. Forest Service, California Coastal Commission, Monterey County, and other relevant agencies and organizations.

²² This potentially includes shoreline boulder replenishment, needed to sustain the supply of shoreline boulders at the toe of the highway slope. Boulders, cobbles and sand absorb and dissipate wave energy, thereby reducing the risk of highway collapse.

²³ At one location, the Pitkins Curve landslide, shoreline sensitivity was studied in advance and a monitoring program established. This set the stage for the experimental program of disposal through "slope detention" now underway at Pitkins, and more recently extended to the nearby Big Slide slope (winter season, 2004-2005). This method involves placement of landslide materials on the slope below the highway in a way that it does not become directly deposited at the shoreline.



Another measure, proposed by this permit application, is to haul excess materials to a prepared terrestrial disposal site, where no impact on marine or terrestrial environmentally sensitive habitats will occur. As already discussed, many candidate locations were examined along the Big Sur Coast, but only a few sites were found that were both feasible and consistent with all applicable resource protection policies. Because such suitable sites are extremely scarce, their limited capacity will need to be used sparingly. Nonetheless, from time to time, due to concerns for the protection of marine resources or other compelling reasons, it will be necessary to draw on the capacity of the Tree Bones and Willow Springs disposal sites.

d. Conclusion for marine habitat

The project will protect environmentally sensitive marine resources and avoid harm to Marine Sanctuary resources by providing an alternative disposal option for landslide materials. This is especially important when no other feasible, environmentally acceptable alternatives are available. Accordingly, safeguards are needed to insure that the permitted, but exceedingly limited disposal site capacity is committed only after specific consideration of the other disposal alternatives offered by the CHMP. As conditioned to require such a consideration of alternatives, for each disposal episode, the capacity of the permitted disposal sites will remain available for as long as possible. By enhancing the available range of measures for landslide disposal, the environmentally sensitive marine habitats of the Big Sur Coast will be protected consistent with Coastal Act Sections 30230-30233 and 30240.

e. Analysis & conclusion for Smith's blue butterfly habitat

Coast buckwheat (*Eriogonum parvifolium*), also known as seacliff buckwheat, is a small, perennial shrub found in scattered patches along the Big Sur Coast. This is one of the host plants for the larval stage of Smith's blue butterfly, a Federally-listed endangered species. Both the host plant and the butterfly have been previously documented nearby, at Gorda. A site specific survey was conducted, and a small number of buckwheat plants were found in the project vicinity. These include 18 plants scattered along a graded access road behind the Caltrans Willow Springs Maintenance Station. This area is being invaded by non-native French broom and will likely to be impacted by the project.

Although seacliff buckwheat clearly provides an important ecosystem function, it is not rare. Isolated individual plants probably have little value as Smith's blue butterfly breeding habitat. At this location, the low number and density of buckwheat plants²⁴, poor site quality, and lack of observed Smith's blue butterflies all argue against this being an environmentally sensitive habitat within the meaning of

Because Pitkins Curve and Big Slide are both relatively active landslides, it is expected that some materials will eventually reach beach level as the ocean continues to erode the toe of the slope. A major advantage is that the landslide sediments are metered into the sea according to the natural variations of wave action and currents, rather than in a single episode of deposition. The results are being monitored; if successful, this technique of "indirect beach replenishment" through "slope detention" could become more widely available.

²⁴ One of the foremost butterfly experts recommends that buckwheat densities of less than 25 plants in an acre should be rated as low quality habitat, with respect to their capacity to support a population of Smith's blue butterfly (Arnold, 1991).



Coastal Act Section 30107.5²⁵. Nonetheless, in an abundance of caution, a Section 7 consultation was undertaken with the U.S. Fish & Wildlife Service (USFWS), pursuant to the provisions of the Federal Endangered Species Act.

Subsequently, the USFWS recommendations were incorporated in Caltrans' own mitigation program and in the terms of the U.S. Forest Service Special Use Permit (see Attachments A & B to Exhibit E, attached). Additionally, the project has been designed to avoid the buckwheat concentrations (shown as "ESA" on the submitted site plans), and has been modified to avoid the construction of any new roads. (To support the haul trucks, existing unpaved access roads will be repaired and regraded to a more uniform width, with short turnouts provided; temporary paving or other surfacing may be needed for winter operations.) Accordingly, as designed and as permitted, the project incorporates appropriate protections for Smith's blue butterfly habitat, and will not cause a significant disruption of any habitat that meets the definition of ESHA, consistent with Coastal Act Section 30240(a).

f. Analysis for potential seasonal wetland at Tree Bones depression

As expected on an ancient landslide surface such as this, the landscape takes the form of a series of irregular hummocks and depressions. There is little or no development of the typical dendritic drainage patterns found in most other Coast Range landforms, since runoff percolates into the broken rock and drains away as subsurface flow. Evidence of this can be seen in the major springs that dot the lower hillsides around Gorda, on the slopes below the ancient landslide surface.

However, in the certain years water accumulates in the lowest part²⁶ of the big depression at Tree Bones; see submitted site plan (Exhibit C, attached). The cause for this accumulation is uncertain, but may be connected to high water tables combined with rainfall exceeding the seepage rate through the floor of the depression.

The occasional presence of standing water here raised the question of whether or not this ephemeral occurrence constitutes a "wetland" or an "environmentally sensitive wetland habitat" within the meaning of Coastal Act Sections 30233 and 30240. Site visits were conducted during the 2002 and 2003 wet seasons. No standing water was observed, and only a scant amount of dried mud polygons and bits of dried algae mat could be found. No evidence of willows or similar perennial hydrophytic vegetation was seen.

Hydric soils were not in evidence, due to the rocky surface and absence of sediments. No frogs or other wetland-associated wildlife were seen. And, no "bathtub ring" of facultative plant species was observed, although there appeared to be a slight wave-cut shoreline notch. On the other hand, the dry floor of the

²⁵ Coastal Act Section 30107.5 offers this definition: "Environmentally sensitive area" means any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments.

²⁶ The lowest part of the Tree Bones depression is an area of about 0.65 acre, and has episodically contained water sufficient to float a canoe (Commission staff observation c.1998, also air photo analysis).



depression was devoid of the woody, upland shrubs such as coyote bush and poison oak that dominate the slopes surrounding the Tree Bones depression.

The working conclusion was that while surface water does appear in the depression in some years, it does not happen regularly enough, or persist long enough, to support the species normally indicative of a wetland or wetland habitat. However, continued observation in the years ahead theoretically could yield data to support a different conclusion.

Therefore, yielding to an abundance of caution, the project has been modified to provide a minimum setback of 100 ft. between the floor of the depression and the toe of the disposal site fill slope, when full. Further, consideration should be given to increasing the setback in event future investigations determine that a wetland does exist here, and that a wider setback is found necessary to protect the resource²⁷.

g. Conclusion for potential seasonal wetland at Tree Bones depression

Based on the preponderance of available evidence, the occasionally inundated floor of the Tree Bones depression does not constitute a wetland habitat. Nonetheless, because of the confirmed periodic presence of standing water, grading, landslide disposal and other site disturbance should be avoided in this location. As designed to avoid this low spot, and as conditioned to allow future increased setback if found necessary, this project will avoid impacts to this *potential* wetland, thereby ensuring compliance with Coastal Act Sections 30231-30233 and 30240.

h. Conclusion for environmentally sensitive habitats and marine resources, overall

As designed and conditioned to avoid and mitigate impacts to Smith's blue butterfly habitat, and to avoid disturbance to the lowest part of the major depression at the Tree Bones site, the onsite impact of the project will not significantly disrupt environmentally sensitive habitats within the meaning of Coastal Act Section 30240.a; nor, will it degrade adjacent environmentally sensitive habitat within the meaning of Coastal Act Section 30240.b. Additionally, these measures, by providing a substantial buffer relative to the potential wetland feature near the Tree Bones site, will ensure conformance with the Coastal Act 30231 requirement for maintaining the quality of coastal waters, wetlands and lakes.

With respect to offsite habitats, a primary value of the project is that it will facilitate protection of the marine environment and other environmentally sensitive habitats along the Big Sur Coast Highway. The project sites are centrally located in the southern portion of the highway corridor. This is where the need is most acute, particularly during the crisis of responding to storm damage events. This special highway maintenance measure is especially appropriate for the Big Sur Coast, considering that the Monterey Bay National Marine Sanctuary constitutes an area of special biological and economic significance within the meaning of Coastal Act Section 30230.

Similarly, although the project certainly cannot prevent resource impacts from landslides in all cases, it will enhance the options available for protecting environmentally sensitive marine and terrestrial

²⁷ Although not the standard of review here, the Monterey County LCP, in Big Sur Coast Land Use Plan policy no. 3.3.3.B.5, calls for a 150 ft. setback from streams and coastal lagoon wetlands.



habitats and coastal wetland resources. Therefore, as conditioned to mitigate onsite impacts, the project conforms to, and will help to implement, the marine resource, water quality and environmentally sensitive habitat protection requirements of Coastal Act Sections 30230, 30231 and 30240.

3. Public Access and Recreation

a. Issues

State Highway Route 1 is the primary, and often only, public access corridor for over 100 miles of the California Coast, Carmel to Cambria. When landslides and other storm events block access along the Big Sur Coast, the public is denied not only the opportunity for a spectacularly scenic drive, but also access to all of the beaches, trailheads, campgrounds, retreat facilities, country inns and other recreational features and amenities²⁸. One of several major constraints on reopening the Big Sur Coast Highway, has been the difficulty in finding sufficient, environmentally acceptable locations for the disposal of excess landslide materials. The purpose of this project is to provide additional options for landslide handling and disposal, through establishment of prepared terrestrial landslide disposal sites that can be put into service when other options are infeasible or would have environmentally unacceptable consequences.

A second issue is that the locations of the proposed disposal sites are on public lands within Los Padres National Forest. The Willow Springs disposal site is on a hillside above and slightly south of Caltrans' existing maintenance yard at Willow Springs. The Tree Bones site adjoins a private parcel where the approved Tree Bones yurt camp is being completed. This visitor-serving commercial facility includes a short coastal trail segment, but the alignment of adjoining future segments on Caltrans or National Forest lands have not been determined.

Both sites are presently open to the public in the same manner as other unrestricted National Forest lands nearby. However, the sites are inland of Highway 1, at locations not ordinarily seen by the visiting public. During the time that site preparation, landslide disposal, and erosion control planting operations are taking place at the project sites, any (potential) public use will be displaced. On the other hand, there are no developed or maintained public trails or other public access features on either site, nor is there much evidence of active public use at present.

b. Relevant Regulatory Policies

The policy of providing and maintaining maximum public access and recreational opportunities along the California coast, consistent with resource protection principles, is specifically elaborated in Coastal Act Sections 30001.5, 30210, 30213-30214, and 30223. Section 30240(b) is also applicable, since the project is located on, and mostly surrounded by the recreational open space encompassed by Los Padres National Forest. In particular:

²⁸ Coastal Commission staff documented and mapped 249 such public access and recreation features along the Big Sur Coast Highway corridor, north of the Hearst Ranch boundary at San Carpoforo Creek (ref: *Corridor Intrinsic Qualities Inventory—Recreational Qualities*, Big Sur Coast Highway Management Plan, May, 2002). An estimated 30 additional similar features (developed vista points, beaches, parks, historic attractions, county inns, etc.) are located along the San Simeon coast, north of Cambria, served by the same reach of Highway 1.



Section 30001.5: The Legislature further finds and declares that the basic goals of the state for the coastal zone are to... (c) Maximize public access to and along the coast and maximize public recreational opportunities in the coastal zone consistent with sound resources conservation principles...

Section 30210: In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse.

Section 30213: Lower cost visitor and recreational facilities shall be protected, encouraged, and, where feasible, provided. Developments providing public recreational opportunities are preferred. ...

Section 30214: (a) The public access policies of this article shall be implemented in a manner that takes into account the need to regulate the time, place, and manner of public access depending on the facts and circumstances in each case including, but not limited to, the following:

- (1) Topographic and geologic site characteristics.*
- (2) The capacity of the site to sustain use and at what level of intensity.*
- (3) The appropriateness of limiting public access to the right to pass and repass depending on such factors as the fragility of the natural resources in the area ...*

Section 30223: Upland areas necessary to support coastal recreational uses shall be reserved for such uses, where feasible.

Section 30240 Environmentally sensitive habitat areas; adjacent developments:

... (b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.

c. Analysis of Public Access and Recreation

Highway 1 along the Big Sur Coast provides access to all the other public access opportunities, from Pt. Lobos to San Simeon. Therefore, keeping the highway open is the key to maximizing public access opportunities, consistent with Coastal Act Section 30210. The project will clearly support the Coastal Act public access policies, including the Legislature's stated intent (in Section 30001.5) to maximize public access opportunities. This is so because the project will enhance Caltrans' options for reopening the Big Sur Coast Highway when it is periodically closed by landslides and other major storm events.

Maximizing public access through reduction of roadside deposition of landslide material. Pullouts allow



visitors to stop and enjoy scenic views, and in dozens of locations also serve as shoreline or inland trailheads for public access. The unpaved shoulder and pullouts also provide a significant safety benefit. For example, they allow slow-moving vehicles to get out of the way of backed up traffic, allow disabled vehicles to get off the roadway, and provide a place for safe cell-phone usage (or, as is often the case, attempts at cell-phone usage). Because this project will provide a potential off-highway alternative for materials handling, stockpiling and disposal, it will improve the range of options available to Caltrans for protecting motorist safety, scenic viewing opportunities, and parking capacity for public access.

Maximizing public access through reduction of time to (re)opening. A broader perspective is that the project will help protect public access and recreational travel opportunities—along the entire length of the approximately 100 mile Carmel-Cambria segment of Highway 1--by improving Caltrans' capacity for *timely* landslide removal. The Big Sur Coast Highway is one of the State's top visitor destinations, and is a designated National Scenic Byway. But, as the 1998 storm events demonstrated, when shoreline and terrestrial disposal options are not available or sufficient, landslide removal requires a fleet of long-distance earth haulers for transport to established landfills beyond the Big Sur Coast, and prolonged closure of the highway.

Compared to long-haul disposal, disposal sites *within* the Big Sur Coast area will provide an option that offers: shorter hauls; correspondingly reduced energy use, air and water pollution; substantially reduced cost to the State; and, the possibility of more rapid restoration of normal traffic flow along the coast. Caltrans has graphically demonstrated the dramatic improvement in time-to-opening, following a landslide event, if off-site/long-distance hauling can be avoided²⁹. Therefore, disposal options within the Big Sur Coast that require only minimal handling and transportation will support the Coastal Act Section 30001.5(c) and 30210 objectives of maximizing public access opportunities.

Onsite public access considerations. With respect to displacement of informal off-trail recreational use now possible at the two disposal sites, such displacement would only be temporary during periods of site preparation, disposal operations, and erosion control plantings. Furthermore, there is little evidence of existing public use, so any such displacement effect will be insignificant. Therefore, any temporary limitations of public access will be in keeping with the parameters for appropriately regulating the time, place and manner of such use as provided by Coastal Act Section 30214.

Coastal Act Section 30223 calls for the reservation of upland areas needed to support coastal recreational uses. Section 30213 encourages the provision of lower cost visitor recreation facilities, and gives priority to developments that provide public recreational opportunities. The Tree Bones site conceivably could be reclaimed for use as a campground or other affordable recreational facility in the future, after disposal operations have exhausted site capacity. And, it is possible that the adjacent yurt camp operator would at some time in the future become interested in expanding into reclaimed parts of

²⁹California Department of Transportation: *Mitigated Negative Declaration for Disposal Sites for Storm Damage Repair on Highway 1, near Big Sur, California* (Dec. 2000), Chart 1. Assuming a 2-way hauling operation and 2,000 cy per day transported, the example given shows that the number of days needed to open the roadway to traffic is more than doubled for a given volume of material.



the disposal site, perhaps on a concessionaire basis. The proposed improvements to the access roads would make this a slightly more tangible possibility. However, the Forest Service has no specific plans for such use at the present time.

