INFORMATION HANDOUT

For Contract No. 05-0T6304
At 05-SB-101-45.6/46.4

Identified by
Project ID 0500020029

PERMITS

Coastal Development Permit-County of Santa Barbara Planning Commission dated October 9, 2015

Incidental Take Permit-California Department of Fish and Wildlife dated October 6, 2015

AGREEMENTS

Biological Opinion-U.S. Fish and Wildlife Service dated September 9, 2013

Programmatic Biological Opinion-U.S. Fish and Wildlife Service dated May 4, 2011

MATERIALS INFORMATION

Geotechnical Design Report dated November 5, 2015

Water Source Information

PRODUCT INFORMATION

Temporary Alternative Crash Cushion

Quardquard II CZ

ADIEM

ABSORB

ACZ-350

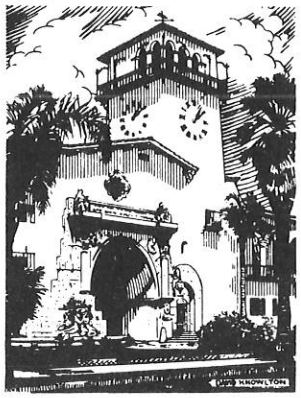
SLED

Alternative Crash Cushion

TAU II

Quadguard II

SMART SCI-100 MG



COUNTY OF SANTA BARBARA
CALIFORNIA

PLANNING COMMISSION

COUNTY ENGINEERING BUILDING
123 E. ANAPAMU ST.
SANTA BARBARA, CALIF. 93101-2058
PHONE: (805) 568-2000
FAX: (805) 568-2030

October 5, 2015

Caltrans District 5
Yvonne Hoffman
50 Higuera Street
San Luis Obispo, Ca 93401

PLANNING COMMISSION
HEARING OF SEPTEMBER 30, 2015

RE: Caltrans Gaviota Curve Realignment; 15DVP-00000-00014, 14CDH-00000-00024

Hearing on the request of Yvonne Hoffman, Caltrans, to consider the following:

a) **15DVP-00000-00014,** [application filed on September 9, 2015] for a Development Plan in compliance with Section 35-174 of Article II, the Coastal Zoning Ordinance, on property zoned REC (Recreation) to realign the existing curve and shoulders along a 0.8-mile stretch of northbound Highway 101, including modification of the median barrier, culverts, and vertical profile of the hillside in this area;

b) **14CDH-00000-00024**, [application filed on July 28, 2014] for a Coastal Development Permit in compliance with Section 35-169 of Article II, the Coastal Zoning Ordinance, on property zoned REC (Recreation) to realign the existing curve and shoulders along a 0.8-mile stretch of northbound Highway 101, including modification of the median barrier, culverts, and vertical profile of the hillside in this area; and,

to accept as adequate the Mitigated Negative Declaration and Addendum prepared by the State of California Department of Transportation (Caltrans) as lead agency under the California Environmental Quality Act. As a result of this project, potentially significant but mitigable effects on the environment are anticipated in the following categories: paleontological resources, natural biological communities, and threatened and endangered species. The ND, Addendum, and all documents may be reviewed at the Planning and Development Department, 123 East Anapamu Street, Santa Barbara and online at www.sbcountyplanning.org. The application involves AP No's 081-270-003 and 081-270-002, located north and south of Highway 101 near Gaviota State Park between Post Mile 45.6 and 46.4, in the Gaviota area, Third Supervisorial District.

Dear Ms. Hoffman:

At the Planning Commission hearing of September 30, 2015, Commissioner Hartmann moved, seconded by Commissioner Blough and carried by a vote of 5 to 0 to:

1. Make the required findings for approval of the project specified in Attachment-A of the staff report, dated September 10, 2015, including CEQA findings.

2. Consider the environmental effects of the project as shown in the Mitigated Negative Declaration dated November 15, 2013 (Attachment-B of the staff report, dated September 10, 2015) and the Addendum to the Mitigated Negative Declaration dated August 20, 2015 (Attachment-C of the staff report, dated September 30, 2015), prepared and adopted by Caltrans, the lead agency, and determine that none of the conditions in CEQA Guidelines sections 15162 requiring a subsequent MND or EIR have occurred; and,

3. Approve the project (Case No's 15DVP-00000-00014 and 14CDH-00000-00024) subject to the conditions included as Attachment-D of the staff report, dated September 10, 2015.

The attached findings and conditions reflect the Planning Commission's actions of September 30, 2015.

The action of the Planning Commission on this project may be appealed to the Board of Supervisors by the applicant or any aggrieved person adversely affected by such decision. To qualify as an aggrieved persons the appellant, in person or through a representative, must have informed the Planning Commission by appropriate means prior to the decision on this project of the nature of their concerns, or, for good cause, was unable to do so.

Appeal applications may be obtained at the Clerk of the Board's office. The appeal form must be filed along with any attachments to the Clerk of the Board. In addition to the appeal form a concise summary of fifty words or less, stating the reasons for the appeal, must be submitted with the appeal. The summary statement will be used for public noticing of your appeal before the Board of Supervisors. The appeal, which shall be in writing together with the accompanying applicable fee must be filed with the Clerk of the Board of Supervisors within the 10 calendar days following the date of the Planning Commission's decision. In the event that the last day for filing an appeal falls on a non-business of the County, the appeal may be timely filed on the next business day. This letter or a copy should be taken to the Clerk of the Board of Supervisors in order to determine that the appeal is filed within the allowed appeal period. **The appeal period for this project ends on Monday, October 12, 2015 at 5:00 p.m.**

Final action by the County on this project may be appealed to the Coastal Commission by the applicant, an aggrieved person, as defined above, or any two members of the Coastal Commission within the 10 working days following the date the County's Notice of Final Action is received by the Coastal Commission.

Sincerely,

Dianne M. Black

Dianne M. Black
Secretary to the Planning Commission

cc: Case File: 15DVP-00000-00014, 14CDH-00000-00024
Planning Commission File
California Coastal Commission, 89 S. California Street, Suite 200, Ventura, CA 93001
County Chief Appraiser
County Surveyor
Fire Department
Flood Control
Community Services Department
Public Works
Environmental Health Services

APCD
Doreen Farr, Third District Supervisor
Joan Hartmann, Third District Commissioner
Jenna Richardson, Deputy County Counsel
Nicole Lieu, Planner

Attachments: **Attachment A – Findings**
Attachment D – Conditions of Approval

DMB/dmv

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ATTACHMENT A: FINDINGS

1.0 CEQA FINDINGS

1.1 NEGATIVE DECLARATION AND ADDENDUM

1.1.1 Finding that a Previous Environmental Document Can Be Used (per CEQA Section 15162)

A Mitigated Negative Declaration was adopted by Caltrans on November 15, 2013 (SCH# 2013051062) and an Addendum was adopted on August 20, 2015. The Project was evaluated in the Mitigated Negative Declaration and Addendum and mitigation measures were incorporated into the project by Caltrans.

CEQA Section 15162 provides that when an EIR has been certified for a project or a ND adopted for a project, no subsequent EIR or ND shall be prepared unless the County determines, on the basis of substantial evidence in light of the whole record, one or more of the following:

(1) Substantial changes are proposed in the project which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;
(2) Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant, environmental effects or a substantial increase in the severity of previously identified significant effects; or
(3) New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the negative declaration was adopted, shows any of the following:
(A) The project will have one or more significant effects not discussed in the previous EIR or negative declaration;
(B) Significant effects previously examined will be substantially more severe than shown in the previous EIR;
(C) Mitigation measures or alternatives previously found not to be feasible would in fact be feasible and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or
(D) Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

Section 15162 of the State CEQA Guidelines is found to be applicable to the effects of the Project (14CDH-00000-00024, 15DVP-00000-00014) within the scope of the County's jurisdiction. Subsequent to adoption of the Mitigated Negative Declaration and Addendum by Caltrans, no changes are proposed in the project, no substantial changes have occurred with respect to the circumstances under which the project is undertaken, and no new information of substantial importance is available. Therefore, the County Planning Commission finds that pursuant to CEQA Section 15162, no subsequent EIR or ND need be prepared and the previous environmental document prepared for the project, the Mitigated Negative Declaration dated November 15, 2013 (SCH# 2013051062) and an Addendum dated August 20, 2015 may be used to fulfill the environmental review requirements for this project, 14CDH-00000-00024, 15DVP-00000-00014.

1.1.2 FULL DISCLOSURE

The Planning Commission finds and accepts that the Mitigated Negative Declaration (Dated November 15, 2013; SCH# 2013051062) and the Addendum dated (August 20, 2015) constitute a complete, accurate, adequate and good faith effort at full disclosure under CEQA. The Planning Commission further finds and accepts that the Mitigated Negative Declaration and Addendum have been completed in compliance with CEQA.

1.1.3 LOCATION OF DOCUMENTS

The documents and other materials which constitute the record of proceedings upon which this decision is based are in the custody of the Secretary of the Planning Commission of the Planning and Development Department located at 123 East Anapamu Street, Santa Barbara, CA 93101.

2.0 ADMINISTRATIVE FINDINGS

A. ***Findings required for all Coastal Development Permits. In compliance with Section 35-60.5 of the Article II Zoning Ordinance, prior to issuance of a Coastal Development Permit, the County shall make the finding, based on information provided by environmental documents, staff analysis, and/or the applicant, that adequate public or private services and resources (i.e., water, sewer, roads, etc.) are available to serve the proposed development.***

No services are required to serve the proposed project, which involves grading, flatwork and revegetation. Water trucks will be used to water restoration plantings during the plant establishment period, and will also be used for dust control purposes. Therefore, this finding can be made.

B. ***Findings required for Coastal Development Permit applications subject to Section 35-169.4.3 for development that may be appealed to the Coastal Commission. In compliance with Section 35-169.5.3 of the Article II Zoning Ordinance, prior to the approval or conditional approval of an application for a Coastal Development Permit subject to Section 35-169.4.3 for development that may be appealed to the Coastal Commission the review authority shall first make all of the following findings:***

1. ***The development conforms:***

    a. ***To the applicable provisions of the Comprehensive Plan, including the Coastal Land Use Plan;***

    b. ***The applicable provisions of this Article or the project falls within the limited exceptions allowed in compliance with Section 161 (Nonconforming Use of Land, Buildings and Structures).***

    As discussed in Section 6.2 and 6.3 of this staff report, dated September 10, 2015 and incorporated herein by reference, the proposed project is consistent with all applicable policies of the County Comprehensive Plan, including the Coastal Land Use Plan, and with all requirements of the Article II Coastal Zoning Ordinance. Therefore, this finding can be made.

2. ***The development is located on a legally created lot.***

    The property known as Assessor's Parcel No. 081-270-002 (Gaviota State Park) was recorded in Book 1167, Page 124 of Deeds on January 12, 1953. The property known as Assessor's Parcel No. 081-270-003 is shown on Record of Survey Book 85, Page 29 dated July 1, 1970 and was recorded as document no. 29404 in book

2207, Page 1050 of Deeds on October 10, 1967. Therefore, this finding can be made.