The original, now abandoned pre-highway Coast Trail cut across these hillsides above Gorda, in close proximity to the two disposal sites. Restoration of parts of this historic lateral public access route on existing National Forest lands would expedite completion of the California Coastal Trail (CCT) along the Big Sur Coast. However, until the Forest Service and State agencies have identified the optimal alignment(s) for the CCT through the Gorda area, it is unclear whether such future trail link will involve either of the two disposal sites. Therefore, for now, the appropriate planning goal should be to avoid any prejudice to the future alignment decision, by insuring that public access is not, in the long run, precluded by the proposed development.

The Forest Service's Special Use Permit does not confer exclusive use to Caltrans, nor does it preclude public access to these lands. However, for sake of clarification, it is appropriate to condition this permit to insure that the opportunity for public access to these public lands will continue to the maximum extent consistent with public safety and resource protection considerations. As conditioned, the proposed project is consistent with the access policies of the Coastal Act that require new development to maximize access and specifically to provide lateral access along the coast.

d. Conclusion

As proposed, the project will help to maintain public access to and along the Big Sur Coast, because it will facilitate the restoration of service on Highway 1 when it is periodically closed by landslides and other catastrophic events. Accordingly, the project will protect opportunities for the public to access Big Sur's abundance of recreational features and facilities, consistent with Coastal Act Sections 30210 – 30214 and Section 30223.

The project is sited and designed to be hidden from Highway 1 views and existing developed public recreational facilities; accordingly, it will be compatible with the continuance of adjacent National Forest recreation lands, consistent with Section 30240.b. At least one of the two sites may have future potential for affordable campground development, consistent with Sections 30213 and 30223. Any such potential will not be compromised—and may be enhanced by upgrading of the Tree Bones entrance road. Further, as conditioned by this permit and the Forest Service Special Use Permit, the long range potential for general public access at the disposal sites, albeit minor, will be assured.

Therefore, because recreational traffic exclusions and delays caused by long haul disposal runs will potentially be reduced; and because pullout and parking area displacements from landslide stockpiling and handling will potentially be lessened; and, as conditioned to ensure that the interference with (potential) public use on National Forest lands is kept to a minimum, and that public access rights will be maintained in perpetuity for pedestrian access and general public use, the proposed project will maximize public access consistent with the above-cited public access and recreation policies of the Coastal Act.



4. Visual Resources

a. Issue

The Big Sur Coast is justly famed as one of the Nation's premier scenic destinations. The Big Sur Coast Highway was California's first designated State Scenic Highway, and in 1996 received federal recognition as an All-American Road—the highest level in the National Scenic Byways Program. Big Sur's scenic virtues and special community character make it a very popular visitor destination, attracting roughly 3 million visits per year.

Federal, state and county agencies have all pledged to protect these aesthetic and cultural resources, especially with respect to the Local Coastal Program's Critical Viewshed "Key Policy" that requires most new development to be hidden from Highway 1 views. Exceptions include necessary public highway facilities. Nonetheless, eternal vigilance is needed to insure that new developments—including public works projects—are subordinate to the character of the landscape, and do not degrade public views.

b. Relevant Regulatory Policies

Coastal Act Section 30251 requires that:

Section 30251. The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas such as those designated in the California Coastline Preservation and Recreation Plan prepared by the Department of Parks and Recreation and by local government shall be subordinate to the character of its setting.

Additionally, Coastal Act Section 30253(5) states that:

Section 30253(5). Where appropriate, protect special communities and neighborhoods, which, because of their unique characteristics, are popular visitor destination points for recreational uses.

c. Analysis of Visual Resources

Through federal, state and local designations, and Coastal Commission and Local Coastal Program findings, the Big Sur Coast is identified as a highly scenic area within the meaning of Coastal Act Section 30251. Therefore, new development must be subordinate to the character of its setting.

Offsite: visual resources selection criteria for identifying potential landslide disposal sites. The Big Sur Coast LUP's Critical Viewshed policy prohibits most new development in view of Highway 1. In screening candidate disposal sites, this policy was applied to both federal and non-federal lands, as an appropriate and consistent guideline for interpreting Coastal Act Section 30251. A variety of otherwise feasible, off-highway terrestrial disposal sites were identified. But, most of these are in the Critical



Viewshed, would require new access road development, contain substantial environmentally sensitive habitat or archaeological features, have insufficient capacity, or are otherwise not available.

In particular, the selection of off-highway landslide disposal sites was constrained by the need to protect the highway corridor's highly scenic views and environmentally sensitive habitat areas. Overall, the Tree Bones and Willow Springs sites represent the final subset of terrestrial disposal locations in the southern one-third of the Big Sur Coast. These are the locations that best meet the criteria of being environmentally acceptable, are operationally feasible, have enough capacity to provide a significant landslide management option, and best conform to the Coastal Act and Local Coastal Program coastal resource protection policies.

Disposal sites not in Critical Viewshed. The proposed Treebones and Willow Springs disposal sites are both hidden from Highway 1 views. Each is located within a natural depression to the east of Highway 1, on the undulating surface of an ancient large-scale landslide near Gorda.

The Tree Bones site is about 200 yards inland from Highway 1, and is screened by the rolling irregularities in the landform and dense brush. Intervening on a low ridge is the Tree Bones yurt camp, with planted pines and several yurt installations visible. The Willow Springs site is about 150 yards inland from the highway, and obscured from view by intervening vegetation, Caltrans maintenance station structures, and a low ridge in the irregular landscape. Therefore, because the disposal sites are well screened from Highway 1 views, the project will be subordinate to the character of the setting, and public views to and along the shoreline will be protected as required by Section 30251.

Onsite visual resource protection. The ground surface at each site is already partially disturbed from unknown past abuses, and each site is partially invaded by French broom and other non-native species. Further disturbance will occur when the sites are prepared for disposal operations, through access road and drainage improvements. The proposed project includes measures to revegetate the finished contours of each disposal site with native plants, upon cessation of operations. These measures are consistent with the policy direction of Section 30251, which requires that such developments be visually compatible with the character of the area, and will restore and enhance visual quality in visually degraded areas.

Each respective existing access road is at least slightly visible in public views, and will be upgraded to meet the minimum 4-meter (12 ft.), the Big Sur Coast LUP standard for single-lane backcountry roads. Most of the improvements will be in the form of restoring proper drainage, trimming back vegetation, and establishing a competent surface for earthhauler trucks to move upon. Short turnouts (in the form of a widened shoulder) will be added to the Tree Bones access road for safe passage of vehicles. However, compared to the appearance of these roads when originally graded, these improvements are not expected to significantly change the overall "visual footprint" as seen from Highway 1.

Project benefits for travelers on the Big Sur Coast Highway National Scenic Byway. At present, the capacity of the three existing Caltrans maintenance yards that cover the 75-mile Big Sur Coast corridor is extremely limited. Generally, due to handling and transportation costs, landslide materials are handled as close to the site of origin as possible. This means that pullouts can become filled with excess material,



and other material is sometimes held in high berms along the highway shoulder. The reduction of pullout capacity and available shoulder width is a traffic safety issue, as well as an impairment of scenic viewing opportunities and public access parking opportunities.

By providing an alternative location for handling, storage and sorting excess landslide materials, the project will benefit all travelers on Highway 1. While the proposed disposal sites certainly will not eliminate the periodic need to utilize the pullouts and shoulders for landslide management purposes, this extra alternative will provide an option for Caltrans to minimize view-blocking mounds of landslide materials along the highway. Accordingly, the project will improve Caltrans' ability to protect public views to and along the coast, consistent with Coastal Act Section 30251.

Project benefits for the Big Sur Special Coastal Community. Finally, the project will facilitate restoration of periodically interrupted public access to Big Sur's amenities, which comprise highly popular destination points for recreational uses as identified pursuant to Section 30253(5). The special community character will be protected by: 1) locating the proposed disposal sites where they will be concealed from Highway 1 views; and, 2) providing alternatives to long-distance earth hauling, with its attendant highway closures, community disruption, prolonged public access impairments and impacts to visitor serving businesses.

d. Conclusion

Systematic evaluation of the many candidate disposal sites through the environmental review process revealed that the Tree Bones and Willow Springs depressions are indeed a rare commodity: environmentally acceptable, feasible disposal sites that will not be seen from the highway. Accordingly, this project will provide an option for terrestrial landslide disposal without significant scenic resource impacts, and will protect Big Sur's special character as required under Coastal Act Section 30253(5).

The project will provide additional landslide material handling and storage options, thereby supporting Caltrans' efforts to maintain the quality of views from Highway 1. Revegetation with native plants will help the finished sites blend with the surrounding natural landscapes. Accordingly, the project will be consistent with the requirements of Coastal Act Section 30251, particularly with respect to the protection of highly scenic areas of the California coast.

5. Water Quality

a. Relevant Regulatory Policies

Coastal Act Section 30231 provides:

Section 30231

The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water



flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

b. Analysis

The prior findings summarize the project's offsite benefits for the protection of environmentally sensitive marine and wetland habitats along the Big Sur Highway corridor. These offsite benefits are partly a water quality issue, due to the potential to enhance available disposal options for disposal of landslide materials (that might otherwise impose heavy sediment loads on nearshore or freshwater habitats). This finding addresses only the onsite water quality impacts of the project.

The proposed disposal sites are located east of Highway 1 in areas of relatively modest relief, and are separated from the Pacific Ocean shoreline by hundreds of yards of intervening brushy vegetation. No wetlands or streams are adjacent, with the possible exception of an ephemeral, occasional accumulation of water in the lowest part of the Tree Bones depression; see discussion and conclusion in Finding 2, above. Nonetheless, construction activities associated with the preparation of the site, and drainage from the disposal site surface at various depositional stages, could potentially result in sediment-laden runoff.

Adverse impacts on downslope water quality may be avoided by application of appropriate mitigation measures, including the recognized road and water quality Best Management Practices (BMPs). Since the project could lead to potential adverse water quality impacts, a number of BMPs have been incorporated in the project design and mitigation measures, as well as the conditions of the U.S. Forest Service Special Use Permit (see Exhibit E, attached). These proposed BMPs and permit conditions require the following measures to be implemented to ensure that water quality will be adequately protected:

- Repair and regrading of the existing unpaved access roads to each of the disposal sites, including correction of drainage deficiencies;
- implementation of siltation and sediment control measures during construction;
- retention of a substantial vegetated buffer strip between the disposal site at Tree Bones, and the lowest point of the Tree Bones depression (which potentially may be increased, if the floor of the depression is in the future determined to be a wetland habitat); and,
- erosion control plantings on the exposed surfaces of the disposal site(s) after each disposal seasonal disposal cycle.

Another mitigating circumstance is that at present, most surface drainage appears to percolate into the broken rock of this ancient landslide surface, rather than concentrating as erosive runoff. This will minimize the risk of silt-laden runoff reaching the waters of the Monterey Bay National Marine Sanctuary, some hundreds of yards downslope.

c. Conclusion

Section 30231 of the Coastal Act requires that water quality be protected and, if possible enhanced by controlling storm water runoff and minimizing entrainment.



As site disturbances will be of limited duration, and the project incorporates use of applicable best management practices, the project is not expected to adversely affect water quality or any aquatic or marine mammal species. Therefore, as proposed by the applicant and conditioned by the U.S. Forest Service, the construction and use of the proposed disposal sites will not adversely affect water quality and is consistent with Coastal Act Section 30231.

6. "Balancing" Provisions for Resolution of Policy Conflicts Required for Approval

a. Legislative Direction and Relevant Policy. Coastal Act Sections 30007.5 and 30200(b) anticipate that, from time to time, conflicts may arise when the various policies of the Act are applied. Specifically, the Coastal Act provides for resolution of such policy conflicts as follows:

Section 30007.5 Legislative findings and declarations; resolution of policy conflicts

The Legislature further finds and recognizes that conflicts may occur between one or more policies of the division. The Legislature therefore declares that in carrying out the provisions of this division such conflicts be resolved in a manner which on balance is the most protective of significant coastal resources. In this context, the Legislature declares that broader policies which, for example, serve to concentrate development in close proximity to urban and employment centers may be more protective, overall, than specific wildlife habitat and other similar resource policies.

Section 30200 Policies as standards; resolution of policy conflicts

(b) Where the commission or any local government in implementing the provisions of this division identifies a conflict between the policies of this chapter, Section 30007.5 shall be utilized to resolve the conflict and the resolution of such conflicts shall be supported by appropriate findings setting forth the basis for the resolution of identified policy conflicts.

b. Analysis. The project involves the placement of materials from future, active landslides, into depressions within an ancient landslide surface. As detailed in Finding 1, Geologic Hazards, above, the submitted geotechnical information is not adequate for the Commission to make a finding of conformance with Coastal Act Section 30253(2). In particular, the Commission does not have sufficient evidence to find that such deposition of landslide materials will "...[not] contribute significantly to...geologic instability..."

Further, it will not be feasible to gather sufficient information that would be needed to confidently make such a finding. This is due both to the immediacy of need—potentially, as soon as the coming winter season—and funding constraints for such expensive and extensive testing. Also; the quest for certainty regarding unknowable or hidden conditions may, geotechnically speaking, be a fool's errand in any case.

Project need for coastal resource protection. A preponderance of public benefits will result from the project. These benefits substantially outweigh the potential increased risk of geologic instability that will result from adding more weight to an existing ancient landslide feature. These benefits include allowing



for better advanced planning and enhanced options available to protect coastal resources, consistent with the strategies for landslide management that are presented in the Coast Highway Management Plan (CHMP).

A primary benefit is that the project will provide a viable alternative for use on certain occasions when landslide disposal on the seaward side of the highway would otherwise harm sensitive marine resources. This will help protect tidepool habitats, nesting seabird colonies, and similar resources within or dependent on the waters of the adjacent Monterey Bay National Marine Sanctuary. The same public benefits will attain with respect to other sensitive coastal resources as well. These include environmentally sensitive terrestrial habitats (e.g., high quality Smith's blue butterfly habitat, riparian redwood forests, coastal terrace native grasslands), archaeological sites, rare plant habitats, freshwater wetlands, etc. Therefore, the project will be supportive of Coastal Act policies that protect marine resources, water quality, environmentally sensitive habitat areas, and archaeological features.

Another project benefit is that it will provide additional flexibility for handling excavated landslide materials. When there is no approved, feasible destination for the landslide debris, the stockpiled materials accumulate along the highway shoulder and in pullouts. Over time, the result is impairment of scenic viewing opportunities and reduced trailhead parking capacity. Therefore, in addition to the operational safety benefits for the highway, the project will clearly support Coastal Act public access, recreation and scenic resource protection policies.

Non-approval would increase risk to significant coastal resources. Without a full range of available disposal measures, Caltrans' ability to reopen the Big Sur Coast Highway after a blocking landslide event will be compromised. Following each major closure, there has been and probably will continue to be a strong economic and political impetus to take expedient measures—whatever it takes to get the highway reopened more rapidly. Long delays until reopening work to deprive the public of scenic viewing and coastal access opportunities. On the other hand, expedient measures have meant that emergency procedures and authorities are invoked, the environmental review process is short-circuited, and the opportunity for public input and deliberation is curtailed.

The CHMP landslide management strategies can minimize these issues, and better protect coastal resources. Its key measures include advanced planning, identification of a maximum range of landslide management options that can be adapted to each landslide event, and site preparation in advance of need. However, these measures can not be fully implemented without suitable prepared sites. These sites are essential for handling and recycling of suitable landslide materials (a preferred CHMP option)—or, for terrestrial disposal, when other environmentally appropriate alternatives are unavailable.

The problem with long delays in reopening the highway to through traffic. As long as the highway is closed, the recreational driving experience along the Scenic Byway will be cut short. Likewise, both wilderness trailheads and shoreline access will be unavailable to the public. Through mobility, such as the popular Carmel to San Simeon drive, will not be possible. Educational and interpretive opportunities are impacted, including those hosted by State Parks, the University of California's Big Creek Reserve, and the Esalen Institute. Some of the most spectacular opportunities for the public to view and learn



about the Monterey Bay National Marine Sanctuary will be inaccessible. Access to campgrounds in the State Parks, Los Padres National Forest, and along the Big Sur River will be blocked from one or both directions. The economic impacts for the State, and particularly for the Big Sur community's resorts, inns and other commercial visitor services, are potentially substantial.

For example, following the large landslide event in 1983, the highway was closed for more than a year. Community life was severely disrupted, and some visitor serving businesses failed. This reduced public recreational opportunities, inconsistent with the Coastal Act's public access and recreation policies. Through access along the Big Sur Coast was denied to the public. Tour operators changed their itineraries. Economic ripples were felt throughout the State.

The problem with expedient measures. The highway was eventually reopened in 1984. This was accomplished by pushing millions of cubic yards into the sea, with consequent smothering, siltation, and scouring impacts on the adjacent marine environment. Sensitive coastal bluff habitats were eliminated by excavation of slide material higher on the slope, above the highway. This also undermined a coastal trail link within the adjacent State Park, and left an excavation scar almost 1,000 ft. high. The resulting direct impacts to marine resources, environmentally sensitive habitats, scenic views, adjoining coastal trail segments, and water quality persist to this day.

Such an outcome would appear inconsistent with Coastal Act policies that specifically protect marine resources, environmentally sensitive habitat areas, water quality, public access, scenic views and recreational values. Nonetheless, because no better alternatives were available, these impacts were largely unavoidable.

The case of the 1983 landslide, which required the moving of 3.7 million cubic yards of earth, seems extreme. But, we know from experience that movements of at least a few thousand cubic yards are to be expected every storm season. Even the smaller storm events can close the highway, for at least a short time, and trigger the emergency response cycle.

Alternative measures and alternative sites have been evaluated. As identified by the CHMP, there is a spectrum of potential ways to dispose of future landslides that impact Highway 1. This project facilitates the *preferred* options, such as reuse and recycling. Ultimately, it is designed to accommodate long-term (i.e., permanent) deposition of landslide materials, as that becomes necessary. Transport to prepared terrestrial disposal sites, as proposed through this application, is one of the *least-preferred* options. The primary reason for this is the extreme scarcity of environmentally suitable disposal sites along the Big Sur Coast, and the finite capacity of such sites. Yet, this option is important to have available because it is generally more preferable than long-haul trucking to distant landfills, or marine disposal that would harm Marine Sanctuary resources.

Dozens of potential terrestrial disposal sites were identified and screened by the interagency steering committee (including Caltrans and Coastal Commission staff) during development of the CHMP. Nearly all the candidate sites turned out to have insurmountable environmental problems, such as impinging on the Critical Viewshed, significant disruption of environmentally sensitive habitats, destruction of



historic or archaeological resources, or impairment of public access. Some were found unsuitable due to lack of access, engineering infeasibility, active site instabilities, or insufficient useful capacity. The final nine (later, seven) candidates were evaluated in the project environmental document. The candidate sites at Treebones and Willow Springs were part of a small, select group that had the most capacity, with the least environmental impacts.

The planned Treebones and Willow Springs sites together will accommodate a total of only about 120,000 cubic yards. (Even in an average rainfall year, the amount of landslide material that Caltrans must handle in this corridor is typically 100,000 cubic yards or more.) Nonetheless, it is anticipated that under certain circumstances, terrestrial deposition will be the only environmentally acceptable, feasible alternative for landslide disposal.

In certain places along the Big Sur Coast, the inshore habitats are especially vulnerable to placement of earthen materials below the seaward edge of Highway 1. Examples include, but are not limited to, tide pools, seabird nesting colonies, marine mammal haul-outs, and nearshore kelp and eelgrass beds. These should not be subjected to landslide disposal impacts if there is an environmentally superior alternative available.

As the initiator and prime sponsor of the CHMP planning effort, Caltrans has committed to do its part to protect the Big Sur Coast's marine environment. To the extent that Caltrans handles landslide materials before they enter the marine environment, the agency already prevents impacts to highly sensitive intertidal and subtidal environments. Their capacity to do so is dependent largely on the availability of disposal options. The purpose of this project is to provide an environmentally acceptable alternative that can be used in those instances where there is no other feasible alternative.

c. Conclusion: "Balancing" is appropriate in this instance

The Commission finds that this project presents a conflict between competing policies of the Coastal Act that requires resolution in conformity with the provisions of Sections 30007.5 and 30200. As determined by the Commission above, this project will promote protection of marine resources, environmentally sensitive habitat areas, highly scenic views, and public access and recreation along the Big Sur Coast. The Commission notes that approval of the project will provide better locations to conduct landslide materials handling and recycling operations, as well as provide prepared terrestrial disposal sites proximate to the most active landslide locations. This will enhance Caltrans' ability to select the least environmentally damaging feasible alternative for responding to any given landslide event. These benefits will be lost if the project is not approved.

Balanced against the beneficial aspects of the project is the competing fact that the project will add landslide materials to existing landslides. The evidence that the added weight will not significantly contribute to renewed movement is not strong enough for the Commission to find that the project is in conformance with Section 30253(2). These concerns will be at least partially offset by a dewatering system, monitoring, and an emergency response plan, as conditioned. Nonetheless, it is not possible to say with certainty that the project will conform with Section 30253(2).



Strict adherence to Section 30253(2)'s policy of requiring projects to not contribute significantly to geologic instability, would make the Tree Bones and Willow Springs disposal sites unavailable for implementation of the CHMP landslide management strategies. This would frustrate measures needed for the protection of Big Sur's sensitive coastal resources. The protection of these resources is mandated by Coastal Act policies, as detailed in the preceding findings. In particular, the protection of marine resources, as directed by Coastal Act Section 30230, would be compromised by Caltrans being barred from placement of excess landslide materials atop the existing landslides at the Tree Bones and Willow Springs sites.

The Big Sur Coast Highway is the prime public access corridor along more than 75 miles of the California coast. This segment of Highway 1, a National Scenic Byway, provides access to an abundance of free and lower cost recreational opportunities, including scenic vista points, shoreline accessways and trailheads, as well as nine State Park System units and National Forest recreation lands. When the highway is closed by landslides, these opportunities are denied to the public. Maximum opportunities for public access and access to affordable recreational resources, as directed by Coastal Act Sections 30210 and 30213, would therefore be compromised by Caltrans being barred from placement of excess landslide materials at the proposed sites.

Applicant's best estimates of future stability notwithstanding, renewed movement of the landslide is nonetheless possible. However, there are no developed facilities in the direct downslope landslide path, other than Highway 1. A Caltrans maintenance station and a visitor-serving commercial campground are nearby, but are not directly downslope from the neighboring project sites. Other than seacliff buckwheat, there are no known, particularly-sensitive terrestrial habitat, shoreline or nearshore marine resources downslope from either site. Therefore, although the project will contribute to the instability of the underlying landslides, in a manner possibly contrary to the policy contained in Coastal Act Section 30253(2), the exposure of people, property and sensitive resources to this hazard appears to be relatively minimal.

For these reasons the Commission finds, pursuant to Sections 30007.5 and 30200 of the Coastal Act, that on balance it is more protective of coastal resources to resolve this conflict by approving the project and allowing additional landslide materials to be placed atop these existing landslides. The increased risk of geologic instability at the Tree Bones and Willow Springs disposal sites has been taken into account, and weighed against the advantages of the project in terms of public access and coastal resource protection. The Commission therefore finds the project consistent with the Coastal Act in reliance on the conflict resolution provisions of Section 30007.5 and 30200.

IV. California Environmental Quality Act (CEQA)

Coordination of environmental review. As the CEQA lead agency for this project, the California Department of Transportation (Caltrans) conducted an Initial Study and prepared a Mitigated Negative



Declaration (MND) for all seven selected Big Sur Coast disposal sites³⁰. In reliance on data developed for the CEQA review process, and further review with US Fish & Wildlife Service pursuant to federal Endangered Species Act Section 7 consultations, the US Forest Service granted a NEPA Categorical Exclusion for the Tree Bones and Willow Springs disposal sites³¹.

Coastal Commission CEQA finding. Section 13096 of the California Code of Regulations requires that a specific finding be made in conjunction with coastal development permit applications showing the application to be consistent with any applicable requirements of CEQA. Section 21080.5(d)(2)(A) of CEQA prohibits a proposed development from being approved if there are feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse effect which the activity may have on the environment. The Coastal Commission's review and analysis of land use proposals has been certified by the Secretary of Resources as being the functional equivalent of environmental review under CEQA. This staff report has discussed the relevant coastal resource issues with the proposal, and has recommended appropriate mitigations to address adverse impacts to said resources. Accordingly, the project is being approved subject to conditions that implement the mitigating actions required of the Applicant by the Commission (see Special Conditions). As such, the Commission finds that only as modified and conditioned by this permit will the proposed project not have any significant adverse effects on the environment within the meaning of CEQA.

³⁰ CEQA MND approved Dec. 6, 2000.

³¹ NEPA Decision Memo signed Dec. 7, 2004.



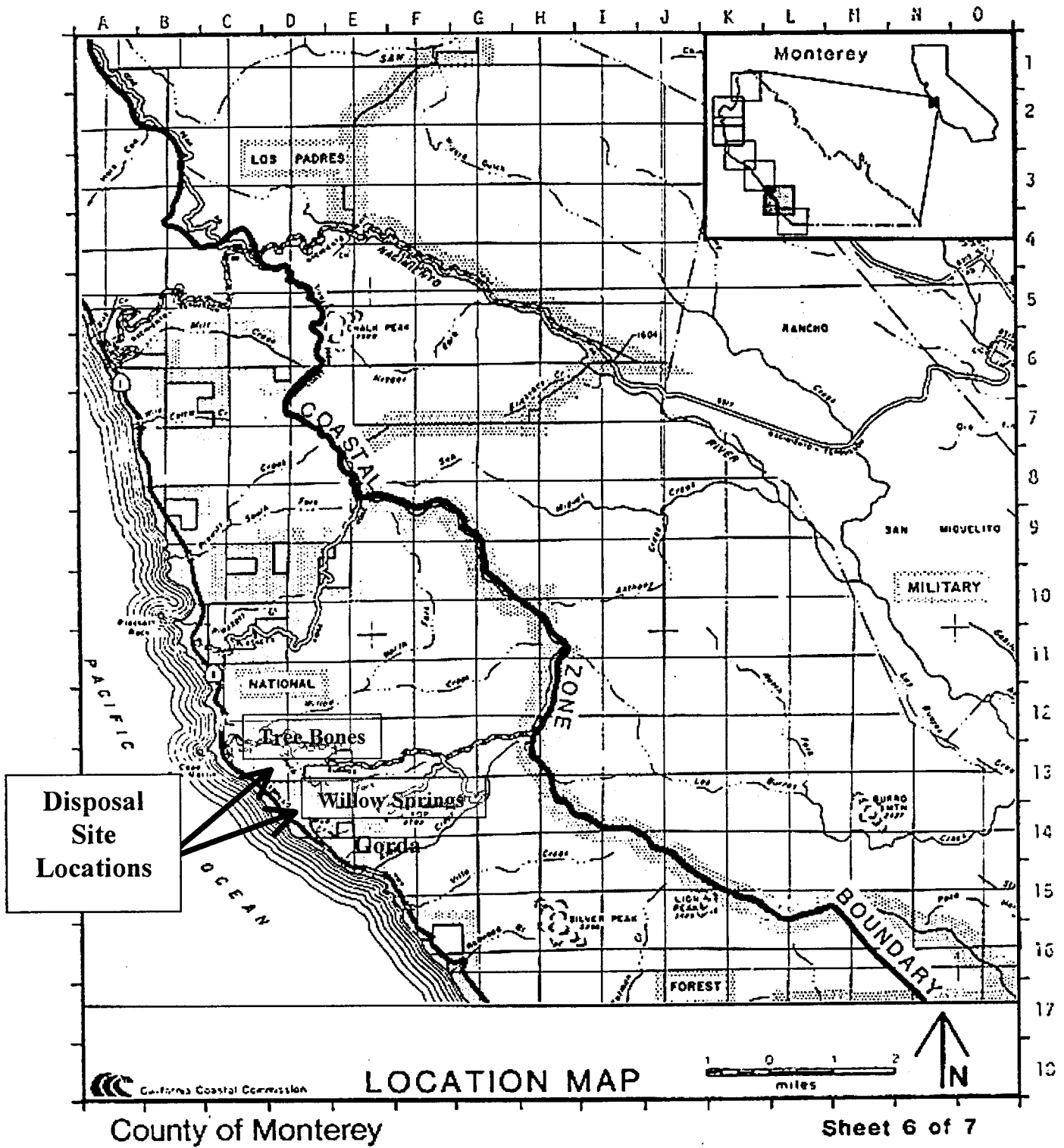


Exhibit A.
Regional Location Map

3-05-001
Caltrans Big Sur Disposal Sites

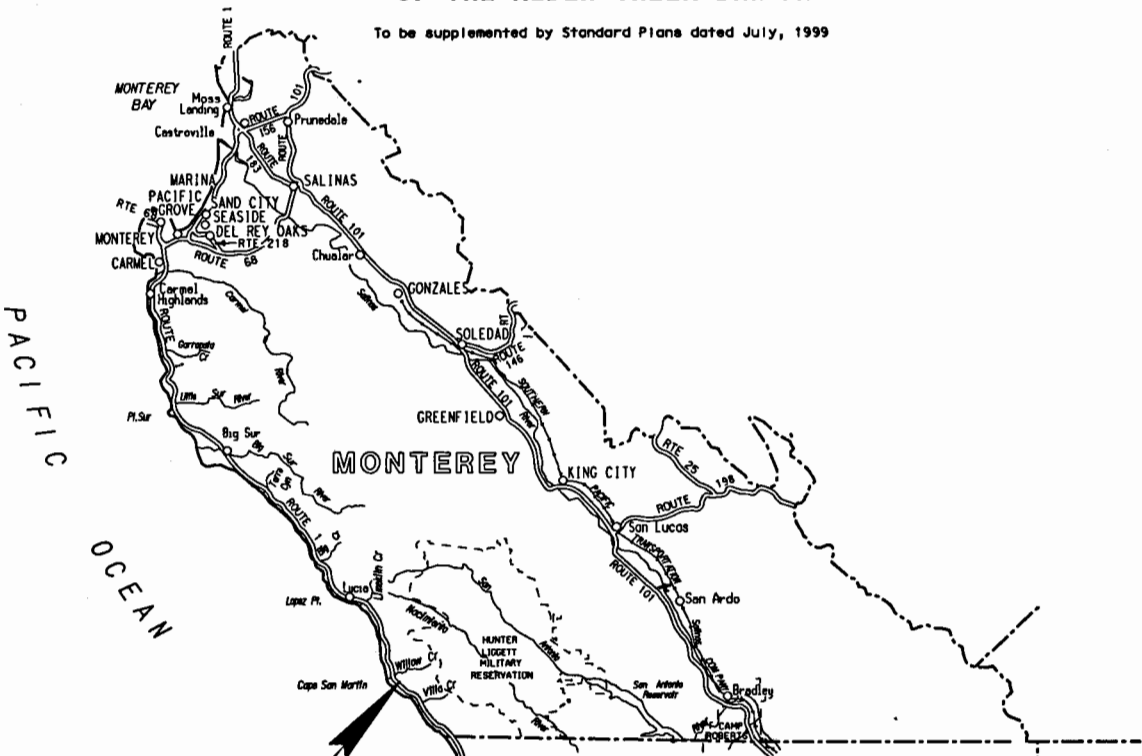
INDEX OF SHEETS

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
PROJECT PLANS FOR CONSTRUCTION ON
STATE HIGHWAY

ON ROUTE 1
IN MONTEREY COUNTY
NEAR LUCIA 4.0 KM NORTH
OF THE ALDER CREEK BRIDGE

To be supplemented by Standard Plans dated July, 1999

Preliminary Plan
Subject To Revision



LOCATION OF CONSTRUCTION
KP 16.7
PM 10.4

NO SCALE

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
05	Mon	1	16.7		



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CCC Exhibit B
(page 1 of 2 pages)