3. ***The subject property and development on the property is in compliance with all laws, rules and regulations pertaining to zoning uses, subdivisions, setbacks and any other applicable provisions of this Article, and any applicable zoning violation enforcement fees and processing fees have been paid. This subsection shall not be interpreted to impose new requirements on legal nonconforming uses and structures in compliance with Division 10 (Nonconforming Structures and Uses).***

   As discussed in Section 6.3 of this staff report, dated September 10, 2015, and incorporated herein by reference, the proposed project would conform to all applicable laws, rules, and regulations pertaining to the REC zone. There are no current violations associated with the subject parcel. Therefore, this finding can be made.

4. ***The development will not significantly obstruct public views from any public road or from a public recreation area to, and along the coast.***

   The project involves grading, flatwork and revegetation adjacent to Highway 101. No structures are proposed, and all work would occur on, or a few feet above the ground surface. The project would result in no obstruction of views to, or along, the coast. Therefore this finding can be made.

5. ***The proposed development will be compatible with the established physical scale of the area.***

   The proposed project is located along Highway 101 on the Gaviota coast, an area considered to be of high visual quality and importance due to expansive coastal views and existing rural landscapes. The Santa Ynez Mountains rise on the north side of Highway 101.The proposed project would include excavation of a new cut slope on the hillside north of the highway, realignment of a segment of Highway 101, widening of the road shoulders, and temporary removal of vegetation. The Visual Impact Assessment (Caltrans, February 2013) and Mitigated Negative Declaration (Caltrans, November 2013) prepared for the project describe its visual impact as follows, *"The proposed landform grading would result in the new slope appearing less engineered than the existing slope. The new slope, although slightly larger, would have a more undulated face along with more rounded transitions around the perimeter. The new slope would also eliminate the existing slope benches."* Figure 2-4 on page 29 of the Mitigated Negative Declaration, incorporated herein by reference, provides a visual simulation showing the existing and proposed slope face. The proposed project would help to restore the visual quality of the area by removing the existing slope benches and creating a more natural slope face. In addition, the existing, irregularly vegetated, slope would be re-vegetated with native seed and container plants. Following implementation of the proposed project, the hillside would remain compatible with the physical scale of the area, which includes undeveloped hillside areas, open space and areas of agricultural use. The expansion of the road shoulders from 8-10 to 12 feet along portions of the highway realignment would be consistent with the scale and character of the surrounding area, which includes highway development with shoulders of 12 feet in width. Therefore, this finding can be made.

6. ***The development will comply with the public access and recreation policies of this***

Article and the Comprehensive Plan including the Coastal Land Use Plan.

Public amenities and beach access are available at Gaviota State Park, located immediately south of the area of proposed work. The project would include widening of portions of the road shoulder, which would allow for greater bicyclist safety and an improved recreational experience for bicyclists. The proposed project will not interfere with public access or recreational use. Therefore, this finding can be made.

C. ***Additional finding required for sites zoned Environmentally Sensitive Habitat (ESH) Overlay. In compliance with Section 35-97.6 of the Article II Zoning Ordinance, prior to the issuance of a Coastal Development Permit for sites designated with the ESH Overlay zone the review authority shall first find that the proposed development meets all applicable development standards in Section 35-97.8 through Section 97.19.***

The project would be in compliance with Article II, Section 35-97.10 (Development Standards for Native Grassland Habitats) and Article II, Section 35-97.18 (Development Standards for Native Plant Community Habitats). The Mitigated Negative Declaration (Caltrans, November 2013) considered multiple project alternatives and identified the proposed project as preferable due to the fact that it would meet the project objectives while also reducing resource impacts (including biological resource impacts) as compared to the other designs also meeting project objectives. The proposed design eliminates the need for a large retaining wall while also minimizing excavation, soil disturbance, paving, and the overall impact footprint, thereby preserving native plant communities, including native grassland, Gaviota tarplant critical habitat, and coastal scrub vegetation. No grazing of native grassland or other native vegetation would occur. The project includes a proposed Mitigation and Monitoring Plan (Caltrans, June 2015) Attachment-E, which would restore a total of 7.31 acres of coastal scrub vegetation (a replacement ratio of 3:1 for permanent impacts and 2:1 for temporary impacts). In addition, the project would result in 0.1 acre of temporary impacts to valley needlegrass grassland (i.e. native grassland) which would be mitigated at a ratio of 2:1 (.20 acres). Therefore, the proposed project has been sited and designed to preserve and prevent impacts to native vegetation, including native grassland, to the maximum extent feasible. Caltrans Construction General Permit Best Management Practices and the Statewide Stormwater Pollution Prevention Plan would be implemented during construction to reduce short term construction impacts to water quality and to reduce storm water runoff. Standard Caltrans BMP's include, but are not limited to: 1) storm water sampling and analysis of runoff at all discharge locations, 2) annual reports, 3) third party compliance inspections, 4) temporary hydraulic mulch (bonded fiber matrix), 5) use of a temporary check dam, 6) fiber rolls and gravel bags, 7) drainage inlet protection, 8) waste management, 9) stockpile management, 10) temporary concrete washout, etc. These measures are implemented through compliance with the Construction General Permit and Statewide Stormwater Pollution Prevention Plan. Please refer to mitigation measures 1 and 2 on page 40 of the Mitigated Negative Declaration (Attachment-B). Therefore, this finding can be made.

2.1.1 DEVELOPMENT PLAN FINDINGS

A. ***Findings required for all Preliminary or Final Development Plans. In compliance with Subsection 35-174.7.1 of the County Land Use and Development Code, prior to the approval or conditional approval of an application for a Preliminary or Final Development Plan the review authority shall first make all of the following findings, as applicable:***

1. ***The site for the subject project is adequate in terms of location, physical characteristics, shape, and size to accommodate the density and intensity of development proposed.***

   The proposed project is a request by Caltrans to realign the existing curve and shoulders along a 0.8-mile stretch of northbound Highway 101. The majority of the project will occur on Assessor's Parcel No. 081-270-003, which is 452.2 acres, and a small portion of the project Assessor's Parcel No. 081-270-002, which is 60.13 acres. In order to accomplish the project, all work must, and will occur within or immediately adjacent to the existing roadway. The physical characteristics of the site are appropriate and adequate for the proposed work. There is no proposed change to the density or intensity of highway use or development in the area. Therefore, the site for the subject project is adequate in terms of location, physical characteristics, shape, and size to accommodate the density and intensity of development proposed, and this finding can be made.

2. ***Adverse impacts will be mitigated to the maximum extent feasible.***

   As discussed in the Caltrans Mitigated Negative Declaration dated November 2013 (Attachment-B) and in a Caltrans Addendum dated August 20, 2015 (Attachment-C), and incorporated herein by reference, adverse impacts anticipated for all issue areas would be mitigated to less than significant levels. Therefore, this finding can be made.

3. ***Streets and highways will be adequate and properly designed to carry the type and quantity of traffic generated by the proposed use.***

   The proposed project is a request by Caltrans to realign the existing curve and shoulders along a 0.8-mile stretch of northbound Highway 101 in order to improve safety in the area. Highway 101 in the project area, is, and will continue to be adequate to carry the type and quantity of traffic for the area. In addition, the proposed project will increase the safety of motorists using this stretch of Highway 101. Highway 101 is adequately designed to carry short-term traffic associated with construction activities. Therefore, this finding can be made.

4. ***There will be adequate public services, including fire and police protection, sewage disposal, and water supply to serve the proposed project.***

   No services are required to serve the proposed project, which involves grading, flatwork and revegetation. Water trucks will be utilized in the establishment of vegetation and for dust control. Caltrans will provide traffic control services as needed during construction.Therefore, this finding can be made.

5. ***The proposed project will not be detrimental to the comfort, convenience, general welfare, health, and safety of the neighborhood and will not be incompatible with the surrounding area.***

   The proposed project will not be detrimental to the comfort, convenience, general welfare, health, and safety of the neighborhood and would result in an improvement to health and safety by increasing the safety of Highway 101. Standard Caltrans procedures and minimization measures provide for noise attenuation (condition 74, Attachment-D, incorporated herein by reference) and water quality protection (conditions 76 and 77, Attachment-D, incorporated herein by reference) during construction. In addition, the project would comply with APCD dust control

requirements (condition 83, Attachment-D, incorporated herein by reference). The area is, and would continue to be used for highway and open space, and the project would therefore be compatible with the surrounding area. Therefore, this finding can be made.

6. ***That the project is in conformance with 1) the Comprehensive Plan, including the Coastal Land Use Plan, and 2) with the applicable provisions of this Article and/or the project falls within the limited exception allowed under Section 35-161.7***

   As discussed in Section 6.2 and 6.3 of this staff report, dated September 10, 2015 and incorporated herein by reference, the proposed project is consistent with all applicable policies of the County Comprehensive Plan, including the Coastal Land Use Plan, and with all requirements of the Article II Coastal Zoning Ordinance. Therefore, this finding can be made.

7. ***That in designated rural areas the use is compatible with and subordinate to the agricultural, rural, and scenic character of the rural areas.***

   The project is located within a rural area. The project would perpetuate existing highway and open space/recreational use of the area. The proposed contouring of the hillside will create a more natural slope as compared to the existing manufactured slope benches. In addition, the existing, irregularly vegetated slope would be re-vegetated with native seed and container plants. The project, as a whole, will be compatible with and subordinate to the scenic character of the area. Therefore, this finding can be made.

8. ***The project will not conflict with any easements required for public access through, or public use of a portion of the subject property.***

   Public access through the property for vehicles and bicyclists will continue following implementation of the proposed project. The project will not conflict with any easements required for public access through, or public use of a portion of the subject property. Therefore, this finding can be made.

B. ***Additional finding required for Final Development Plans. In compliance with Subsection 35-174.7.2.of the County Land Use and Development Code, prior to the approval or conditional approval of an application for a Final Development Plan the review authority shall first find that the plan is in substantial conformity with any previously approved Preliminary Development Plan except when the review authority considers a Final Development Plan for which there is no previously approved Preliminary Development Plan. In this case, the review authority may consider the Final Development Plan as both a Preliminary and Final Development Plan.***

There is no preliminary development plan for the project. Therefore, the proposed development plan is both the preliminary and final plan.

ATTACHMENT-D.A

Conditions of Approval for Development Plan Case No. 15DVP-00000-00014

1. This Development Plan is based upon and limited to compliance with the project description, the hearing exhibits dated September 30, 2015 and all conditions of approval set forth below, including mitigation measures and specified plans and agreements included by reference, as well as all applicable County rules and regulations. The project description is as follows:

   Development Plan to realign the existing curve and shoulders along a 0.8-mile stretch of northbound Highway 101 between Post Mile 45.6 and 46.4, including widening of the road shoulders from 8-10 feet to 12 feet and modification of the median barrier, culverts, and vertical profile of the hillside in this area (requiring approximately 200,000 cubic yards of cut).