DATE: 02/01
PROJECT MANAGER: M. A. A. 61411 (on) 02/01
DATE: 02/01
PROJECT ENGINEER: L. L. McIntire 61411 (on) 02/01

Project Engineer Date
Registered Civil Engineer

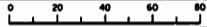


Plans Approval Date

Contract No. 05-OH1804

CU 05602

EA OH1801



Preliminary Plan
Subject To Revision



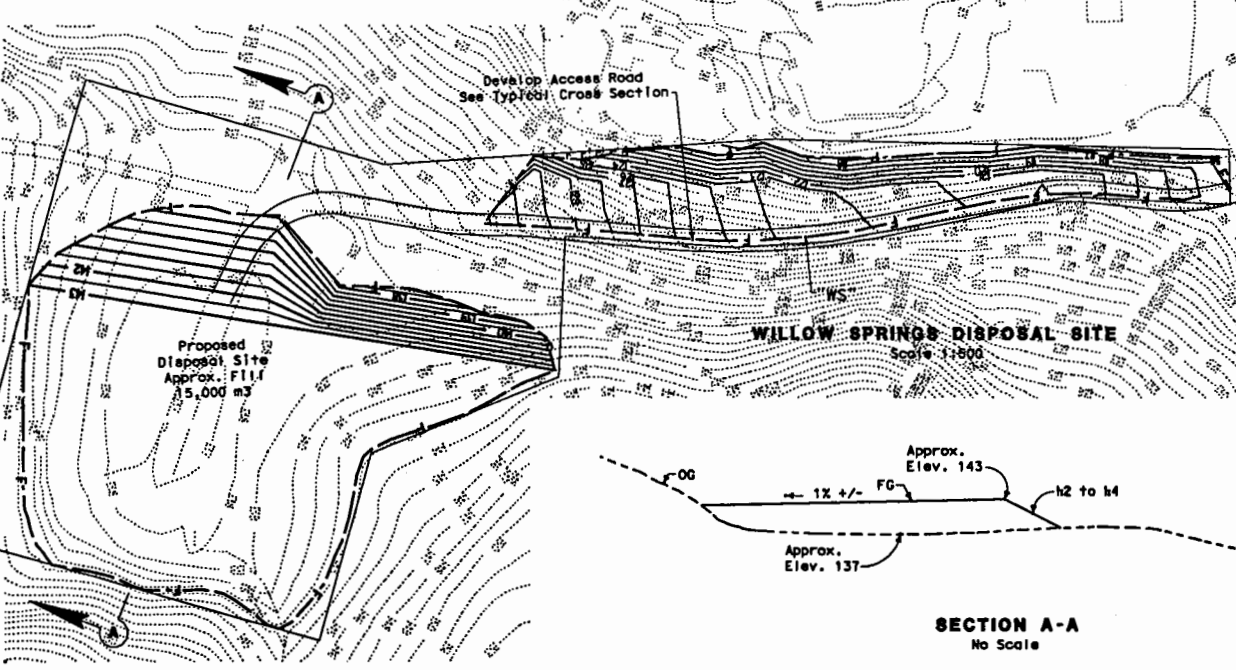
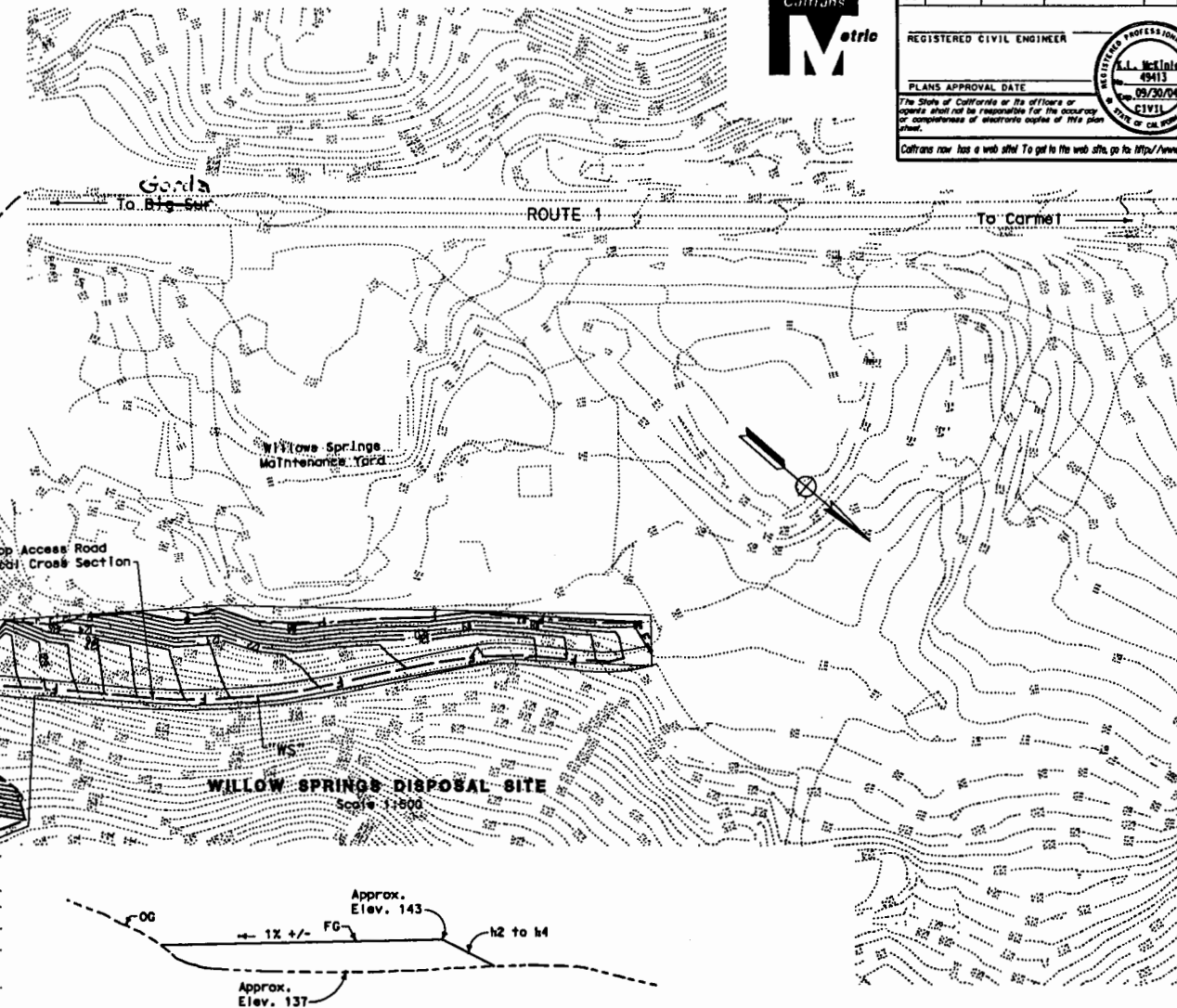
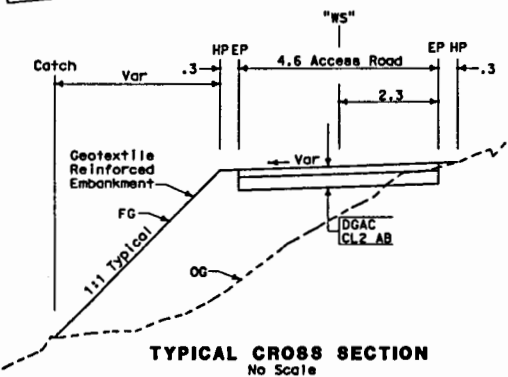
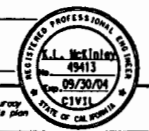
DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
05	Mon	1	10.4		

REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE

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LAYOUT
Alternative 2
L-1

FOR REDUCED PLANS ORIGINAL SCALE IS IN MILLIMETERS

0 20 40 60 80

USERNAME => 0100
SCH FILE => 101.dgn

CU 00000 EA 000000

(page 1 of 2 pages) TREE BONES DISPOSAL SITE
 PROJECT ENGINEER: K. L. McKinley
 CHECKED BY: [Signature]
 DATE: [Blank]

Note: For Complete R/W, See R/W Record Maps at District Office

USFS Disturbed Area 2.02ha (4.99 Acre)



DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET NO	TOTAL SHEETS
05	Mon	1	11.0		

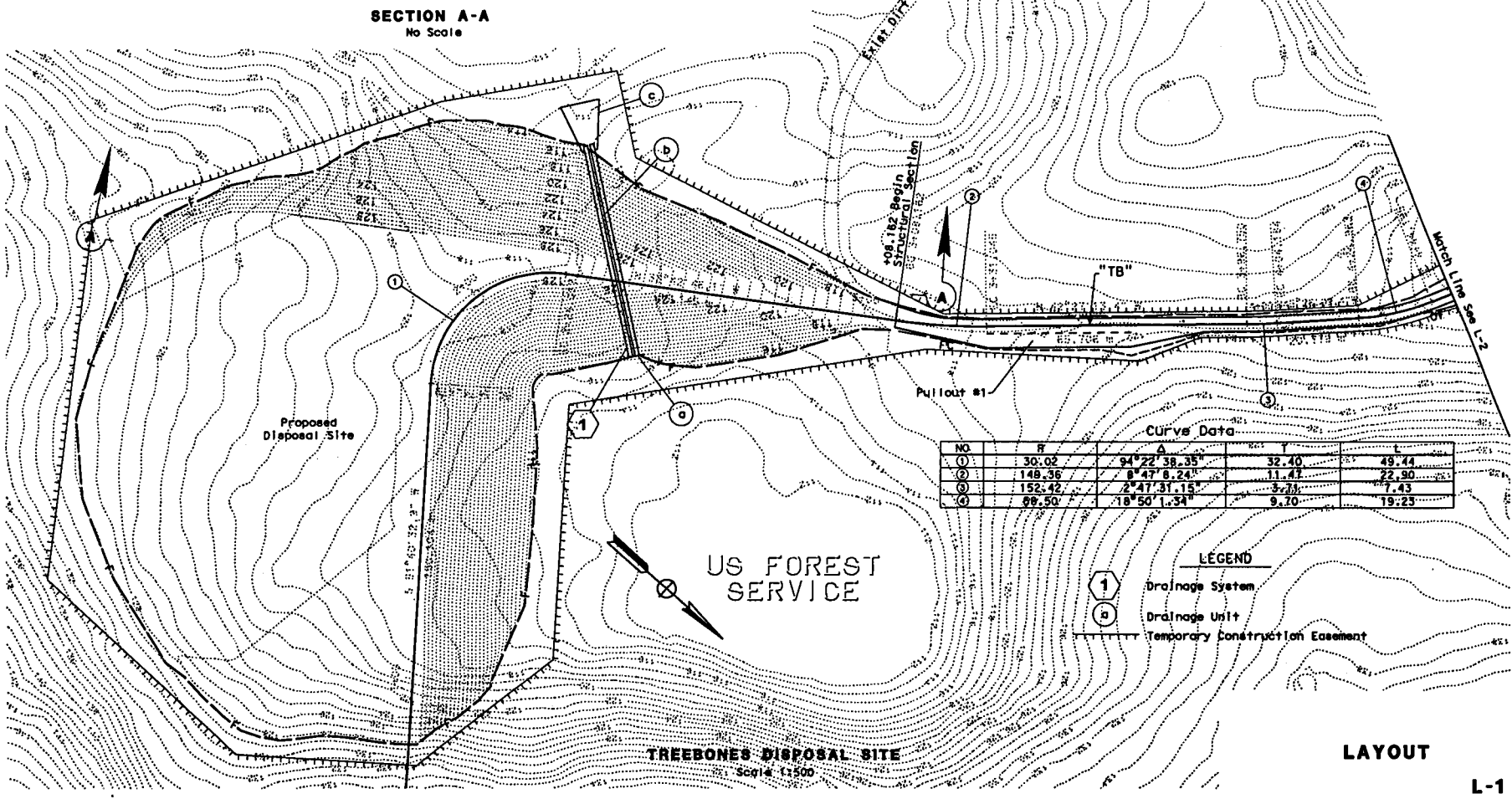
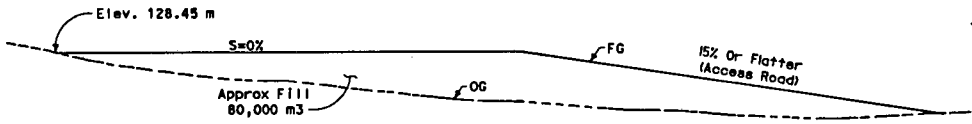
REGISTERED CIVIL ENGINEER

K. L. McKinley
49413
09/30/08
CIVIL
STATE OF CALIFORNIA

PLANS APPROVAL DATE: 09/30/08

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Curve Data

NO	R	Δ	T	L
①	30.02	94°22'38.35"	32.40	49.44
②	149.36	8°47'6.24"	11.41	22.90
③	152.42	2°47'31.15"	3.73	7.43
④	88.50	18°50'1.34"	9.70	19.23

LEGEND

- ① Drainage System
- ② Drainage Unit
- Temporary Construction Easement

FOR REDUCED PLANS ORIGINAL SCALE IS IN MILLIMETERS

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DGN FILE => 101.dgn

CU 05602 EA 0C9401

L-1

DATE PLOTTED: 03-11-04
 TIME PLOTTED: 03:11:11

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
05	Mon	1	17.7		

REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE

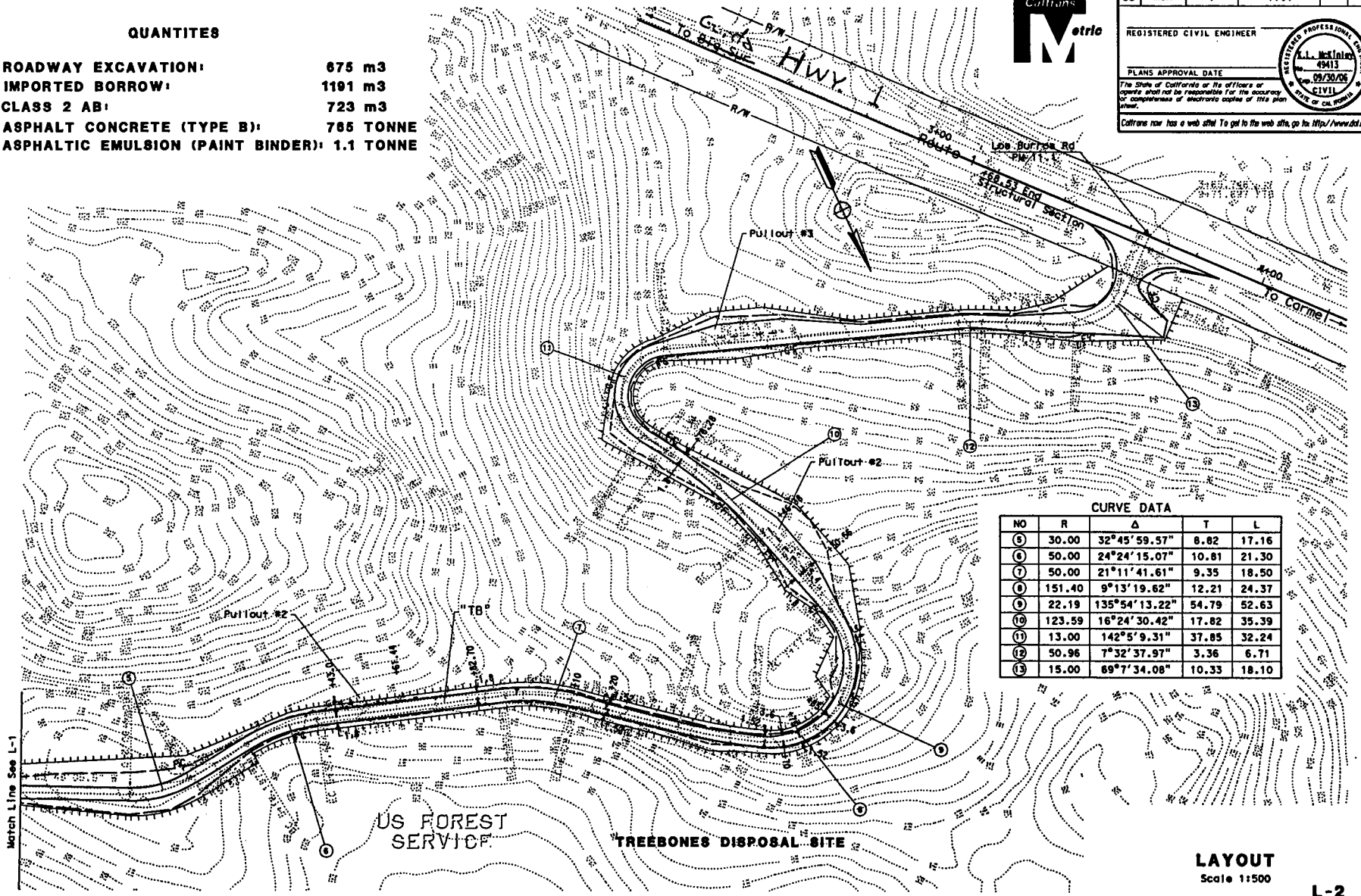
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan.