   Any deviations from the project description, exhibits or conditions must be reviewed and approved by the County for conformity with this approval. Deviations may require approved changes to the permit and/or further environmental review. Deviations without the above described approval will constitute a violation of permit approval.

2. **Proj Des-02 Project Conformity**. The grading, development, use, and maintenance of the property, the size, shape, arrangement, and location of the structures, parking areas and landscape areas, and the protection and preservation of resources shall conform to the project description above and the hearing exhibits and conditions of approval below. The property and any portions thereof shall be sold, leased or financed in compliance with this project description and the approved hearing exhibits and conditions of approval thereto. All plans (such as Landscape and Tree Protection Plans) must be submitted for review and approval and shall be implemented as approved by the County.

3. **Rules-02 Effective Date-Appealable to CCC**. This Development Plan shall become effective upon the expiration of the applicable appeal period provided an appeal has not been filed. If an appeal has been filed, the planning permit shall not be deemed effective until final action by the review authority on the appeal, including action by the California Coastal Commission if the planning permit is appealed to the Coastal Commission. [ARTICLE II § 35-169].

4. **Rules-05 Acceptance of Conditions.** The Owner/Applicant's acceptance of this permit and/or commencement of use, construction and/or operations under this permit shall be deemed acceptance of all conditions of this permit by the Owner/Applicant.

5. **Rules-07 DP Conformance**. No permits for development, including grading, shall be issued except in conformance with an approved Final Development Plan. The size, shape, arrangement, use, and location of structures, walkways, parking areas, and landscaped areas shall be developed in conformity with the approved development plan marked dated September 30, 2015.

6. **Rules-14 Final DVP Expiration**. Final Development Plans shall expire five years after the effective date unless substantial physical construction has been completed on the development or unless a time extension is approved in compliance with County rules and regulations.

7. **Rules-18 CUP and DVP Revisions**. The approval by the Planning Commission of a revised final development plan shall automatically supersede any previously approved final development plan upon the effective date of the revised permit.

8. **Rules-29 Other Dept Conditions**. Compliance with Departmental/Division letters required as follows:
   a. Air Pollution Control District, dated November 26, 2014
   b. California State Parks, dated February 9, 2015

9. **Rules-33 Indemnity and Separation**. The Owner/Applicant shall defend, indemnify and hold harmless the County or its agents or officers and employees from any claim, action or proceeding against the County or its agents, officers or employees, to attack, set aside, void, or annul, in whole or in part, the County's approval of this project. In the event that the County fails promptly to notify the Owner / Applicant of any such claim, action or proceeding, or that the County fails to cooperate fully in the defense of said claim, this condition shall thereafter be of no further force or effect.

10. **Special-01 Biological Resources Plan Sheet**. A biological resources plan sheet showing the precise location of the environmentally sensitive habitats (native grassland, coastal scrub, riparian habitat) potentially affected by the proposed project and including notations advising of the possibility of encountering any sensitive resources (red-legged frog, Gaviota tarplant critical habitat) shall be provided to P&D staff . **Plan Requirements and Timing:** The biological resources plan sheet shall be submitted to P&D staff prior to Coastal Development Permit issuance. **Monitoring:** P&D staff shall review and approve the plan sheet and shall review plan sets to ensure inclusion of the biological resources plan sheet. B&S staff shall ensure inclusion of the plan sheet with the grading plans etc.

ATTACHMENT-D.B

Conditions of Approval for Coastal Development Permit Case No. 14CDH-00000-00024

1. This Coastal Development Permit is based upon and limited to compliance with the project description, the hearing exhibits dated September 30, 2015 and all conditions of approval set forth below, including mitigation measures and specified plans and agreements included by reference, as well as all applicable County rules and regulations. The project description is as follows:

   Coastal Development Permit to realign the existing curve and shoulders along a 0.8-mile stretch of northbound Highway 101 between Post Mile 45.6 and 46.4, including widening of the road shoulders from 8-10 feet to 12 feet and modification of the median barrier, culverts, and vertical profile of the hillside in this area (requiring approximately 200,000 cubic yards of cut).

   Any deviations from the project description, exhibits or conditions must be reviewed and approved by the County for conformity with this approval. Deviations may require approved changes to the permit and/or further environmental review. Deviations without the above described approval will constitute a violation of permit approval.

2. **Proj Des-02 Project Conformity**. The grading, development, use, and maintenance of the property, the size, shape, arrangement, and location of the structures, parking areas and landscape areas, and the protection and preservation of resources shall conform to the project description above and the hearing exhibits and conditions of approval below. The property and any portions thereof shall be sold, leased or financed in compliance with this project description and the approved hearing exhibits and conditions of approval thereto. All plans (such as Landscape and Tree Protection Plans) must be submitted for review and approval and shall be implemented as approved by the County.

3. **Rules-02 Effective Date-Appealable to CCC**. Coastal Development Permit shall become effective upon the expiration of the applicable appeal period provided an appeal has not been filed. If an appeal has been filed, the planning permit shall not be deemed effective until final action by the review authority on the appeal, including action by the California Coastal Commission if the planning permit is appealed to the Coastal Commission. [ARTICLE II § 35-169].

4. **Rules-05 Acceptance of Conditions.** The Owner/Applicant's acceptance of this permit and/or commencement of use, construction and/or operations under this permit shall be deemed acceptance of all conditions of this permit by the Owner/Applicant.

5. **Rules-11 CDP Expiration-With CUP or DVP**. The approval or conditional approval of a Coastal Development Permit shall be valid for one year from the date of decision-maker action. Prior to the expiration of the approval, the review authority who approved the Coastal Development Permit may extend the approval for one year if good cause is shown and the applicable findings for the approval required in compliance with Section 35-169.5 can still be made. Prior to the expiration of a time extension approved in compliance with Subsection a. above, the review authority who approved the time extension may approve two additional time extensions for two years each if good cause is shown and the applicable findings for the approval required in compliance with Section 35-169.5 can still be made. A Coastal Development Permit shall expire two years from the date of issuance if the use or structure for which the permit was issued has not been established

or commenced in conformance with the effective permit. A Coastal Development Permit whose expiration date has been extended in compliance with the above will nevertheless expire at the earlier of: (1) the expiration of the most recent time extension or (2) the expiration of the associated Conditional Use Permit or Development Plan (as modified by any extension thereto).

6. **Rules-29 Other Dept Conditions**. Compliance with Departmental/Division letters required as follows:
   a. Air Pollution Control District, dated November 26, 2014
   b. California State Parks, dated February 9, 2015

7. **Rules-33 Indemnity and Separation**. The Owner/Applicant shall defend, indemnify and hold harmless the County or its agents or officers and employees from any claim, action or proceeding against the County or its agents, officers or employees, to attack, set aside, void, or annul, in whole or in part, the County's approval of this project. In the event that the County fails promptly to notify the Owner / Applicant of any such claim, action or proceeding, or that the County fails to cooperate fully in the defense of said claim, this condition shall thereafter be of no further force or effect.

8. **Special-01 Biological Resources Plan Sheet**. A biological resources plan sheet showing the precise location of the environmentally sensitive habitats (native grassland, coastal scrub, riparian habitat) potentially affected by the proposed project and including notations advising of the possibility of encountering any sensitive resources (red-legged frog, Gaviota tarplant critical habitat) shall be provided to P&D staff . **Plan Requirements and Timing:** The biological resources plan sheet shall be submitted to P&D staff prior to Coastal Development Permit issuance. **Monitoring:** P&D staff shall review and approve the plan sheet and shall review plan sets to ensure inclusion of the biological resources plan sheet. B&S staff shall ensure inclusion of the plan sheet with the grading plans etc.

November 26, 2014

Nicole Lieu
Santa Barbara County
Planning and Development
123 E. Anapamu Street
Santa Barbara, CA 93101

Re: APCD Comments on Caltrans Gaviota Curve Realignment, 14CDH-00000-00024

Dear Ms. Lieu:

The Air Pollution Control District (APCD) has reviewed the referenced project, which consists of a safety improvement project along Highway 101, from 0.7 mile north of Beckstead Overcrossing to 0.8 mile south of Gaviota Tunnel. The project would realign the existing northbound compound curve to a single radius curve. Also proposed is the widening of existing shoulders, modifications to the median barrier, and a modification of the vertical height of the northbound lanes of this segment. There will be grading associated with the project disturbing a total area of 10 acres. The subject property is a 452.22-acre parcel zoned as a Recreation and Transportation Corridor and identified in the Assessor Parcel Map Book as APN 081-270-003.

APCD staff reviewed the Mitigated Negative Declaration (MND) that Caltrans prepared and circulated for review for this project in May, 2013. We did not have any comments related to the MND, but we did offer some measures that we recommended for the project. Those measures are included below, and are suggested as conditions of approval for the project.

1. Standard dust mitigations (**Attachment A**) are recommended for all construction and/or grading activities. The name and telephone number of an on-site contact person must be provided to the APCD prior to issuance of land use clearance.

2. Fine particulate emissions from diesel equipment exhaust are classified as carcinogenic by the State of California. Therefore, during project grading, construction, and hauling, construction contracts must specify that contractors shall adhere to the requirements listed in **Attachment B** to reduce emissions of ozone precursors and fine particulate emissions from diesel exhaust.

3. All portable diesel-fired construction engines rated at 50 bhp or greater must have either statewide Portable Equipment Registration Program (PERP) certificates or APCD permits prior to operation. Construction engines with PERP certificates are exempt from APCD permit, provided they will be on-site for less than 12 months.

4. The project area should be tested for Naturally Occurring Asbestos (NOA). If it is determined that NOA is present in the project area, appropriate abatement measures must be undertaken. The Air Resources Board Air Toxic Control Measure for Construction, Grading, Quarrying and Surface Mining Operations requires that NOA be minimized (see www.arb.ca.gov/toxics/asbestos/asbestos.htm). Regardless of the presence of NOA, all feasible

fugitive dust mitigation measures are required to reduce nuisance and public health impacts during the construction period.

5. At all times, idling of heavy-duty diesel trucks should be minimized; auxiliary power units should be used whenever possible. State law requires that:
   - Drivers of diesel-fueled commercial vehicles shall not idle the vehicle's primary diesel engine for greater than 5 minutes at any location.
   - Drivers of diesel-fueled commercial vehicles shall not idle a diesel-fueled auxiliary power system (APS) for more than 5 minutes to power a heater, air conditioner, or any ancillary equipment on the vehicle. Trucks with 2007 or newer model year engines must meet additional requirements (verified clean APS label required).
   - While at a school, the driver must shut down the engine immediately upon arrival and leave within 30 seconds of starting the engine.
   - See www.arb.ca.gov/noidle for more information.

6. Asphalt paving activities shall comply with APCD Rule 329, *Cutback and Emulsified Asphalt Paving Materials*.

If you or the project applicant have any questions regarding these comments, please feel free to contact me at (805) 961-8893 or via email at NightingaleK@sbcapcd.org.