Coltrane now has a web site. To get to the web site, go to: <http://www.ced.com>



QUANTITIES

ROADWAY EXCAVATION: 675 m3
 IMPORTED BORROW: 1191 m3
 CLASS 2 AB: 723 m3
 ASPHALT CONCRETE (TYPE B): 765 TONNE
 ASPHALTIC EMULSION (PAINT BINDER): 1.1 TONNE



CURVE DATA

NO	R	Δ	T	L
6	30.00	32°45'59.57"	8.82	17.16
7	50.00	24°24'15.07"	10.81	21.30
8	50.00	21°11'41.61"	9.35	18.50
9	151.40	9°13'19.62"	12.21	24.37
10	22.19	135°54'13.22"	54.79	52.63
11	123.59	16°24'30.42"	17.82	35.39
12	13.00	142°5'9.31"	37.85	32.24
13	50.96	7°32'37.97"	3.36	6.71
14	15.00	89°7'34.08"	10.33	18.10

DATE REVISIONS BY DATE REVISIONS BY
 (page 2 of 2 pages)
 PROJECT ENGINEER
 STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
 MAINTENANCE DESIGN
 L-2

FOR REDUCED PLANS ORIGINAL SCALE IS IN MILLIMETERS

0 20 40 60 80

USERNAME ==81ru
 JOB FILE ==102.cop

CU 05602 EA 01701

DATE PLOTTED == 24-JUN-2005
 TIME PLOTTED == 13:09
 LAYOUT L-2

Coast Highway Management Plan

Disposal Sites Summary Map

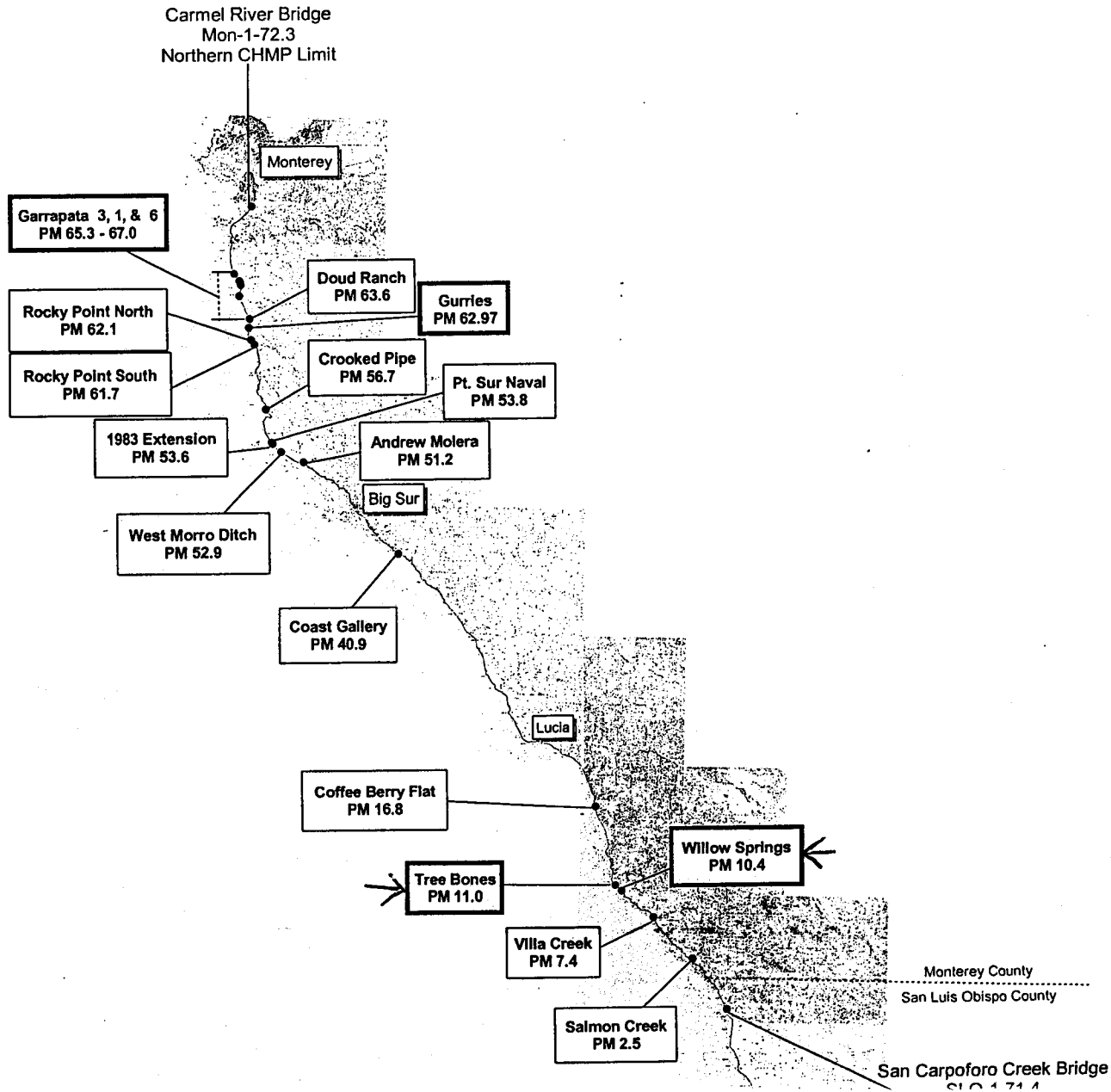


Table 4: Potential Material Disposal Sites

Maint. Area	Site Location		Existing/Proposed	Estim. Cap. (CY)	Size (Acres)*	Owner	Regulatory Jurisdiction							Recom. By	
	P.M./Approx.	Location Name					Coast. Zone	USFS	DPR	ACOE	RWQ CB	State Lands	DFG		MB NMS
Willow Springs	SLO-73.7	Little Flat	Proposed	20,000	N/A	Unk.	x							consult	CT Maint.
	0.1	County Line	Proposed	4,000	N/A	Unk.	x							consult	CT Maint.
	**2.5	Salmon Creek	Existing	10,000	0.8	USFS	x	x						consult	CT Maint.
	3.6	Soda Springs	Proposed	20,000	N/A	USFS	x	x		x	x		x	consult	CT Maint.
	4.3	South of Radio Pt	Proposed	60,000	N/A	Private	x	x						consult	CT Maint.
	4.6	Radio Pt 1&2	Proposed	10,000	N/A	RW	x	x						consult	CT Maint.
	6.7	Grey Slip	Existing	30,000/yr	N/A	Unk.	x			consult	consult			consult	CT Const.
	**7.2	Villa Creek	Proposed	50,000	1.2	Unk.	x	x		consult	consult			consult	CT Maint.
	9.3	Lone Eucalypt.	Proposed	55,000	N/A	USFS	x	x						consult	USFS
	9.5	Eucalyptus	Proposed	30,000	N/A	USFS	x	x		x	x		x	consult	USFS
	9.98	Spruce Creek	Proposed	10,000	N/A	USFS	x	x		x	x		x	consult	USFS
	***10.4	Willow Springs	Proposed	20,000	1.9	USFS	x	x							USFS
	***11	Tree Bone	Proposed	100,000	5.7	USFS	x	x							USFS
	11.8	Willow Creek	Proposed	30,000	N/A	RW	x							consult	CT Maint.
	**16.8	Coffeeberry Flat	Existing	60,000	3.4	RW	x							consult	CT Maint.
	24.1	Harlan's Creek	Proposed	100,000	N/A	Private	x			x	x		x	consult	John Harlan
	25.0	Tres Pinos	Proposed	15,000	N/A	RW	x							consult	CT Maint.
	25.0	Robinson's retreat	Proposed	40,000	N/A	Unk.	x							consult	CT Const.
	26.9	Packard Beach S	Proposed	5,000	N/A	Unk.	x							consult	CT Maint.
27.7	Big Creek stage-S	Existing	3,000	N/A	Big Creek Res.	x							consult	CT Maint.	
28.5	Big Creek North	Proposed	35,000	N/A	Big Creek Res.	x			x	x			consult	John Harlan	
33.8	Buck Creek So.	Existing	5,000/yr	N/A	Private	x							consult	CT Maint.	
Big Sur	38.3	Obie's Flat	Proposed	2,000	N/A	Private	x							consult	Ken Wright
	**40.9	Coast Gallery	Existing	1,000/yr	1.8	Unk.	x							consult	CT Maint.
	42.1	Fullers	Proposed	20,000	N/A	Unk.	x							consult	CT Maint.
	**51.2	Andrew Molera	Proposed	4,500	0.9	DPR	x		x					consult	State Parks
	**52.9	W. Morro Ditch	Proposed	20,000	2.1	Private	x			x	x		x	consult	El Sur Ranch
	52.9	E. Morro Ditch	Proposed	2,000	N/A	Private	x			x	x		x		El Sur Ranch
53.3	Dairy Canyon	Existing	5,000	N/A	Private	x							consult	El Sur Ranch	

Main Area	Site Location		Existing/Proposed	Estim. Cap. (CY)	Size (Acres)*	Owner	Regulatory Jurisdiction								Recom. By
	P.M./Approx.	Location Name					Coast Zone	USFS	DPR	ACOE	RWQ CB	State Lands	DFG	MB NMS	
Big Sur	53.6	Light house Ditch	Existing	2,000	N/A	Private	x			x	x		x	consult	El Sur Ranch
	***53.6	1983 Extension	Proposed	50,000	1.3	Private	x			x	x		x	consult	El Sur Ranch
	**53.8	Pt Sur Naval	Proposed	9,000	3.1	State Parks	x		x					consult	State Parks
	56.0	Little Sur River	Proposed	5,000	N/A	Private	x								El Sur Ranch
	56.0	Little Sur River	Existing	5,000	N/A	R/W	x								CT Maint.
	**56.7	Crooked Pipe	Existing	20,000	1.5	Private	x			x	x		x	consult	CT Mntc Design
	57.2	Hill re-build W	Proposed	750	N/A	Private	x							consult	Ken Wright
	57.2	Hill re-build E	Proposed	3,000	N/A	Unk.	x								Ken Wright
	57.3	Straight Down	Proposed	8,000/yr	N/A	Unk.	x			consult	consult			Consult	CT Mntc Design
	57.4	Straight Chute	Proposed	3,000	N/A	Unk.	x			consult	consult			consult	CT Mntc Design
	**61.7	Rocky Pt South	Proposed	8,000	1.7	Unk.	x							consult	CT Mntc Design
**62.1	Rocky Pt North	Proposed	8,000	0.1	Unk.	x							consult	CT Mntc Design	
Monterey	***62.97	Gurries	Proposed	100,000+	4.2	Private	x			x	x		x		Property Owner
	**63.6	Doud Ranch	Proposed	8,000	0.9	Private	x			x	x		x		CT Mntc Design
	63.6	Garrapata #4	Proposed	15,000	1.0	State Parks	x		x	x	x		x	consult	State Parks
	***65.3	Garrapata #3	Proposed	1,000	0.1	State Parks	x		x	x	x		x	consult	State Parks
	66.1	Garrapata #2	Existing	5,000	0.3	State Parks	x		x				x	consult	State Parks
	**66.3	Garrapata #5	Existing	5,000+	1.2	State Parks	x		x	x	x			consult	State Parks
	***66.4	Garrapata #1	Proposed	4,000	0.2	State Parks	x		x	x	x		x	consult	State Parks
***67	Garrapata #6	Proposed	2,000	0.8	State Parks	x		x	x	x		x	consult	State Parks	
Sites to be reviewed															
SLO-53.2	Winsor	Existing				Private	x								CT Const.
SLO-72.2	Ragged Pt	Proposed				USFS	x	x							USFS
MON-25.8	Vicente Creek					Unk.									Citizen
MON-60+	Scully	Proposed				Private									Property owner
Table Notes:															
***Recommended Disposal Sites															
** Other short-listed sites															
* Acreage figures are estimates only- generated from ArcView layouts (see aerial photos: figures 4-21)															
Legend: PM--postmile location on highway; CY--cubic yards; USFS--U.S. Forest Service; DPR--Department of Parks and Recreation; ACOE--Army Corps of Engineers; RWQCB--Regional Water Quality Control Board; DFG--Department of Fish and Game; MBNMS--Monterey Bay National Marine Sanctuary; R/W--Caltrans Right of Way															

EXHIBIT: U.S. FOREST SERVICE SPECIAL USE PERMIT

Los Authorization ID: MRD1012P

FS-2700-4
(05/03)

Contact ID: CALTRANS

OMB
0596-0082

Expiration Date: 12/31/2009

Use Code: 341

U.S. DEPARTMENT OF AGRICULTURE

Forest Service

SPECIAL USE PERMIT

AUTHORITY:

**ORGANIC ADMINISTRATION ACT June 4, 1897, PERMITS FOR PUBLIC
BLDG AND OTHER PUBLIC WORKS September 3, 1954**

CA. STATE, DEPT. OF TRANSPORT. (Caltrans) of C/O Gary Ruggerone, Senior Environmental Planner, 50 Higuera Street, , SAN LUIS OBISPO, CA 93401-5415 (hereinafter called the Holder) is hereby authorized to use or occupy National Forest System lands, to use subject to the conditions set out below, on the Los Padres National Forest.

This permit covers **7.20 acres** total for both sites and/or N/A miles and is described as: Sec. 5, T. 24 S., R. 5 E., MT. DIABLO PRINCIPAL MERIDIAN (**Willow Springs Site**), Sec. 32, T. 23 S., R. 5 E., MT. DIABLO PRINCIPAL MERIDIAN, (**Tree Bones Site**) as shown on the location map attached to and made a part of this permit, and is issued for the purpose of:

Issued for two debris disposal sites off Highway 1, Big Sur Coast.

The above described or defined area shall be referred to herein as the "permit area".

TERMS AND CONDITIONS

This permit issuance is contingent upon Caltrans getting all required permits from California Coastal Commission. If such document can not be obtained this permit will become void and will be cancelled.

**Caltrans will implement all mitigation measures and terms and conditions in the disposal sites E.A. (June 2003, pages 13-16) and in appendices A and B.
Caltrans will implement all applicable Best management Practices in Attachment C.**

It is understood by both USFS and Caltrans that upon completion of this project and before permit

is determined expired, both parties will review the pavement section of the roads to determine if the pavement is to be removed or left in place. If it is determined by USFS that the pavement will be removed, Caltrans will remove all pavement installed at Willow Springs and Tree Bones and hauled off National Forest System Lands for disposal. Roads will also be put back to its natural state following Best Management Practices in Attachment C.

Seacliff buckwheat plants will not be affected at the Tree Bones site.

Should any previously unidentified historic properties be encounter in the course of the proposed project, all work shall cease within 50 meters of the find and an appropriate archaeologist will immediately be informed of the find. In addition, an appropriate Los Padres Forest archeologist or the Northern Zone Archeologist will be notified as soon as possible.

I. AUTHORITY AND GENERAL TERMS OF THE PERMIT

A. Authority. This permit is issued pursuant to the authorities enumerated at Title 36, Code of Federal Regulations, Section 251 Subpart B, as amended. This permit, and the activities or use authorized, shall be subject to the terms and conditions of the Secretary's regulations and any subsequent amendment to them.