Sincerely,

Krista Nightingale

Krista Nightingale,
Air Quality Specialist
Technology and Environmental Assessment Division

Attachments: Fugitive Dust Control Measures
Diesel Particulate and NO_x Emission Measures

cc: CA Department of Transportation (Caltrans)
Veronika Pesinova
TEA Chron File

Santa Barbara County
Air Pollution Control District

ATTACHMENT A
FUGITIVE DUST CONTROL MEASURES

These measures are required for all projects involving earthmoving activities regardless of the project size or duration. Proper implementation of these measures is assumed to fully mitigate fugitive dust emissions.

- During construction, use water trucks or sprinkler systems to keep all areas of vehicle movement damp enough to prevent dust from leaving the site. At a minimum, this should include wetting down such areas in the late morning and after work is completed for the day. Increased watering frequency should be required whenever the wind speed exceeds 15 mph. Reclaimed water should be used whenever possible. However, reclaimed water should not be used in or around crops for human consumption.

- Minimize amount of disturbed area and reduce on site vehicle speeds to 15 miles per hour or less.

- If importation, exportation and stockpiling of fill material is involved, soil stockpiled for more than two days shall be covered, kept moist, or treated with soil binders to prevent dust generation. Trucks transporting fill material to and from the site shall be tarped from the point of origin.

- Gravel pads shall be installed at all access points to prevent tracking of mud onto public roads.

- After clearing, grading, earth moving or excavation is completed, treat the disturbed area by watering, or revegetating, or by spreading soil binders until the area is paved or otherwise developed so that dust generation will not occur.

- The contractor or builder shall designate a person or persons to monitor the dust control program and to order increased watering, as necessary, to prevent transport of dust offsite. Their duties shall include holiday and weekend periods when work may not be in progress. The name and telephone number of such persons shall be provided to the Air Pollution Control District prior to land use clearance for map recordation and land use clearance for finish grading of the structure.

  Plan Requirements: All requirements shall be shown on grading and building plans and as a note on a separate information sheet to be recorded with map. **Timing:** Requirements shall be shown on plans or maps prior to land use clearance or map recordation. Condition shall be adhered to throughout all grading and construction periods.

  MONITORING: Lead Agency shall ensure measures are on project plans and maps to be recorded. Lead Agency staff shall ensure compliance onsite. APCD inspectors will respond to nuisance complaints.

Santa Barbara County
Air Pollution Control District

ATTACHMENT B
DIESEL PARTICULATE AND NO_x EMISSION MEASURES

Particulate emissions from diesel exhaust are classified as carcinogenic by the state of California. The following is an updated list of regulatory requirements and control strategies that should be implemented to the maximum extent feasible.

The following measures are required by state law:

- All portable diesel-powered construction equipment shall be registered with the state's portable equipment registration program OR shall obtain an APCD permit.
- Fleet owners of mobile construction equipment are subject to the California Air Resource Board (CARB) Regulation for In-use Off-road Diesel Vehicles (Title 13 California Code of Regulations, Chapter 9, § 2449), the purpose of which is to reduce diesel particulate matter (PM) and criteria pollutant emissions from in-use (existing) off-road diesel-fueled vehicles. For more information, please refer to the CARB website at www.arb.ca.gov/msprog/ordiesel/ordiesel.htm.
- All commercial diesel vehicles are subject to Title 13, § 2485 of the California Code of Regulations, limiting engine idling time. Idling of heavy-duty diesel construction equipment and trucks during loading and unloading shall be limited to five minutes; electric auxiliary power units should be used whenever possible.

The following measures are recommended:

- Diesel construction equipment meeting the California Air Resources Board (CARB) Tier 1 emission standards for off-road heavy-duty diesel engines shall be used. Equipment meeting CARB Tier 2 or higher emission standards should be used to the maximum extent feasible.
- Diesel powered equipment should be replaced by electric equipment whenever feasible.
- If feasible, diesel construction equipment shall be equipped with selective catalytic reduction systems, diesel oxidation catalysts and diesel particulate filters as certified and/or verified by EPA or California.
- Catalytic converters shall be installed on gasoline-powered equipment, if feasible.
- All construction equipment shall be maintained in tune per the manufacturer's specifications.
- The engine size of construction equipment shall be the minimum practical size.
- The number of construction equipment operating simultaneously shall be minimized through efficient management practices to ensure that the smallest practical number is operating at any one time.
- Construction worker trips should be minimized by requiring carpooling and by providing for lunch onsite.

Plan Requirements: Measures shall be shown on grading and building plans. **Timing:** Measures shall be adhered to throughout grading, hauling and construction activities.

MONITORING: Lead Agency staff shall perform periodic site inspections to ensure compliance with approved plans. APCD inspectors shall respond to nuisance complaints.

State of California • Natural Resources Agency
Edmund G. Brown Jr., *Governor*

DEPARTMENT OF PARKS AND RECREATION
Lisa Ann L. Mangat, *Acting Director*
Channel Coast District
911 San Pedro Street
Ventura, CA 93001

February 9, 2015

David Beard, Project Manager
California Department of Transportation
50 South Higuera St.
SLO, California 93401

Re: Request for Landowner Signature on Santa Barbara County Permit Application for the State Route 101 Gaviota Curve Realignment Project; Santa Barbara County, CA

Dear Mr. Beard,

This letter is in response to your request for landowner signature from the Department of Parks and Recreation (DPR) on the Santa Barbara County Permit Coastal Development Permit application for the proposed for Caltrans District 5 Gaviota Curve Realignment Project. We understand that a portion of APN#081-270-003, part of Gaviota State Park, is needed to complete this project and that landowner consent is necessary prior to processing of the Santa Barbara County Coastal Development Permit application. We are providing you this letter of conditional land owner consent for the proposed Caltrans District 5 Gaviota Curve Realignment Project as it pertains to the Santa Barbara County Permit application process. Land owner consent does not authorize commencement of any work. A DPR Right of Entry (ROE) Permit will be issued prior to project implementation. Should you have any questions, please contact Nathaniel Cox at nat.cox@parks.ca.gov or (805) 648-8194.

Sincerely,

Richard Rozzelle
District Superintendent

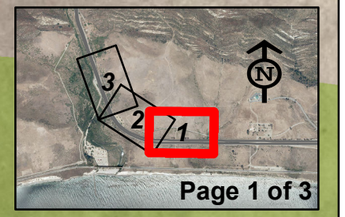
NOTE: FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

CURVE DATA

No.	R	Δ	T	L
1	1625'	69°38'15"	1130.19'	1975.03'

LEGEND:

- COLD PLANE AC PAVEMENT
- ENVIRONMENTALLY SENSITIVE AREA (ESA)
- REMOVE BASE AND SURFACING



22.0' Lt "DNB1" 69+50
Beg HMA DIKE (TYPE E)

"DNB1" 69+50
END COLD PLANE AC PAVEMENT
Beg STRUCTURAL SECTION

ESA

R/W

ESA

22.0' Lt "DNB1" 77+00
END HMA DIKE (TYPE E)

24.0' Lt "DNB1" 78+30.4
END TAPER

25.0' Lt "DNB1" 78+30
END TRANSITION RAILING (TYPE DTB)
Beg CONCRETE BARRIER (TYPE 60)

25.0' Lt "DNB1" 78+05
END RECONSTRUCT DTBB
Beg SALVAGE DTBB
Beg TRANSITION RAILING (TYPE DTB)

22.0' Lt "DNB1" 77+30.4
Beg TAPER

R/W

SURVEY MONUMENT (PM 45.87)
TO BE DESTROYED DURING CONSTRUCTION

61+21.3 "DNB1" 13.0' Rt
Beg Shld RUMBLE STRIP

64+50 "DNB1" 13.0' Lt
Beg Shld RUMBLE STRIP

SB

ROUTE 101

NB

ROUTE 101 "DNB1" LINE

N89^16'22"W
1338.3'

CONFORM

C

F

F C

C F

25.0' Lt "DNB1" 79+00
Beg WILDLIFE PASSAGEWAY (TYPE S)
AT 50' C-C

27.0' Lt "DNB1" 79+34.3

F C

MATCH LINE "DNB1" 81+50 (SEE SHEET L-2)

80.2' Rt
"DNB1" 79+00

REMOVE EUCALYPTUS TREE

F C

R/W

22.0' Rt "DNB1" 70+40
Beg HMA DIKE (TYPE E)

"DNB1" 68+75
Beg COLD PLANE AC PAVEMENT
CONFORM

67.6' Rt, 83.2' Rt
"DNB1" 71+75

55.1' Rt, 83.2' Rt
"DNB1" 73+00

55.1' Rt, 82.3' Rt
"DNB1" 75+20

82.3' Rt
"DNB1" 76+40

79+30.44 BC

26.7' Lt DNB1" 78+85.7
END SALVAGE DTBB
Beg REMOVE CONCRETE BARRIER

66.2' Rt "DNB1" 80+69.8
Beg REMOVE FENCE (TYPE BW)
Beg FENCE (TYPE BW, 5 STRAND, METAL POST)

25.0' Lt "DNB1" 77+50
Beg RECONSTRUCT DTBB

67.6' Rt "DNB1" 67+75
Beg Temp FENCE (TYPE ESA)

REMOVE ALL EUCALYPTUS
SUCKERS/SAPLINGS/TREES

PROJECT CONTROL MONUMENT (PM 45.61)
TO BE DESTROYED DURING CONSTRUCTION

REMOVE ALL EUCALYPTUS SUCKERS/SAPLINGS/TREES
REMOVE PEPPER TREE

PROJECT CONTROL MONUMENT (PM 45.70)
TO BE DESTROYED DURING CONSTRUCTION

22.0' Rt "DNB1" 78+00
END HMA DIKE (TYPE E)

60.7' Rt
"DNB1" 81+01.6

59.8' Rt
"DNB1" 81+02.7

SCALE: 1" = 50'

NOTE:
ALL ELEVATIONS ARE BASED ON NAVD 88, 1991 LIST.