B. Authorized Officer. The authorized officer is the Forest Supervisor or a delegated subordinate officer.

C. License. This permit is a license for the use of federally owned land and does not grant any permanent, possessory interest in real property, nor shall this permit constitute a contract for purposes of the Contract Disputes Act of 1978 (41 U.S.C. 611). Loss of the privileges granted by this permit by revocation, termination, or suspension is not compensable to the holder.

D. Amendment. This permit may be amended in whole or in part by the Forest Service when, at the discretion of the authorized officer, such action is deemed necessary or desirable to incorporate new terms, conditions, and stipulations as may be required by law, regulation, land management plans, or other management decisions.

E. Existing Rights. This permit is subject to all valid rights and claims of third parties. The United States is not liable to the holder for the exercise of any such right or claim.

F. Nonexclusive Use and Public Access. Unless expressly provided for in additional terms, use of the permit area is not exclusive. The Forest Service reserves the right to use or allow others to use any part of the permit area, including roads, for any purpose, provided, such use does not materially interfere with the holder's authorized use. A final determination of conflicting uses is reserved to the Forest Service.

G. Forest Service Right of Entry and Inspection. The Forest Service has the right of unrestricted access of the permitted area or facility to ensure compliance with laws, regulations, and ordinances and the terms and conditions of this permit.

H. Assignability. This permit is not assignable or transferable. If the holder through death, voluntary sale or transfer, enforcement of contract, foreclosure, or other valid legal proceeding ceases to be the owner of the improvements, this permit shall terminate.

I. Permit Limitations. Nothing in this permit allows or implies permission to build or maintain any structure or facility, or to conduct any activity unless specifically provided for in this permit. Any use not specifically identified in this permit must be approved by the authorized officer in the form of a new permit or permit amendment.

II. TENURE AND ISSUANCE OF A NEW PERMIT

A. Expiration at the End of the Authorized Period. This permit will expire at midnight on 12/31/2009. Expiration shall occur by operation of law and shall not require notice, any decision document, or any environmental analysis or other documentation.

B. Minimum Use or Occupancy of the Permit Area. Use or occupancy of the permit area shall be exercised at least 365 days each year, unless otherwise authorized in writing under additional terms of this permit.

C. Notification to Authorized Officer. If the holder desires issuance of a new permit after expiration, the holder shall notify the authorized officer in writing not less than six (6) months prior to the expiration date of this permit.

D. Conditions for Issuance of a New Permit. At the expiration or termination of an existing permit, a new permit may be issued to the holder of the previous permit or to a new holder subject to the following conditions:

1. The authorized use is compatible with the land use allocation in the Forest Land and Resource Management Plan.
2. The permit area is being used for the purposes previously authorized.
3. The permit area is being operated and maintained in accordance with the provisions of the permit.
4. The holder has shown previous good faith compliance with the terms and conditions of all prior or other existing permits, and has not engaged in any activity or transaction contrary to Federal contracts, permits laws, or regulations.

E. Discretion of Forest Service. Notwithstanding any provisions of any prior or other permit, the authorized officer may prescribe new terms, conditions, and stipulations when a new permit is issued. The decision whether to issue a new permit to a holder or successor in interest is at the absolute discretion of the Forest Service.

F. Construction. Any construction authorized by this permit may commence **upon obtaining all required permits** and shall be completed by **December 31, 2009**. If construction is not completed within the prescribed time, this permit may be revoked or suspended.

III. RESPONSIBILITIES OF THE HOLDER

A. Compliance with Laws, Regulations, and other Legal Requirements. The holder shall comply with all applicable Federal, State, and local laws, regulations, and standards, including but not limited to, the Federal Water Pollution Control Act, 33 U.S.C. 1251 et seq., the Resource Conservation and Recovery Act, 42 U.S.C. 6901 et seq., the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. 9601 et seq., and other relevant environmental laws, as well as public health and safety laws and other laws relating to the siting, construction, operation, and maintenance of any facility, improvement, or equipment on the property.

B. Plans. Plans for development, layout, construction, reconstruction, or alteration of improvements on the permit area, as well as revisions of such plans, must be prepared by a qualified individual acceptable to the authorized officer and shall be approved in writing prior to commencement of work. The holder may be required to furnish as-built plans, maps, or surveys, or other similar information, upon completion of construction.

C. Maintenance. The holder shall maintain the improvements and permit area to standards of repair, orderliness, neatness, sanitation, and safety acceptable to the authorized officer and consistent with other provisions of this authorization. If requested, the holder shall comply with inspection requirements deemed appropriate by the authorized officer. (See Attachment C – Road B.M.P's)

D. Hazard Analysis. The holder has a continuing responsibility to identify all hazardous conditions on the permit area which would affect the improvements, resources, or pose a risk of injury to individuals. Any non-emergency actions to abate such hazards shall be performed after consultation with the authorized officer. In emergency situations, the holder shall notify the authorized officer of its actions as soon as possible, but not more than 48 hours, after such actions have been taken.

E. Change of Address. The holder shall immediately notify the authorized officer of a change in address.

F. Change in Ownership. This permit is not assignable and terminates upon change of ownership of the improvements or control of the business entity. The holder shall immediately notify the authorized officer when a change in ownership or control of business entity is pending. Notification by the present holder and potential owner shall be executed using Form SF-299 Application for Transportation and Utility Systems and Facilities of Federal Lands, or Form FS-2700-3a, Holder Initiated Revocation of Existing Authorization, Request for a Special Use Permit. Upon receipt of the proper

documentation, the authorized officer may issue a permit to the party who acquires ownership of, or a controlling interest in, the improvements or business entity.

IV. LIABILITY

C. The holder has an affirmative duty to protect from damage the land, property, and interests of the United States.

The holder shall be strictly liable (liability without proof of negligence) to the United States for any injury, loss, or damage arising under this authorization. Such strict liability shall be in the amount of \$1 million unless the Forest Supervisor determines at the time of issuance of this authorization that a lesser amount of strict liability is appropriate based upon a risk assessment for the use authorized by this instrument. Liability for injury, loss, or damage to the United States in excess of the prescribed amount of strict liability shall be determined under the general law of negligence.

V. TERMINATION, REVOCATION, AND SUSPENSION

A. General. For purposes of this permit, "termination", "revocation", and "suspension" refer to the cessation of uses and privileges under the permit.

"Termination" refers to the cessation of the permit under its own terms without the necessity for any decision or action by the authorized officer. Termination occurs automatically when, by the terms of the permit, a fixed or agreed upon condition, event, or time occurs. For example, the permit terminates at expiration. Terminations are not appealable.

"Revocation" refers to an action by the authorized officer to end the permit because of noncompliance with any of the prescribed terms, or for reasons in the public interest. Revocations are appealable.

"Suspension" refers to a revocation which is temporary and the privileges may be restored upon the occurrence of prescribed actions or conditions. Suspensions are appealable.

B. Revocation or Suspension. The Forest Service may suspend or revoke this permit in whole or part for:

1. Noncompliance with Federal, State, or local laws and regulations.
2. Noncompliance with the terms and conditions of this permit.
3. Reasons in the public interest.
4. Abandonment or other failure of the holder to otherwise exercise the privileges granted.

C. Opportunity to Take Corrective Action. Prior to revocation or suspension for cause pursuant to Section V (B), the authorized officer shall give the holder written notice of the grounds for each action and a reasonable time, not to exceed 90 days, to complete the corrective action prescribed by the authorized officer.

D. Removal of Improvements. Prior to abandonment of the improvements or within a reasonable time following revocation or termination of this authorization, the holder shall prepare, for approval by the authorized officer, an abandonment plan for the permit area. The abandonment plan shall address removal of improvements and restoration of the permit area and prescribed time frames for these actions. If the holder fails to remove the improvements or restore the site within the prescribed time period, they become the property of the United States and may be sold, destroyed or otherwise disposed of without any liability to the United States. However, the holder shall remain liable for all cost associated with their removal, including costs of sale and impoundment, cleanup, and restoration of the site.

VI. OTHER PROVISIONS

A. Members of Congress. No Member of or Delegate to Congress or Resident Commissioner shall benefit from this permit either directly or indirectly, except when the authorized use provides a general benefit to a corporation.

B. Appeals and Remedies. Any discretionary decisions or determinations by the authorized officer are subject to the appeal regulations at 36 CFR 251, Subpart C, or revisions thereto.

C. Superior Clauses. In the event of any conflict between any of the preceding printed clauses or any provision thereof and any of the following clauses or any provision thereof, the preceding printed clauses shall control.

*** See attachments A and B for for terms and conditions and mitigation measures that will apply to both disposals sites.**

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0596-0082.

This information is needed by the Forest Service to evaluate requests to use National Forest System lands and manage those lands to protect natural resources, administer the use, and ensure public health and safety. This information is required to obtain or retain a benefit. The authority for that requirement is provided by the Organic Act of 1897 and the Federal Land Policy and Management Act of 1976, which authorize the Secretary of Agriculture to promulgate rules and regulations for authorizing and managing National Forest System lands. These statutes, along with the Term Permit Act, National Forest Ski Area Permit Act, Granger-Thye Act, Mineral Leasing Act, Alaska Term Permit Act, Act of September 3, 1954, Wilderness Act, National Forest Roads and Trails Act, Act of November 16, 1973, Archaeological Resources Protection Act, and Alaska National Interest Lands Conservation Act, authorize the Secretary of Agriculture to issue authorizations for the use and occupancy of National Forest System lands. The Secretary of Agriculture's regulations at 36 CFR Part 251, Subpart B, establish procedures for issuing those authorizations.

The Privacy Act of 1974 (5 U.S.C. 552a) and the Freedom of Information Act (5 U.S.C. 552) govern the confidentiality to be provided for information received by the Forest Service Public reporting burden for collection of information, if requested, is estimated to average 1 hour per response for annual financial information; average 1 hour per response to prepare or update operation and/or maintenance plan; average 1 hour per response for inspection reports; and an average of 1 hour for each request that may include such things as reports, logs, facility and user information, sublease information, and other similar miscellaneous information requests. This

CCC Exhibit E
(page 6 of 13 pages)

This permit is accepted subject to the conditions set out above.

HOLDER NAME: CA. STATE, DEPT. OF TRANSPORT.
DEPARTMENT OF AGRICULTURE

U.S.
FOREST
SERVICE.

By: _____

By: _____

(Holder Signature)
Officer Signature)

(Authorized

By: _____

Title: _____

(Holder Signature)
Title)

(Name and

Date: _____

Date: _____

ATTACHMENT A
REASONABLE AND PRUDENT MEASURES
FISH AND WILDLIFE SERVICE
WILLOW SPRINGS DISPOSAL SITE

The following are measures that the Service believes are reasonable and prudent measures that are necessary and appropriate to minimize take of the Smith's blue butterfly:

1. Take of Smith's blue butterflies shall be minimized by placement of the removed seacliff buckwheat plants and associated soil and duff in a manner that maximizes the potential for any life stages of Smith's blue butterflies using the plants to survive and that minimizes effects to individuals occupying the adjacent habitat.
2. Take of Smith's blue butterflies shall be minimized by implementing well-defined operational procedures.
3. Take of Smith's blue butterflies shall be reduced by implementing measures that reduce the potential for introducing and spreading exotic, invasive plants in the project area and vicinity.
4. Take of Smith's blue butterflies shall be reduced by implementing measures to ensure the successful establishment of host plants in the project area.
5. Take of Smith's blue butterflies shall be minimized by allowing only qualified individuals to handle seacliff buckwheat plants and their associated soil and duff.

TERMS AND CONDITIONS

To be exempt from the prohibitions of section 9 of the Endangered Species Act, Caltrans must comply with the following terms and conditions, which implement the reasonable and prudent measures, described above and outline reporting and monitoring requirements. These terms and conditions are non-discretionary.

1. To implement reasonable and prudent measure 1, the following terms and conditions are established:
 - a. The seacliff buckwheat plants targeted for removal shall be placed with their associated soil and duff in a location where they will not be disturbed by activities associated with landslide material disposal.
 - b. The seacliff buckwheat plants shall be relocated in a manner that does not disturb the existing seacliff buckwheat plants including duff and roots.

Workers shall avoid walking through the existing habitat to the extent possible.

- c. The seacliff buckwheat plants targeted for removal shall be placed with their associated soil and duff adjacent to unaffected seacliff buckwheat plants. Soil and duff shall not be placed directly under existing seacliff buckwheat plants.
- d. Removal and relocation of the identified seacliff buckwheat plants and collection and placement of duff shall be done under the supervision of an on-site, Service-approved biologist.

2. To implement reasonable and prudent measure 2, the following terms and conditions are established:

- a. A Service-approved biologist shall conduct a brief training session for all project personnel before any construction activities begin within the project area. At a minimum, the training shall include:
 - Identification of the Smith's blue butterfly and its host plant, seacliff buckwheat.
 - The general provision and protections afforded by the Act.
 - The measures to be implemented during construction to protect the species.
 - A review of project boundaries.
- b. Prior to construction activities, the project boundaries shall be clearly delineated by flagging or other means to prevent inadvertent activity outside the project area.
- c. The construction area should be wetted down as necessary to minimize dust. Wetting shall be applied in a manner that does not lead to erosion.

3. To implement reasonable and prudent measure 3, the following terms and conditions are established:

- a. To ensure that additional plant species are not introduced to the project area, the USFS or Caltrans shall ensure that equipment and vehicles entering the project area are not contaminated with weeds or other material that could support propagules, including seeds.
- b. If fill or erosion control materials are required, the USFS or Caltrans shall ensure that only weed-free materials are used.
- c. Ground disturbance shall be minimized to reduce opportunity for establishment of exotic invasive species.

- d. Caltrans will remove by hand all exotic, invasive weeds in the area before any mechanical equipment works begins.
 - e. Any native plant material other than the seacliff buckwheat plants that is removed from the project site and not contaminated with exotic, invasive plants shall be replaced over exposed soil on or adjacent to the site as mulch.
 - f. The USFS or Caltrans shall monitor the project site and immediate vicinity for exotic, invasive plants every six months during the first year and annually thereafter for a total of five years. Any exotic, invasive plant species present, including seeding, shall be removed by hand.
4. To implement reasonable and prudent measure 4, the following terms and conditions are established:
- a. The USFS or Caltrans shall monitor the condition of the seacliff buckwheat plants and the revegetated area every six months during the first year and annually thereafter for a total of five years.
 - b. The USFS or Caltrans shall hydroseed the project area with a mix containing seacliff buckwheat seed collected within three miles of the project area. Other species characteristic of the coastal scrub community at the project site shall be included in the seed mix.
5. To implement reasonable and prudent measure 5, the following terms and conditions are established:

Only qualified biologists, approved by the Service, shall handle any seacliff buckwheat plants and their associated duff that may contain eggs, larvae or pupae of the Smith's blue butterfly. The USFS or Caltrans shall provide the credentials of the person who will perform these duties to us for our review and approval at least 15 days prior to the onset of ground-disturbing activities.

REPORTING REQUIREMENTS

Caltrans shall provide a written annual report to the Service. The USFS or Caltrans shall submit the first report by **December 2005** and subsequent reports annually until **December 2009**. The reports shall document the amount of habitat and number of seacliff buckwheat plants actually disturbed; the results of revegetation with seacliff buckwheat and associated coastal scrub species; the results of exotic plant species monitoring and control program per term and condition 3 (f); problems encountered in implementing terms and conditions; results of any surveys conducted per our conservation recommendations and other local sightings records of the Smith's blue

butterfly; and only other pertinent information. This attachment will assist the Service, USFS and Caltrans in evaluating future measures for the conservation of the Smith's blue butterfly.

DISPOSITION OF INJURED OR DEAD SPECIMENS

Upon locating dead Smith's blue butterflies, initial notification within three days of it's finding must be made in writing to the Service's Division of Law Enforcement (370 Amapola Avenue, Suite 114, Torrance, California 90501) and by telephone and writing to the Ventura Fish and Wildlife Office (2493 Portola Road, Suite B, Ventura, California 93003; (805) 644-1766). The report shall include the date, time and location of the specimen, a photograph, cause of death, if known, and any other pertinent information.

Care should be taken in handling the dead species to preserve biological material in the best possible state for later analysis. The USFS or Caltrans shall make arrangements regarding proper disposition of potential museum specimens with the California Academy of Sciences (Contact: Collections Manager, Golden Gate Park, San Francisco< California 94118; (415) 750-7177).

CONSERVATION RECOMMENDATIONS

Section 7 (a)(1) of the Act directs federal agencies to use their authorities to further the purposes of the Act by carrying out conservation program for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. We recommend the following:

1. The USFS or Caltrans should conduct annual surveys to assess the status of the Smith's blue butterfly in the project area and it's vicinity.
2. The USFS or Caltrans should encourage further observations and documentation of Smith's blue butterflies in the project area and its vicinity by experts on the species and other knowledgeable individuals or institutions.

We request notification of the implementation of any conservation recommendations so we may be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats.

**ATTACHMENT B
CALTRANS
MITIGATION MEASURES
TREE BONES DISPOSAL SITE**

Seacliff buckwheat plants will not be affected during this project. This will be accomplished by avoiding all Seacliff buckwheat plants in the project area. Measures to avoid impacts to Seacliff buckwheat present along the "Tree Bones" access road are as follows:

- 1) A USFWS approved biologist shall conduct a brief training session for all project personnel before any construction activities begin within the project area. At a minimum, the training shall include:
 - Identification of the Smith's blue butterfly and its host plant, Seacliff buckwheat.
 - The general provisions and protections afforded by the Endangered Species Act.
 - The measures to be implemented during construction to protect the species.
 - A review of the project boundaries.

- 2) Prior to construction activities, the project boundaries shall be clearly delineated by flagging or other means to prevent inadvertent activity outside the project area.
- 3) The construction area shall be wetted down as necessary to minimize dust. Wetting shall be applied in a manner that does not lead to erosion.
- 4) If fill or erosion control materials are required, the USFS or the Department shall ensure that only weed free materials are used.
- 5) Ground disturbance shall be minimized to reduce opportunity for establishment of exotic invasive species.
- 6) Workers shall conduct any necessary vegetation clearing along the access road by hand.
- 7) Any native plant material other than the Seacliff buckwheat plants that is removed from the project site and not contaminated with exotic, invasive plants shall be replaced over exposed soil on or adjacent to the site as mulch.
- 8) The USFS or the Department shall monitor the project site and immediate vicinity for exotic, invasive plants every six months during the first year and annually thereafter for a total of five years. Any exotic, invasive plant species present, including seedlings, shall be removed by hand.
- 9) The USFS or the Department shall hydroseed the project area with a mix containing Seacliff buckwheat seed collected within three miles of the project area. Other species characteristic of the coastal scrub community at the project site shall be included in the seed mix.

CALIFORNIA COASTAL COMMISSION

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SAN FRANCISCO, CA 94105-2219
VOICE AND TDD (415) 904-5200
FAX (415) 904-5400



2 June 2005

GEOTECHNICAL REVIEW MEMORANDUM

To: Lee Otter, Transportation & Development Liaison
From: Mark Johnson, Staff Geologist
Re: 3-05-001 (Caltrans), Willow Springs & Treebones disposal sites, Big Sur Coast

In regard to the above referenced coastal development permit application, I have reviewed the following documents:

- 1) Caltrans 2002, "Preliminary geotechnical report, File number 05-MON-001-PM10.4, 05-0H1800", 13 p. geotechnical report dated 25 January 2002 and signed by J. D. Duffy (RG 5127).
- 2) Caltrans 2002, "Preliminary geotechnical report, File number 05-MON-001-PM11.4, 05-0H1700", 12 p. geotechnical report dated 14 February 2002 and signed by J. D. Duffy (RG 5127).
- 3) Caltrans 2002, "Preliminary geotechnical report, File number 05-MON-001-PM62.97, 05-0H1500", 10 p. geotechnical report dated 6 August 2002 and signed by J. D. Duffy (RG 5127).
- 4) Caltrans 2002, "Response to California Coastal Commission request for additional information to the Preliminary Geotechnical Report for the Tree Bones disposal site", 2 p. geotechnical report dated 6 September 2002 and signed by J. D. Duffy (RG 5127).
- 5) Caltrans 2002, "Response to California Coastal Commission request for additional information to the Preliminary Geotechnical Report for the Willow Springs disposal site", 2 p. geotechnical report dated 6 September 2002 and signed by J. D. Duffy (RG 5127).

In addition, I have visited the Treebones and Willow Springs sites on two occasions, on 28 January 2000 and on 26 August 2003. I have discussed the sites, their geology, and options for disposal of landslide debris with John Duffy, geologist for CalTrans, on several occasions. In addition, I have discussed these issues with several other geologists including Chris Wills (California Geological Survey), Michael Manson (California Geological Survey), and Allen King (U.S. Forest Service). Michael Manson and Allen King accompanied me in the field in 2003.

CCC Exhibit F
(page 1 of 5 pages)

The proposed project is to place landslide debris ("fill") at several locations near Highway One on the Big Sur Coast. Disposal of landslide debris removed from Highway One has been problematic for Caltrans, and these disposal sites are seen as an interim solution until a plan can be worked out by agencies involved for alternative disposal options in the future. The recently completed Big Sur Coast Highway Management Plan (CHMP), ratified in March 2004, recommends an hierarchy of strategies for landslide disposal, ranging from materials reuse and shoreline replenishment to terrestrial disposal.

This memo concerns two proposed terrestrial disposal sites, the "Treebones" site near milepost 11.4, at which Caltrans plans to dispose of 80,000 cubic meters of landslide debris, and the "Willow Springs" site, near milepost 10.4 and an existing Caltrans maintenance facility, where Caltrans hopes to dispose of 15,000 cubic meters of landslide debris. Although reliance on terrestrial disposal sites has been characterized as an "interim" measure until the CHMP landslide management strategies can be fully implemented, the placement of any actual landslide material at the sites must be regarded as (potentially) permanent.

The two sites share many similarities. They both are depressions at the heads of large landslides. Both landslides are seated in the Jurassic-Cretaceous Franciscan Group, which here consists of fractured sandstone, sheared shales, and greenstone in a chaotic mixture known as a *mélange*. Both landslides have been mapped by the California Geological Survey as "dormant young rock slides" meaning that they are deep seated landslides involving bedrock, and that the landforms related to the landslide are relatively fresh, but there is no record of historic movement.

At both sites, CalTrans conducted extensive field investigations, reported on in references (1) and (2), that included subsurface borings with continuous or near continuous coring, installation of inclinometers and piezometers, and seismic refraction profiling. These data were used to characterize the sites and provide input for slope stability modeling of the sites.

Treebones Site

Borings at the Treebones site indicate that the Franciscan *mélange* is overlain by 29 meters of surficial deposits consisting of alluvium and debris flow deposits. No slide plane was noted to the total depth of approximately 52 meters. Although core recovery was very good, the bedrock was highly fractured. Seismic refraction studies identified three different units of different seismic velocity. These were correlated with observations from the boring to indicate the presence of three relatively continuous layers at the site: weak recent sediments, debris flow deposits, and the Franciscan *Mélange* bedrock. The piezometer was monitored for ten months, and showed that ground water varied seasonally from 102 to 104.5 meters above sea level.

Rock strength parameters (friction angle, cohesion, and unit weight) were not measured at the site. Instead, assumed values were derived, based on testing of materials at several nearby Caltrans projects within the Franciscan *Mélange*.

These data were used to construct two different models for the Treebones landslide, with different orientations of the slide plane (and corresponding different volumes of the Treebones

landslide). The two models provide factors of safety of 2.39 and 3.45. Adding 80,000 cubic meters of fill at the head of the landslide, as proposed, reduces these factors of safety to 2.35 and 3.36, respectively.

Although the modeled factors of safety are very high, far in excess of the usual 1.5 required for new development, I am concerned that they may be overstated. The report includes a sensitivity analysis (Table 1) showing the effects of changing the rock strength parameters (cohesion and friction angle) as well as a 10m increase in water level on the calculated factor of safety. Under some of these scenarios, the factor of safety drops to values below 1.5 once the fill is added, and to as low as 1.1 (this for a friction angle of 16, cohesion of 0 and a 10 m increase in water level). I do not consider such a scenario to be unlikely.

The rock strength parameters assumed for the slide plane are very high, particularly the friction angle of 28 degrees. No direct shear test or triaxial shear tests were performed on material collected at the site in support of these values. Instead, data from other CalTrans projects within the Franciscan mélangé were used as proxies for strength parameters of the rocks at the Treebones site. In particular, back-calculations from three relatively nearby landslides yielded friction angles ranging from 28 to 34 degrees. Without careful evaluation of these back-calculations I cannot attest that these very high friction angles are reasonable values for those slides. Even if they are, however, I am not convinced that they are transferable to the Treebones slide. Differences in shale content, the amount of shearing on the slide plane and the distribution of asperities on the slide plane—which is related to the size and abundance of greenstone blocks in the mélangé—may well vary from site to site. In addition, it is unclear whether the landslides used in the back-calculations were reactivation of ancient landslides, or were first-time landslides. If the latter, rock strength parameters calculated from them are not appropriate for modeling the strength along a pre-existing slide plane, such as at Treebones. Such a pre-existing slide plane will be much weaker than intact Franciscan bedrock. The choice of rock strength parameters is critical in evaluating slope stability. In the case of a pre-existing landslide, the strength of sheared rocks along the slide plane is the critical value. The results of the slope stability analysis will vary widely with varying rock strength parameters. The use of the very high friction angle in the slope stability analyses at this site may have lead to falsely high factors of safety.

Other clues to slope instability can be gleaned from direct observation of ongoing movement. A slope inclinometer installed in the boring and monitored for ten months prior to the preparation of the reference (1) showed no movement to a depth of 90 meters. However, the report notes—and I observed—active ground cracking at the southern margin of the landslide where it crosses Highway One. Reference (1) attributes this ground cracking to movement on a smaller, surficial slide located above the main slide plane. I am not convinced, however, that this cracking might not indicate actual movement on the main slide plane itself. It would be useful to have additional (later) data from the one installed slope inclinometer, monitoring data from the Treebones Rustic Campground project (Appeal. A-3-99-97, approved by the Commission in May 2000), or additional inclinometer data to help resolve this issue. If the main slide at this site is actively moving, then the very high factors of safety calculated by the modeling exercises described above must be in error, and the actual factor of safety must be just below 1.0.

There are several other issues concerning future stability of the site that are not addressed in the report. These issues include seismic slope stability, elevated water tables, and the effects of marine erosion at the toe of the landslide. First, although the report does discuss seismicity at the site, and identifies the maximum credible bedrock acceleration at the site to be 0.56 g, no calculations are undertaken to determine how the landslide would perform under such acceleration, either in the existing condition, or post-project. Second, although a sensitivity analysis is performed that shows the effects of a 10 meter increase in the water level over that measured during the 10 month period that the peizometer was monitored, it is not clear how likely such a ten meter rise would be. Nor is it clear whether or not much higher water levels may be reached during particularly wet years. The depression at the head of the slide periodically fills with water, as reported by Forest Service officials, indicating that the water levels in the slide may, on occasion, be much higher than the levels modeled. Finally, the stability of the landslide into the future will continually be reduced by ongoing marine erosion at the toe of the slide. The computed factors of safety do not reflect these changing conditions into the future.

Accordingly, it is my opinion that the proposed project will decrease site stability, and has the potential to instigate or accelerate movement on the existing slide planes.

Willow Springs Site

At the Willow Springs site, a geogrid-reinforced fill buttress will be required to buttress the existing access road. I foresee no unsolvable geotechnical problems with the construction of such a buttress, with which Caltrans has much experience. The fill slope could be subject to raveling, potentially resulting in sedimentation into adjacent areas, so appropriate water quality BMPs will be essential.

The Willow Springs site lies near the southern lateral margin of a very large ancient landslide two kilometers wide and two kilometers in length, with a slide plane that daylight in the coastal bluff. Smaller slides have occurred within the Willow Springs landslide mass, and the disposal site lies in a flat area that I interpret to be the head of one such smaller landslide. In addition, an ongoing landslide occurs below the area proposed for the access road fill buttress. Loading the head of this landslide with the road buttress will, in my opinion, likely exacerbate ongoing movement of this landslide, dubbed the "Willow Springs Maintenance Yard Landslide" in reference (2). No further analysis was undertaken in reference (2) to model the effect of the fill buttress on this landslide, although the report concludes that the fill will bridge the headscarp, and not substantially load the Willow Creek Maintenance Yard Landslide. As indicated above, I disagree. Another ongoing historic landslide, the "Willow Springs Magazine Landslide" is described in reference (2). This landslide, also involving part of the large Willow Springs landslide mass, likely will continue to experience movement in the future, but its location makes it unlikely to affect the proposed project.

Borings at the Willow Springs site indicate that the Franciscan Formation consists of highly fractured serpentinite and mélangé, overlain by 7 meters of surficial deposits consisting of alluvium and debris flow deposits. No slide plane was noted to the total depth of approximately 53 meters. Although core recovery was good, the bedrock was highly fractured. Seismic.

refraction studies identified three different units of different seismic velocity. These were correlated with observations from the boring to indicate the presence of three relatively continuous layers at the site: weak recent sediments, debris flow deposits, and the Franciscan mélange bedrock. Although a piezometer has been installed, no data are available from it. Ground water was encountered during the borings at elevation 120 m.

As at the Treebones site, rock strength parameters (friction angle, cohesion, and unit weight) were not measured at this site. Instead, assumed values were derived, based on testing of materials at several nearby Caltrans projects within the Franciscan Mélange.

These data were used to construct two different models for the Willow Springs landslide, with different orientations of the slide plane (and corresponding different volumes of the Willow Springs landslide). The two models provide factors of safety of 1.62 and 2.8. Adding 15,000 cubic meters of fill at the head of the landslide, as proposed, reduces these factors of safety to 1.59 and 2.7, respectively.

Much of the discussion concerning the suitability of the Treebones analysis in modeling that slide pertains also to these models of the Willow Springs slide. Most important, the same relatively high rock strength parameters were applied to these analyses. A more limited sensitivity analysis was performed for the Willow Springs landslide, that is, only relatively high friction angles were investigated. Nevertheless, the calculated factor of safety actually drops below 1.0 for the Model 1 slide if a friction angle of 20 is used and there is a 10 m elevation of groundwater. Even more than at the Treebones site, we have little information on the range of ground water elevations realistic at the site. And as at the Treebones site, seismic slope stability is not addressed, nor are the effects of marine erosion on the stability of the slide in the future.

Accordingly, it is my opinion that the proposed project will decrease site stability, and has the potential to instigate or accelerate movement on the existing slide planes.

I hope that this review is useful to you. Please do not hesitate to contact me with any questions or comments.