+75 CONFORM
Elev 132.18
+3.5%
+06 BVC
Elev 136.23
"DNB1"
1710' VC
PG
OG
+61
Elev 167.54

Habitat Type
October 7, 2015

- Purple Needlegrass Grassland
- Arroyo Willow Thicket
- Non-Native Annual Grassland
- Ruderal/Disturbed
- Coastal Scrub
- Impacted CA Red-Legged Frog Critical Habitat
- Impacted Gaviota Tarplant Critical Habitat

PROFILE
"DNB1" LINE
ROUTE 101

STATION	8	9	70+00	1	2	3	4	75+00	6	7	8	9	80+00	1	TOTAL
CY Exc								5,106							5,106
CY Emb								409							409

LAYOUT
SCALE: Horiz 1" = 50'
Vert 1" = 10'
L-1

NOTE: FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

78.6' Lt "DNB1" 86+00
END REMOVE Conc BARRIER

151.9' Lt "DNB1" 85+00
Beg TEMPORARY FENCE (TYPE ESA)

R/W

ESA

84.4' Lt "DNB1" 86+00
Beg PLACE HMA (Misc AREA)

97.4' Lt "DNB1" 88+01
END PLACE HMA (Misc AREA)

241.6' Lt "DNB1" 91+00
END TEMPORARY FENCE (TYPE ESA)

137.21' Lt "DNB1" 91+00

121.6' Lt "DNB1" 85+00

C / L

SB

ROUTE 101

F C

"DNB1" LINE
ROUTE 101

NB

25.0' Lt "DNB1" 86+00
END Conc BARRIER (TYPE 60)

24.0' Lt "DNB1" 88+00
Beg HMA DIKE (TYPE F)

20.0' Lt "DNB1" 85+50
END WILDLIFE PASSAGEWAY (TYPE S)
AT 50 C-C

20.0' Lt "DNB1" 93+20
END HMA DIKE (TYPE F)

Exist Conc
PAVEMENT

R/W

MATCH LINE "DNB1" 81+50 (SEE SHEET L-1)

70.7' Rt, 71.7' Rt
"DNB1" 83+36.4

101.5' Rt, 102.5' Rt
"DNB1" 85+21.4

118.5' Rt
"DNB1" 85+84.6

117.8' Rt
"DNB1" 85+85.6

137.9' Rt
"DNB1" 85+79.2

151.4' Rt
"DNB1" 86+44.8

136.2' Rt
"DNB1" 85+80.8

164.75' Rt
"DNB1" 87+54.90

304.0' Rt
"DNB1" 89+27.9

309.1' Rt
"DNB1" 91+90.8

309.6' Rt
"DNB1" 89+78.9

227.5' Rt
"DNB1" 91+68.7

320.9' Rt
"DNB1" 89+53.4

Exist Conc
CHANNEL

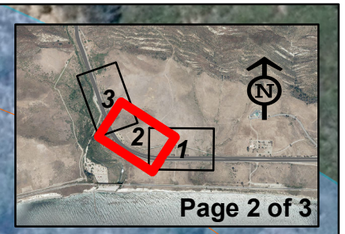
169.6' Rt
"DNB1" 94+40.4

CMP

MATCH LINE "DNB1" 96+50 (SEE SHEET L-3)

CURVE DATA

No.	R	△	T	L
1	1625'	69°38'15"	1130.19'	1975.03'



SCALE: 1" = 50'

NOTE: ALL ELEVATIONS ARE BASED ON NAVD 88, 1991 LIST.

PG

OG

+16 EVC
Elev 123.80

-5.1 %

"DNB1"

Habitat Type
October 7, 2015

- Purple Needlegrass Grassland
- Arroyo Willow Thicket
- Non-Native Annual Grassland
- Ruderal/Disturbed
- Coastal Scrub
- Impacted CA Red-Legged Frog Critical Habitat
- Impacted Gaviota Tarplant Critical Habitat

PROFILE
"DNB1" LINE
ROUTE 101

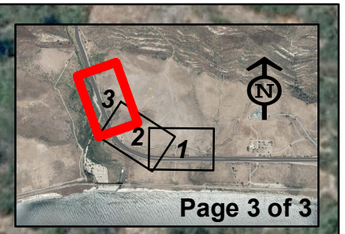
LAYOUT
L-2

SCALE: Horiz 1" = 50'
Vert 1" = 10'

	140	130	120	110	100	90	80	70

STATION	2	3	4	85+00	6	7	8	9	90+00	1	2	3	4	95+00	TOTAL
CY Exc								193,191							198,297
CY Emb								1,443							1,852

NOTE: FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



32.0' Lt
"DNB1" 95+94.8

32.4' Lt "DNB1" 96+51.4
Beg REMOVE Conc BARRIER
Beg Conc BARRIER (TYPE 60C)
Beg Conc BARRIER TRANSITION

31.1' Lt "DNB1" 96+66.1
END Conc BARRIER TRANSITION

25.0' Lt "DNB1" 98+70.0
END Conc BARRIER (TYPE 60C)
ALTERNATIVE CRASH CUSHION

13.0' Lt "DNB1" 98+85
END Shld RUMBLE STRIP

25.0' Lt "DNB1" 98+26.91
END REMOVE Conc BARRIER
SALVAGE CRASH CUSHION

"DNB1" 99+60
END COLD PLANE
AC PAVEMENT
CONFORM

46.0' Rt "DNB1" 100+61.6
END Temp FENCE (TYPE ESA)

24.5' Lt "DNB1" 104+60.6
Beg PLACE HMA (Misc AREA)

24.3' Lt "DNB1" 104+84.5
SALVAGE CRASH CUSHION
Beg REMOVE Conc BARRIER

24.0' Lt "DNB1" 106+00.0
END PLACE HMA (Misc AREA)
ALTERNATIVE CRASH CUSHION
Beg Conc BARRIER (TYPE 60S) END ANCHORAGE

MATCH LINE "DNB1" 95+50 (SEE SHEET L-2)

GAVIOTA BEACH Rd

R/W

ROUTE 101 SB

ROUTE 101 NB

"DNB1" LINE

N19^38'07"
1315.6'

CONFORM

20.2' Rt "DNB1" 99+11.2
END REMOVE AC DIKE

20.2' Rt "DNB1" 98+85
BEGIN REMOVE AC DIKE

13.0' Rt "DNB1" 105+95
END Shld RUMBLE STRIP

23.9' Lt "DNB1" 106+24.7
END Conc BARRIER (TYPE 60PR)
END REMOVE Conc BARRIER

23.9' Lt "DNB1" 106+10.0
END Conc BARRIER (TYPE 60S) END ANCHORAGE
Beg Conc BARRIER (TYPE 60PR)

Exist Conc
CHANNEL

62.9' Rt
"DNB1" 97+69.0

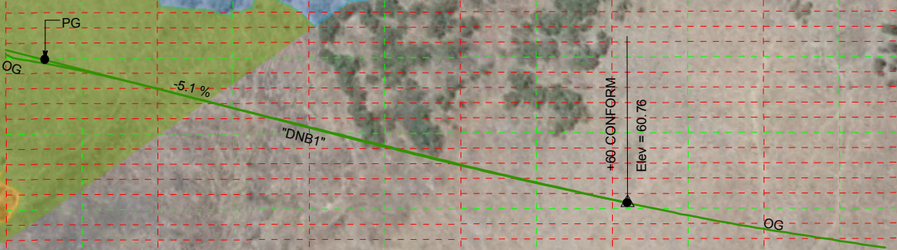
70.3' Rt "DNB1" 98+76.1
END REMOVE FENCE (TYPE BW)
END FENCE (TYPE BW, 5 STRAND, METAL POST)

CURVE DATA

No.	R	Δ	T	L
1	1625'	69°38'15"	1130.19'	1975.03'

SCALE: 1" = 50'

NOTE:
ALL ELEVATIONS ARE BASED ON NAVD 88, 1991 LIST.



PROFILE
"DNB1" LINE
ROUTE 101

Habitat Type
October 7, 2015

- Purple Needlegrass Grassland
- Arroyo Willow Thicket
- Non-Native Annual Grassland
- Ruderal/Disturbed
- Coastal Scrub
- Impacted CA Red-Legged Frog Critical Habitat
- Impacted Gaviota Tarplant Critical Habitat

SCALE: Horiz 1" = 50'
Vert 1" = 10'

LAYOUT
L-3

STATION		6	7	8	9	100+00	TOTAL
CY	Exc		2,746				201,043
	Emb		1,161				3,013

State of California –The Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
South Coast Region
3883 Ruffin Road
San Diego, CA 92123
(858) 467-4201
www.wildlife.ca.gov

***EDMUND G. BROWN, JR**, Governor*
***CHARLTON H. BONHAM,** Director*

October 6, 2015

Larry Bonner, Senior Environmental Planner
CA Department of Transportation
50 Higuera Street
San Luis Obispo, CA 93401-5415

Subject: Incidental Take Permit No. 2081-2015-047-05
GAVIOTA CURVE REALIGNMENT PROJECT (EA 05-0T630)

Dear Mr. Bonner:

Enclosed you will find two originals of the incidental take permit for the above referenced Project, which have been signed by the Department. Please read the permit carefully, sign the acknowledgement on both copies of the permit, and return one original **no later than 30 days from Department signature**, and prior to initiation of ground-disturbing activities, to:

Department of Fish and Wildlife
Habitat Conservation Planning Branch, CESA Permitting
1416 Ninth Street, 12th Floor
Sacramento, CA 95814

You are advised to keep the other original signature permit in a secure location and distribute copies to appropriate Project staff responsible for ensuring compliance with the conditions of approval of the permit. Note that you are required to comply with certain conditions of approval prior to initiation of ground-disturbing activities. Additionally, a copy of the permit must be maintained at the Project work site and made available for inspection by Department staff when requested.

The permit will not take effect until the signed acknowledgement is received by the Department. If you wish to discuss these instructions or have questions regarding the permit, please contact Jamie Jackson, Senior Environmental Scientist (Specialist), at (805) 382-6906.

Sincerely,

for Ed Pert, Regional Manager
South Coast Region
California Department of Fish and Wildlife

Enclosures (2)

California Department of Fish and Wildlife
South Coast Region
3883 Ruffin Road
San Diego, CA 92123

California Endangered Species Act
Incidental Take Permit No. **2081-2015-047-05**

Gaviota Curve Realignment Project (EA 05-0T630)

Authority.
This California Endangered Species Act (CESA) Incidental Take Permit (ITP) is issued by the California Department of Fish and Wildlife (CDFW) pursuant to Fish and Game Code section 2081, subdivisions (b) and (c), and California Code of Regulations, Title 14, section 783.0 et seq. CESA prohibits the take[1] of any species of wildlife designated by the California Fish and Game Commission as an endangered, threatened, or candidate species.[2] CDFW may authorize the take of any such species by permit if the conditions set forth in Fish and Game Code section 2081, subdivisions (b) and (c) are met. (See Cal. Code Regs., tit. 14, § 783.4.)

Permittee:	**California Department of Transportation (Caltrans)**
Principal Officer:	**Larry Bonner, Senior Environmental Planner**
Contact Person:	**Paul Andreano, Associate Biologist 805-542-4688**
Mailing Address:	**50 Higuera Street** **San Luis Obispo, CA 93401-5415**

Effective Date and Expiration Date of this ITP:
This ITP shall be executed in duplicate original form and shall become effective once a duplicate original is acknowledged by signature of the Permittee on the last page of this ITP, *and returned to CDFW's Habitat Conservation Planning Branch at the address listed in the* Notices section of this ITP. Unless renewed by CDFW, this ITP's authorization to take the Covered Species shall expire on **04/01/2020**.

---

[1]Pursuant to Fish and Game Code section 86, "'Take' means hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." See also *Environmental Protection Information Center v. California Department of Forestry and Fire Protection* (2008) 44 Cal.4th 459, 507 (for purposes of incidental take permitting under Fish and Game Code section 2081, subdivision (b), "'take' … means to catch, capture or kill").
[2]The definition of an endangered, threatened, and candidate species for purposes of CESA are found in Fish and Game Code sections 2062, 2067, and 2068, respectively.