Sincerely,

Mark Johnsson, Ph.D., CEG, CHG
Staff Geologist

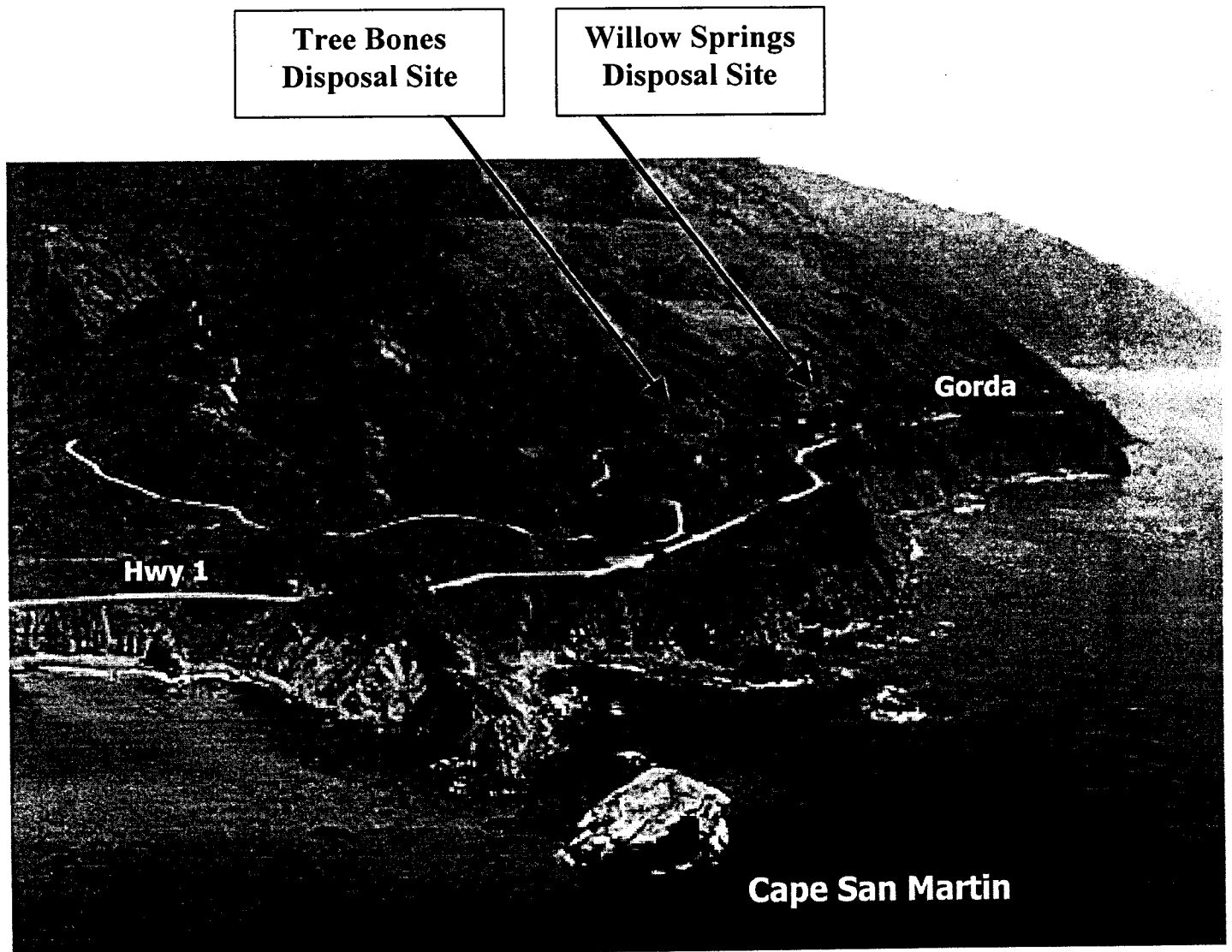


Photo 1. Oblique aerial photo of Tree Bones and Willow Springs Disposal Sites northwest of Gorda.

(Photo ©California Coastal Records Project, Image #1649, dated 9/2/02)

Exhibit G – pg. 1 of 2
Oblique Aerial Photos of Proposed Disposal Sites

3-05-001
Caltrans Big Sur Disposal Sites

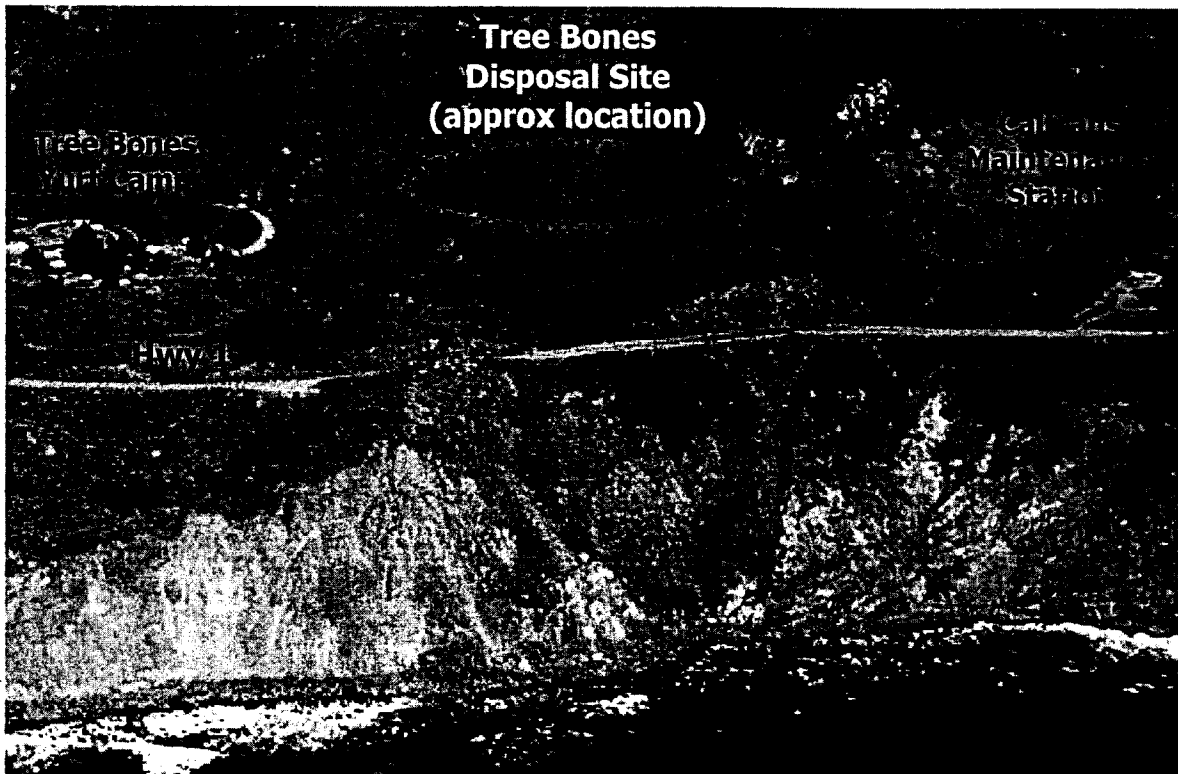


Photo 2. Oblique aerial photo of Tree Bones Disposal Site northwest of Gorda.
(Photo ©California Coastal Records Project, Image #200402758, dated 10/11/04)

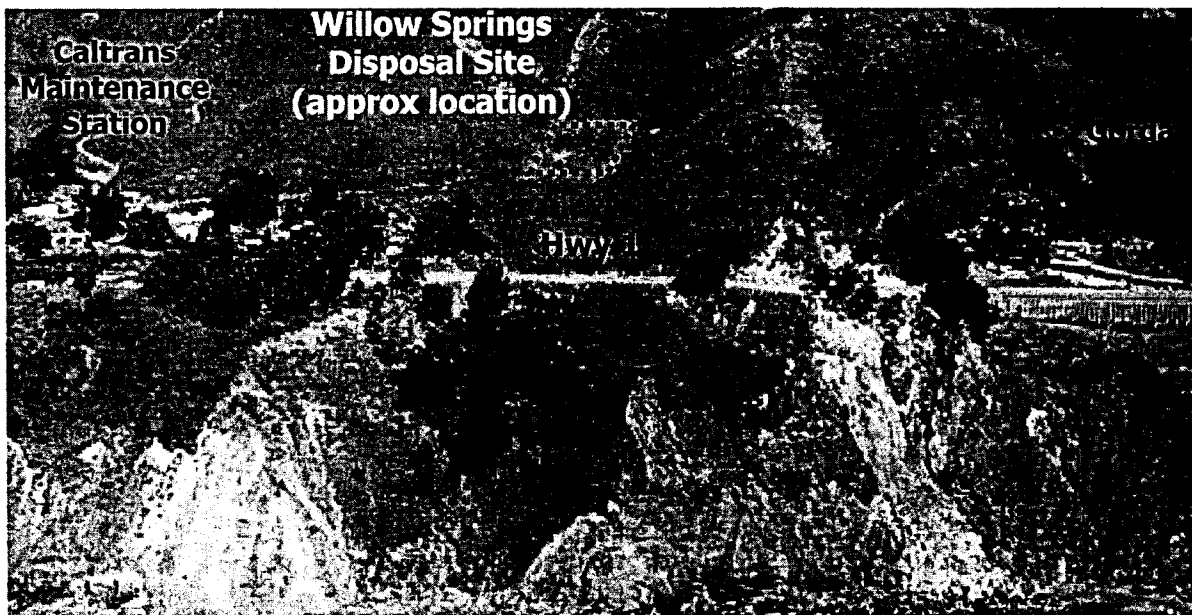


Photo 3. Oblique aerial photo of Willow Springs Disposal site, northwest of Gorda, and south of Caltrans Willow Springs Maintenance Station.
(Photo ©California Coastal Records Project, Image #200402761, dated 10/11/04)

Exhibit G – pg. 2 of 2
Oblique Aerial Photos of Proposed Disposal Sites

SUPPORTING SOUND MANAGEMENT OF OUR COASTS AND SEAS

Rates of Landsliding and Cliff Retreat Along the Big Sur Coast, California—Measuring a Crucial Baseline

Steep topography, active faults, diverse geology, and seasonal storms combine to make the rugged Big Sur area one of the most landslide-prone

stretches of the California coast. Landslides in Big Sur frequently damage the popular and economically essential Coast Highway and may impact near-shore marine life. To assist State and Federal agencies in managing this coastline, U.S. Geological Survey (USGS) scientists are studying the processes and effects of landsliding and cliff retreat in



California Department of Transportation (Caltrans) crews work to reopen Highway 1 at Pitkins Curve during winter 2004. When this photograph was taken, one lane of the highway was still closed (note boulders at lower left behind the traffic barricade). This site is currently the most active landslide on the Big Sur coast. (USGS photograph by Cheryl J. Hapke.)

Along central California's Big Sur coast, the rugged Santa Lucia Mountains descend abruptly into the Pacific Ocean. Millions of visitors travel annually along the Coast Highway (California Highway 1) to explore the area's dramatic topography, ancient redwood forests, and unique marine habitats, bringing many millions of dollars to the local economy.

Maintaining safe access along the Coast Highway is essential for both tourism and the livelihood of local residents. However, Big Sur's extreme topography makes the area highly susceptible to landslides. Landslides frequently block the highway, and because disposal of landslide debris into the adjacent Monterey Bay National Marine Sanctuary (MBNMS) could damage critical marine habitats, maintenance of the highway is expensive and controversial.

U.S. Geological Survey (USGS) scientists are studying

the rates and processes of erosion, transportation, and deposition of slope material to estimate the annual volume of sediment (sediment yield) that enters the MBNMS from landslides. This research aims to assist the efforts of Federal and State agencies in coastal planning.

Why Is the Big Sur Coast Prone to Landsliding?

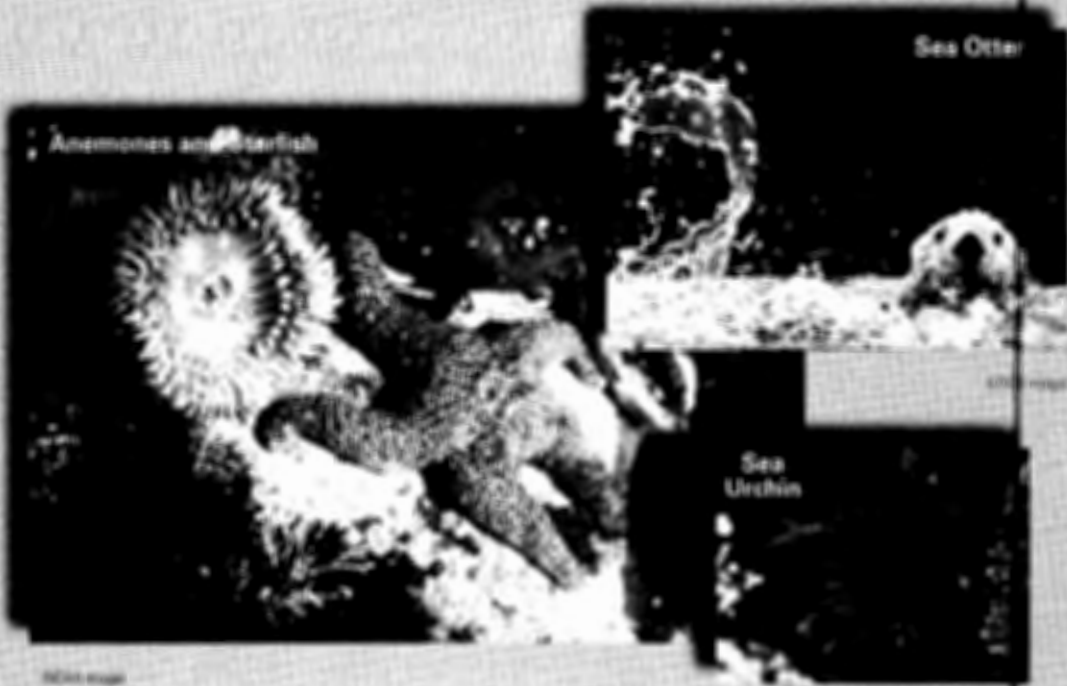
In the Big Sur area, earthquakes can result in uplift of the Santa Lucia Mountains. Recurrent uplift, in combination with relentless erosion by ocean waves, creates extreme topography, making the area highly susceptible to landslides. Rocks that have been weakened through faulting and fracturing also help provide ideal condi-

tions for large landslides. During the winter months, Big Sur receives both heavy rainfall (as much as 80 inches per year) and high wave energy. In summer and fall, occasional wildfires remove vegetation, making the area's slopes more vulnerable to erosion. All these factors produce chronic landslides, such as those that block, undermine, or damage the Coast Highway. For example, a 1983 landslide near Julia Pfeiffer Burns State Park resulted in closure of the highway for more than a year. Subsequent repairs cost more than \$7 million and generated nearly 3 million cubic yards of debris.

In all, more than 1,500 landslides have been mapped along the Big Sur coast. The most common type of landslide in this area is a rockslide, which is a slow-moving or

BIG SUR LANDSLIDES MAY THREATEN NEARSHORE MARINE LIFE

Rocky substrates in the nearshore waters of Monterey Bay National Marine Sanctuary provide essential habitats for many marine species. Along the Big Sur coast, both natural landslides and human activities can introduce large volumes of sediment into sanctuary waters, potentially impacting these habitats. This may affect not only bottom-dwelling species—including anemones, starfish, and sea urchins—but also the animals that feed on them, such as the southern sea otter, a protected marine mammal.



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increased net material-loss rates, especially the interval containing the 1997–98 El Niño, when loss rates increased by 5 inches per year from the earlier non-El Niño interval (1986/87–93). At all three sites, movement on large creeping landslides mobilized material and deposited it on the lower slope or slope base. Subsequent smaller failures in the loose material, as well as wave erosion at the slope base, resulted in a net loss of material to the nearshore environment, ranging from about 4 to 7 inches per year.

Could Landslides Be Affecting Nearshore Marine Habitats?

Landslides and coastal-cliff erosion contribute material to adjacent ocean waters. Deposition of large amounts of sediment and increased suspended-sediment concentrations may pose a threat to some marine life. However, restricting sediment input could also harm the nearshore environment because debris from coastal erosion and landslide activity also supplies nutrients and provides a natural

buffer to protect cliffs from erosion by wave attack.

By studying the volume of sediment that has historically entered MBNMS waters from landslide movement and coastal-cliff retreat, USGS scientists are providing a sediment-yield baseline against which the impact of human activities along the Big Sur coast can be evaluated by coastal planners. Before the MBNMS was established in 1992, both natural landslide debris and excess material generated from efforts to stabilize slopes were sometimes deposited on the seaward side of the highway to clear it for traffic. This material could then be carried downslope and into the MBNMS, disrupting nearshore habitats.

Coastal landslides continue to be problematic along the Big Sur coast and in other similar high-relief sections of the Pacific coast. USGS research will help in the development of new coastal-management practices designed to minimize environmental impacts, while preserving the beauty and

protecting the natural resources along this evolving coastline. Such research is only one part of the USGS efforts to protect people's lives and property from geologic and environmental hazards in the coastal zones of the United States.

Cheryl J. Hapke and Krystal R. Green

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