Notwithstanding the expiration date on the take authorization provided by this ITP, the Permittee's obligations pursuant to this ITP do not end until CDFW accepts as complete the Permittee's Final Mitigation Report required by Condition of Approval 7.7 of this ITP.

Project Location:
The Gaviota Curve Realignment Project (Project) is located along State Route 101 (SR-101), from 0.8 mile south of Gaviota Tunnel to 0.7 mile north of the Beckstead Overcrossing in Santa Barbara County. Please see Figure 1 (page 20) for Project Location Map.

Project Description:
The Project includes the realignment the existing northbound compound curve with a single *radius curve. The Project proposes to widen the existing shoulders along the two northbound* lanes. Project plan sheets are provided in Appendix A of the ITP application package. The project will impact 0.11 acres of Covered Species potential habitat. The components of the project are described in detail below:

Curve Realignment
The proposed realignment would require excavation of a new cut slope roughly parallel to the existing cut slope and recessed 75 feet to the northeast from the apex of the curve. The proposed cut slope would reflect similar slope ratios to the existing cut slope. Exclusion of benches and the addition of a catchment area at the toe of the slope not less than 20 feet wide from the edge of traveled way are proposed for the new slope design.

Shoulder Widening
Both the inside and outside northbound shoulders will be widened and paved.
Existing outside shoulder along the northbound lanes will be widened from 8 feet to 10 feet.
The existing width of the inside shoulder varies between 0 to 7 feet; after construction the width of the inside shoulder will range between 10 and 12 feet.

Vertical Profile Modification
Vertical height of the northbound lane prior to the curve will be modified to meet current design standards for sight distance.

Median Barrier
A new concrete median barrier (type 60S) will replace the existing concrete median barrier (type 50) to accommodate the proposed median width and grade. Also included in this alternative is adjusting the concrete median barrier to the immediate north of the Gaviota State Park at-grade intersection. The purpose of this modification is to accommodate larger vehicle turning radius from Gaviota State Park to northbound SR-101. Wildlife passageways were designed and incorporated into the concrete median barrier south of the State Park entrance. These wildlife passageways will accommodate small to medium-sized mammals.

Culvert Modification

Culvert inlets will be upgraded and flare ends will be placed on outlets where applicable. The Project proposes to place rock slope protection, within the Caltrans right-of-way (ROW), at locations experiencing erosion.

Covered Species Subject to Take Authorization Provided by this ITP:

This ITP covers the following species:

Name	**CESA Status**
Gaviota tarplant *(Deinandra increscens* ssp. *villosa)*	Endangered[3]

This species and only this species is the "Covered Species" for the purposes of this ITP.

Impacts of the Taking on Covered Species:

Project-related activities (Covered Activities) and their resulting impacts are expected to result in the incidental take of the seed bank of Gaviota tarplant and/or undetected individual Gaviota tarplant(s) (Covered Species).

Incidental take of the seed bank and undetected individuals of the Covered Species in the form of mortality ("kill") may occur as a result of Covered Activities during grading and construction activities. The areas where authorized take of the Covered Species is expected to occur include: within the Caltrans Right-of-Way along State Route 101 (SR-101), from 0.8 mile south of Gaviota Tunnel to 0.7 mile north of the Beckstead Overcrossing in Santa Barbara County (collectively, the Project Area).

The Project is expected to cause the permanent and temporary impacts to Covered Species potential habitat (0.04 Acres of Permanent and 0.07 Acres of Temporary impacts) within the Project Area. Impacts of the authorized taking include adverse impacts to the Covered Species related to temporal losses, increased habitat fragmentation and edge effects, and the Project's incremental contribution to cumulative impacts (indirect impacts). *These impacts include increased susceptibility of impacted areas to invasion by wildland* invasive plant species and ongoing disturbances in the Caltrans Right of Way (ROW) (mowing, herbicide spraying).

[3]See Cal. Code Regs. tit. 14 § 670.2, subd. (a)(2)(G).

Estimated Take of Covered Species:

Table 1. Estimated impacts to Covered Species potential habitat (see Figures 2, 3, and 4, pages 21-23)

Community/Habitat	Permanent Impacts	Temporary Impacts
Covered Species potential habitat	*0.04 acre*	*0.07 acre*

Incidental Take Authorization of Covered Species:

This ITP authorizes incidental take of the Covered Species and only the Covered Species. With respect to incidental take of the Covered Species, CDFW authorizes the Permittee, its employees, contractors, and agents to take Covered Species incidentally in carrying out the Covered Activities, subject to the limitations described in this section and the Conditions of Approval identified below. This ITP does not authorize take of Covered Species from activities outside the scope of the Covered Activities, take of Covered Species outside of the Project Area, take of Covered Species resulting from violation of this ITP, or intentional take of Covered Species except for the inadvertent crushing of one Covered Species within the Project Area during Covered Activities and the collection and relocation of Covered Species as authorized by this ITP.

Conditions of Approval:

Unless specified otherwise, the following measures apply to all Covered Activities within the Project Area, including areas used for vehicle ingress and egress, vehicle parking, staging and storage of construction equipment, staging and storage of materials, and noise- and vibration-generating activities that may/will cause disruption within environmentally sensitive areas (ESA). CDFW's issuance of this ITP and the Permittee's authorization to take the Covered Species are subject to the Permittee's compliance with and implementation of the following Conditions of Approval:

1. **Legal Compliance:** Permittee shall comply with all applicable federal, state, and local laws in existence on the effective date of this ITP or adopted thereafter.

2. **CEQA Compliance:** Permittee shall implement and adhere to the mitigation measures related to the Covered Species in the Biological Resources section of the Initial Study with Mitigated Negative Declaration and Finding of No Significant Impact (SCH No.: 2013051062) adopted by Caltrans in November 2013 as Lead Agency for the Project, pursuant to the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.). The final Environmental document approved by the Lead Agency includes avoidance and minimization measures, as well as monitoring, notification, and reporting measures.

3. **LSA Agreement Compliance:** If it becomes necessary to work within CDFW jurisdiction as part of the Project-related activities, Permittee shall notify for a Lake and Streambed Alteration (LSA) Agreement for the Project. Permittee shall implement and adhere to the mitigation measures and conditions related to the Covered Species if a LSA Agreement is executed for the Project by CDFW pursuant to Fish and Game Code section 1600 *et seq.*

4. **Federal Endangered Species Act (Section 7) Compliance:** Permittee shall implement and adhere to the terms and conditions related to the Covered Species in the Biological *Opinion for the Gaviota Curve Realignment Project, Santa Barbara County, California* (8-8-13-F-18), pursuant to Section 7. For purposes of this ITP, where the terms and conditions for the Covered Species in the federal authorization are less protective of the Covered Species or otherwise conflict with this ITP, the conditions of approval set forth in this ITP shall control.

5. **ITP Time Frame Compliance:** Permittee shall fully implement and adhere to the conditions of this ITP within the time frames set forth below and as set forth in the Mitigation Monitoring and Reporting Program (MMRP-Attachment 1), which is included as part of the ITP Application, Section 4.1.2, items 15-23 and included herein to this ITP.

6. **General Provisions:**

6.1. Designated Representative. Before starting Covered Activities, Permittee shall *designate a representative (Designated Representative) responsible for* communications with CDFW and overseeing compliance with this ITP. Permittee shall notify CDFW in writing before starting Covered Activities of the Designated Representative's name, business address, and contact information, and shall notify CDFW in writing if a substitute Designated Representative is selected or identified at any time during the term of this ITP.

6.2. Designated Biologist. Permittee shall submit to CDFW in writing the name, qualifications, business address, and contact information of a biological monitor (Designated Biologist) at least 30 days before starting Covered Activities. Permittee shall ensure that the Designated Biologist is knowledgeable and experienced in the biology, natural history, and identification of the Covered Species. The Designated Biologist shall be responsible for monitoring Covered Activities to help minimize and fully mitigate or avoid the incidental take of individual Covered Species, should they be encountered, and to minimize disturbance of Covered Species' critical habitat. Permittee shall obtain CDFW approval of the Designated Biologist in writing before starting Covered Activities, and shall also obtain approval in advance in writing if the Designated Biologist must be changed.

6.3 Designated Biologist Authority. To ensure compliance with the Conditions of Approval of this ITP, the Designated Biologist shall have authority to immediately stop any activity that does not comply with this ITP, and/or to order any reasonable measure to avoid the unauthorized take of an individual of the Covered Species. Neither the Designated Biologist, Designated Monitors, nor CDFW shall be liable for any costs incurred in complying with the terms and conditions of the ITP, including cease-work orders issued by CDFW.

6.4. Education Program. Permittee shall conduct an education program for all persons employed or otherwise working in the Project Area before performing any work. The program shall consist of a presentation from the Designated Biologist that includes a discussion of the biology, general habitat where the Covered Species would most likely occur, if present, and general characteristics (both in flower and non-flower stages) of the Covered Species. The education program shall include information about the distribution and habitat needs of the Covered Species, sensitivity of the Covered Species to human activities, and equipment utilized that may have negative effects on for the Covered Species from Covered Activities. The education program shall include information related to status of the Covered Species pursuant to CESA, including legal protection, recovery efforts, penalties for violations and Project-specific protective measures described in this ITP. Permittee shall provide interpretation for non-English speaking workers, and the same instruction shall be provided to any new workers before they are authorized to perform work in the Project Area. Permittee shall prepare and distribute wallet-sized cards, or a fact sheet handout containing this information for workers to carry in the Project Area. Upon completion of the program, employees shall sign a form stating they attended the program and understand all protection measures. This training shall be repeated at least once annually for long-term and/or permanent employees that will be conducting work in the Project Area.

6.5. Construction Monitoring Notebook. The Designated Biologist shall maintain a construction-monitoring notebook on-site throughout the construction period, which shall include a copy of this ITP with attachments and a list of signatures of all personnel who have successfully completed the education program. Permittee shall ensure a copy of the construction-monitoring notebook is available for review at the Project site upon request by CDFW.

6.6. Trash Abatement. Permittee shall initiate a trash abatement program before starting Covered Activities and shall continue the program for the duration of the Project. Permittee shall ensure that trash and food items are contained in animal-proof containers and removed at least once a week to avoid attracting opportunistic native wildlife searching for easy food such as bears, deer, and birds, and avoid non-native

animals entering into habitat areas and attracting opportunistic predators such as ravens, coyotes, and feral dogs.

6.7. Dust Control. Permittee shall implement dust control measures during Covered Activities to facilitate visibility for monitoring of the Covered Species by the Designated Biologist. Permittee shall keep the amount of water used to the minimum amount needed, and shall not allow water to form puddles.

6.8. Erosion Control Materials. Permittee shall prohibit use of erosion control materials potentially harmful to native species, such as monofilament netting (erosion control matting) or similar material, in potential Covered Species' habitat.

6.9. Delineation of Property Boundaries. Before starting Covered Activities along each part of the route in active construction, Permittee shall clearly delineate the boundaries of the Project Area with fencing, stakes, or flags. Permittee shall restrict all Covered Activities to within the fenced, staked, or flagged areas. Permittee shall maintain all fencing, stakes, and flags until the completion of Covered Activities in that area. To ensure that environmentally sensitive areas (ESA) are not unnecessarily impacted during Covered Activities, orange plastic mesh fencing shall be placed and maintained by the contractor as directed by the Designated Biologist and illustrated in the project limits and boundaries for the Covered Activities (see Figures 2, 3, and 4 pages 21 and 23).

6.10. Delineation of Habitat. Permittee shall clearly delineate habitat of the Covered Species within the Project Area with posted signs, posting stakes, flags, and/or rope *or cord, and place fencing as necessary to minimize the disturbance of Covered* Species' habitat.

6.11. Project Access. Project-related personnel shall access the Project Area using existing routes, or routes identified in the Project Description, and shall not cross Covered Species' habitat outside of or en route to the Project Area. Permittee shall restrict Project-related vehicle traffic to established roads, staging, and parking areas. Permittee shall ensure that vehicle speeds do not exceed 20 miles per hour to avoid vehicle collision with any animal(s) within the Project Area or traversing the roads. If Permittee determines construction of routes for travel is necessary outside of the Project Area, the Designated Representative shall contact CDFW for written approval before carrying out such an activity. CDFW may require an amendment to this ITP if additional take of Covered Species will occur as a result of the Project modification.

6.12. Staging Areas. Permittee shall confine all Project-related parking, storage areas, laydown sites, equipment storage, and any other surface-disturbing activities to the Project Area using, to the extent possible, previously disturbed areas. Additionally,

Permittee shall not use or cross Covered Species' habitat outside of the marked Project Area unless provided for as described in Condition of Approval 6.11 (Project Access) of this ITP.

6.13. Hazardous Waste. Permittee shall immediately stop and, pursuant to pertinent state and federal statutes and regulations, arrange for repair and clean up by qualified individuals of any fuel or hazardous waste leaks or spills at the time of occurrence, or as soon as it is safe to do so. Permittee shall exclude the storage and handling of hazardous materials from the Project Area and shall properly contain and dispose of any unused or leftover hazardous products off-site.

6.14. CDFW Access. Permittee shall provide CDFW staff with reasonable access to the Project and shall otherwise fully cooperate with CDFW efforts to verify compliance with or effectiveness of mitigation measures set forth in this ITP.

6.15. Soil Stockpiles. Soil stockpiles shall be placed where soil shall not pass into any waters of the state as per Fish and Game Code sections 5650 and 5652. Stockpiles shall be appropriately protected to prevent soil erosion.

7. Monitoring, Notification and Reporting Provisions:

Monitoring will be required to ensure compliance with all avoidance and minimization measures to protect the Covered Species.

7.1. Notification Before Commencement. The Designated Representative shall notify CDFW 14 calendar days before starting Covered Activities and shall document compliance with all pre-Project Conditions of Approval before starting Covered Activities.

7.2. Notification of Non-compliance. The Designated Representative shall immediately notify CDFW in writing if it determines that the Permittee is not in compliance with any Condition of Approval of this ITP, including but not limited to any actual or anticipated failure to implement measures within the time periods indicated in this ITP and/or the Mitigation Monitoring and Reporting Plan (MMRP). The Designated Representative shall report any non-compliance with this ITP to CDFW within 24 hours.

7.3. Compliance Monitoring. The Designated Biologist shall be on-site daily when Covered Activities occur. The Designated Biologist shall conduct compliance inspections to (1) minimize incidental take of the Covered Species; (2) prevent unlawful take of species; (3) check for compliance with all measures of this ITP; (4) check all exclusion zones; (5) ensure that signs, stakes, ESA fencing and other fencing are intact and that Covered Activities are only occurring in the Project Area. The Designated Representative or Designated Biologist shall prepare daily written

observation and inspection records summarizing: oversight activities and compliance inspections, observations of Covered Species, survey results, and monitoring activities required by this ITP. The Designated Biologist or Designated Monitors shall conduct compliance inspections a minimum of once per week during periods of inactivity and after clearing, grubbing, and grading are completed.

7.4. Monthly Compliance Report. The Designated Representative or Designated Biologist shall compile the observation and inspection records identified in Condition of Approval 7.3 (Compliance Monitoring) into a Monthly Compliance Report and submit it to CDFW along with a copy of the MMRP table with notes showing the current implementation status of each mitigation measure. Monthly Compliance Reports shall be submitted to CDFW's Regional Office at the office listed in the Notices section of this ITP and via e-mail to CDFW's Regional Representative. At the time of this ITP's approval, the CDFW Regional Representative is Ms. Jamie Jackson, Senior Environmental Scientist Specialist at: jamie.jackson@wildlife.ca.gov (or designated Caltrans Liaison). CDFW may at any time increase the timing and number of compliance inspections and reports required under this provision depending upon the results of previous compliance inspections. If CDFW determines the reporting schedule must be changed, CDFW will notify Permittee in writing of the new reporting schedule.

7.5. Annual Status Report. Permittee shall provide CDFW with an Annual Status Report (ASR) no later than January 31 of every year beginning with issuance of this ITP and continuing until CDFW accepts the Final Mitigation Report identified below. Each ASR shall include, at a minimum: (1) a summary of all Monthly Compliance Reports for that year identified in Condition of Approval 7.4 (Monthly Compliance Report); (2) a general description of the status of the Project Area and Covered Activities, including actual or projected completion dates, if known; (3) a copy of the table in the MMRP with notes showing the current implementation status of each mitigation measure; (4) an assessment of the effectiveness of each completed or partially completed mitigation measure in avoiding, minimizing and mitigating Project impacts; (5) all available information about Project-related incidental take of the Covered Species; (6) an accounting of the number of acres subject to both temporary and permanent disturbance, both for the prior calendar year, and a total since ITP issuance; and (7) information about other Project impacts on the Covered Species.

7.6. CNDDB Observations. The Designated Biologist shall submit all observations of Covered Species to CDFW's California Natural Diversity Database (CNDDB) within 60 calendar days of the observation, and the Designated Biologist shall include copies of the submitted forms with the next Monthly Compliance Report or ASR, whichever is submitted first relative to the observation.

7.7. Final Mitigation Report. No later than 45 days after completion of the Project,

Permittee shall provide CDFW with a Final Mitigation Report including all mitigation measures. The Designated Biologist shall prepare the Final Mitigation Report which shall include, at a minimum: (1) a summary of all Monthly Compliance Reports and all ASRs; (2) a copy of the table in the MMRP with notes showing when each of the mitigation measures was implemented; (3) all available information about Project-related incidental take of the Covered Species; (4) information about other Project impacts on the Covered Species; (5) beginning and ending dates of Covered Activities; (6) an assessment of the effectiveness of this ITP's Conditions of Approval in minimizing and fully mitigating Project impacts of the taking on Covered Species; (7) recommendations on how mitigation measures might be changed to more effectively minimize take and mitigate the impacts of future projects on the Covered Species; *and (8) any other pertinent information.*

7.8. Notification of Take. Permittee shall immediately notify the Designated Biologist if a Covered Species is taken by a Project-related activity within the vicinity of the Project. The Designated Biologist or Designated Representative shall provide initial notification to CDFW by calling the Regional Office at (858) 467-4201. The initial notification to CDFW shall include information regarding the location and number of Covered Species and the ITP Number. Following initial notification, Permittee shall send CDFW a written report within two calendar days. The report shall include the date and time of the finding or incident, location of the Covered Species and if possible provide a photograph, explanation as to cause of take, and any other pertinent information.

8. Take Minimization Measures:

The following requirements are intended to ensure the minimization of incidental take of Covered Species in the Project Area during Covered Activities. Permittee shall implement and adhere to the following conditions to minimize take of Covered Species:

8.1 Gaviota Tarplant (Covered Species) Relocation Plan. The Designated Biologist shall prepare a Covered Species relocation plan and submit to CDFW for review at least 30 days prior to Covered Activities occurring within documented areas known and/or potential Covered Species locations previously identified. Covered Activities within these areas may not proceed until CDFW has given written authorization to Permittee that the relocation plan has been reviewed and accepted. Generally, CDFW does not authorize the relocation of Covered Species due to possible unidentified impacts from genetic factors and/or disease. The Covered Species relocation plan should relocate the Covered Species to suitable habitat; but not within habitat where currently thriving populations of the Covered Species exist.

8.2 Pre-Work Surveys. Prior to any activities in the Project Area, the Permittee shall conduct a pre-work survey to characterize the habitat with the potential to support Covered Species and photograph pre-work conditions. If any life stages of the

Covered Species (seeds, seedlings, or mature plants) are found, the approved Designated Biologist shall contact CDFW. Only the approved Designated Biologist is authorized to collect and handle Covered Species. The Designated Biologist may be assisted by the Designated Monitors.

8.3 Pre-construction Surveys. Prior to any activities, a CDFW-approved Designated Biologist shall survey the work site. If any life stages of the Covered Species (seeds, seedlings, or mature plants) are found, the approved Designated Biologist shall contact CDFW. Only the approved Designated Biologist is authorized to collect and handle Covered Species. The Designated Biologist may be assisted by the Designated Monitors.

8.4 Surface Disturbance. Initial surface disturbing actions that occur in the vicinity of any potentially occupied habitat by the Covered Species shall be monitored by a Designated Biologist. The Designated Biologist shall be on site until all Covered Species have been relocated (if necessary) and disturbance of potentially occupied habitat is completed.

8.5 Area of Disturbance. Permittee shall minimize the area to be disturbed whenever vegetation must be cleared or access roads need to be repaired. The need to minimize the area disturbed and the limits of the work area shall be clearly explained to all contractors and equipment operators by Permittee inspectors, the Designated Representative, the Designated Biologist, or Designated Monitor.

8.6 Covered Species Occurrence. If any Covered Species are found in the Project footprint during construction, all work that could potentially harm the Covered Species shall stop immediately. Permittee shall immediately contact CDFW regarding the sighting to determine if relocation of the Covered Species is required before work may recommence. All Covered Species sightings confirmed by the Designated Biologist shall include the following documented information: the date, time, and location of each occurrence using Global Positioning System (GPS), the name of the party that identified the Covered Species, circumstances of the incident, the general condition and health of each individual and actions undertaken. Permittee shall submit this information to the CNDDB.

9. Habitat Land Management and Restoration:

CDFW has determined that permanent protection and perpetual management of compensatory habitat is necessary and required pursuant to CESA to fully mitigate Project-related impacts of the taking on the Covered Species that will result with implementation of the Covered Activities. This determination is based on factors including an assessment of the importance of the habitat in the Project Area, the extent to which the Covered Activities will impact the habitat, and CDFW's estimate of the acreage required to provide for adequate compensation.

To meet this requirement, the Permittee shall implement the Permittee's proposed mitigation strategy for temporary and permanent impacts to the Covered Species that will involve restoration of Covered Species potential habitat. All proposed restoration will occur on-site, within the Project limits and ROW. Mitigation for impacts to Covered Species will focus on potential habitat Restoration will include the removal of invasive species within the restoration areas. Restoration to all proposed potential Covered Species habitat will result in a total of 0.26-acre. Restoration is the preferred mitigation strategy, rather than the purchase of mitigation credits or habitat management land (HM) offsite (see Table 2 (below) and Figure 5, page 24).

9.1 Permanent Impacts. Permittee proposes compensation for the permanent loss of 0.04-acre of potential Covered Species habitat by establishment (restoration/creation) of 0.12-acre of potential habitat along the new alignment of the Project ROW and Project Areas.

9.2 Temporary Impacts. Permittee proposes compensation for the temporary loss of 0.07-acre of potential Covered Species habitat by restoration of 0.14-acre of potential habitat along the new alignment of the Project ROW and Project Areas.

Table 2. Proposed Restoration Ratios and Compensation Acres for Impacts to Natural Communities.

Community/ Habitat	Permanent Impacts			Temporary Impacts		
	Impact acres	Proposed Restoration Ratio	Compensation acres	Impact acres	Proposed Restoration Ratio	Compensation acres
Covered Species Potential Habitat	0.04	3:1	0.12	0.07	2:1	0.14
Totals	**1.49**	-	**4.47**	**1.65**	-	**3.30**

9.3 Habitat Restoration. Permittee shall restore on-site a minimum of 0.26-acre acres of Covered Species potential habitat with erosion control seeding and container planting. Erosion control hydroseeding will occur on the steep cut slope and along a section of median. Containers planting will occur along the north side of the highway, north and south of the cut slope, and will utilize irrigated container plants. The Permittee shall restore 0.26-acre of Gaviota tarplant potential habitat adjacent to the Project Area. The Permittee shall permanently protect and manage the sites with signage of the restoration and creation areas with ESA paddle signs. The Permittee shall not disturb the area; routine maintenance activities shall not be conducted in the restoration area. In addition, the Permittee shall develop a mitigation strategy for

the Covered Species that involves the removal of invasive plant species such as, eucalyptus (*Eucalyptus* ssp.), fountain grass (*Pennisetum setaceum*) and iceplant (*Carpobrotus edulis*) from the Caltrans ROW within Covered Species critical habitat. The implementation of the 0.26 acres of mitigation shall be completed within three years of the start of construction.

9.4 Fully Mitigate Impacts. To meet the fully mitigated requirement, the Permittee shall provide for both the permanent protection and management of 0.26- acre of Covered Species potential habitat. Permanent protection and funding for perpetual management of restoration habitat must be complete before starting Covered Activities, or within 18 months of the signing of the ITP.

9.5 Cost Estimates. CDFW has estimated the cost of acquisition, protection, creation/restoration and perpetual management of the HM lands and restoration of temporarily disturbed habitat as follows:

9.5.1 Restoration/Creation Implementation. Permittee provided a cost estimate of $23,000 for restoration and creation of on-site permanent and temporary effects to Covered Species habitat as described in Condition of Approval 9.3.

9.5.2 Restoration/Creation Long-term Management. Permittee shall estimate the cost of protection, and perpetual management of the restoration/creation of 0.26-acre of HM lands, according to all the measures outlined in this ITP.

9.5.3 Long-Term Management. Permittee shall ensure the 0.26 acres of mitigation is demarcated with "Environmentally Sensitive Area" (ESA) paddle markers. The mitigation shall be within the Caltrans Right-of-Way and fencing shall be installed along the Right-of-Way boundary. The ESA area(s) shall be included in the Caltrans Maintenance "Integrated Maintenance Management System" (IMMS). The IMMS will describe this ESA area(s) as Gaviota tarplant mitigation area and include restrictions on the type and timing of maintenance activities. In addition, the IMMS shall instruct the maintenance department to contact the Environmental Stewardship Branch prior to conducting activities.

9.6 Mitigation Funding. Permittee shall according to Measures 1-5 of Mitigation Compensation for Take (Section 4.2 of the ITP Application) ensure funding by providing a Funding Assurances Memo with sufficient monies to complete restoration activities and ensure the long-term maintenance of ESA signage. Written documentation to CDFW that Permittee has allocated sufficient funds in the Expenditure Authorization for the Project will ensure implementation of the Conditions of Approval.

9.7 Habitat Mitigation Monitoring and Restoration Plan (HMMP). Permittee shall create and restore a minimum of 0.26-acre of Covered Species habitat that will be maintained as optimal habitat for the Covered Species. Within 6 months of issuance of this ITP, Permittee shall prepare a Final Vegetation Restoration Plan (a Draft has already been approved by CDFW) to facilitate revegetation of the 0.26-acre and shall ensure that the Plan is successfully implemented by the contractor. The Plan shall include all previously agreed to detailed specifications for restoring all temporarily disturbed areas, such as seed mixes and application methods. The plan shall also include all previously agreed upon measures that indicate the best time of year for seeding to occur. Plantings undertaken between May and October shall include regular watering to ensure adequate growth. Described below are the minimum *avoidance, minimization, restoration measures, and success criteria that must be* included in the Final Vegetation Restoration Plan. The Draft HMMP has already been approved by the Department in writing prior to any Project related disturbances at the Project site. Described below are the minimum avoidance, minimization, restoration measures and success criteria that must be included in the Final HMMP.

- The Covered Species Habitat Restoration (HR) site shall include no more than 5% non-native percent cover in any vegetation layer (tree, shrub, and herbaceous) in any year.

- The HMMP shall contain measurements of species diversity, abundance, cover, etc., to ensure the heath of the habitat is at least as healthy as that of an identified, healthy, reference site. This data shall be collected for each vegetation layer (tree, shrub, and herbaceous) every year.

- The HMMP shall contain a detailed plan to monitor the success of the Covered Species HR lands, including the use of a reference site and scientifically accepted sampling methodology for assessing success.

9.8 Land Manager. Permittee shall be designated as both the interim and long-term land manager. The Permittee shall provide documents (Final HMMP and IMMS language) related to the management of the Gaviota tarplant mitigation and ESA lands prior to the initiation of the mitigation area.

9.9 Start-up Activities. Permittee shall provide for the implementation of start-up activities, including the initial site protection and enhancement of HM lands as described within the HMMP and further described in the IMMS for long-term management. Geographic Information Systems (GIS) data identifying the location and boundaries of the mitigation area shall be submitted to the Department after completion of the mitigation area. The electronic files shall include geographic information system (GIS) shapefiles, along with the appropriate metadata, of the

mitigation area. Click or paste this link in your browser for more details on creating shapefiles: http://www.esri.com/library/whitepapers/pdfs/shapefile.pdf.

9.10 Interim Management (Initial and Capital). Permittee shall ensure that management of the HM lands is as described in the final HMMP and IMMS. The Permittee shall ensure funding by providing a Funding Assurances Memo with sufficient monies to complete restoration activities and ensure the long-term maintenance of ESA signage. Written documentation to CDFW that Permittee has allocated sufficient funds in the Expenditure Authorization for the Project will ensure implementation of the Conditions of Approval.

9.11 After the Interim Management Period. Permittee shall ensure that the long-term management and monitoring of the HM lands are conducted according to the final management plan and IMMS. The Permittee shall be obligated to manage and monitor the HM lands in perpetuity to preserve their conservation values in accordance with this ITP, the conservation easement, if any, and the final management plan.

Amendment.
This ITP may be amended as provided by California Code of Regulations, Title 14, section 783.6, subdivision (c), and other applicable law. This ITP may be amended without the concurrence of the Permittee as required by law, including if CDFW determines that continued implementation of the Project as authorized under this ITP would jeopardize the continued existence of the Covered Species or where Project changes or changed biological conditions necessitate an ITP amendment to ensure that all Project-related impacts of the taking to the Covered Species are minimized and fully mitigated.

Stop-Work Order.
CDFW may issue Permittee a written stop-work order requiring Permittee to suspend any Covered Activity for an initial period of up to 25 days to prevent or remedy a violation of this ITP, including but not limited to the failure to comply with reporting or monitoring obligations, or to prevent the unauthorized take of any CESA endangered, threatened, or candidate species. Permittee shall stop work immediately as directed by CDFW upon receipt of any such stop-work order. Upon written notice to Permittee, CDFW may extend any stop-work order issued to Permittee for a period not to exceed 25 additional days. Suspension and revocation of this ITP shall be governed by California Code of Regulations, Title 14, section 783.7, and any other applicable law. Neither the Designated Biologist nor CDFW shall be liable for any costs incurred in complying with stop-work orders.

Compliance with Other Laws.
This ITP sets forth CDFW's requirements for the Permittee to implement the Project pursuant to CESA. This ITP does not necessarily create an entitlement to proceed with the Project. Permittee is responsible for complying with all other applicable federal, state, and local law.

Notices.
The Permittee shall deliver a fully executed duplicate original ITP by registered first class mail or overnight delivery to the following address:

Habitat Conservation Planning Branch
California Department of Fish and Wildlife
Attention: CESA Permitting Program
1416 Ninth Street, Suite 1260
Sacramento, CA 95814

Written notices, reports and other communications relating to this ITP shall be delivered to CDFW by registered first class mail at the following address, or at addresses CDFW may subsequently provide the Permittee. Notices, reports, and other communications shall reference the Project name, Permittee, and ITP Number (2081-2015-047-05) in a cover letter and on any other associated documents.

Original cover with attachment(s) to:

Edmund J Pert, Regional Manager
California Department of Fish and Wildlife
3883 Ruffin Road
San Diego, CA 92123
Telephone (858) 467-4201
Fax (858) 467-4299

Unless Permittee is notified otherwise, CDFW's Regional Representative for purposes of addressing issues that arise during implementation of this ITP is:

Ms. Jamie Jackson, Senior Environmental Scientist (Specialist)
P.O. BOX 1179
Ventura, CA 90012
Telephone (805) 382-6906
Fax (805) 382-6906

Compliance with CEQA.
CDFW's issuance of this ITP is subject to CEQA. CDFW is a responsible agency pursuant to CEQA with respect to this ITP because of prior environmental review of the Project by the lead agency, Caltrans. (See generally Pub. Resources Code, §§ 21067, 21069.) The Lead Agency's prior environmental review of the Project is set forth in the Initial Study with Mitigated Negative Declaration and Finding of No Significant Impact (SCH No.: 2015050162) dated November 2013 that Caltrans adopted for the Gaviota Curve Realignment Project.

This ITP, along with CDFW's related CEQA findings, which are available as a separate document, provide evidence of CDFW's consideration of the lead agency's Mitigated Negative Declaration for the Project and the environmental effects related to issuance of this ITP (CEQA Guidelines, § 15096, subd. (f)). CDFW finds that issuance of this ITP will not result in any previously undisclosed potentially significant effects on the environment or a substantial increase in the severity of any potentially significant environmental effects previously disclosed by the lead agency. Furthermore, to the extent the potential for such effects exists, CDFW finds adherence to and implementation of the Conditions of Project Approval adopted by the lead agency, and that adherence to and implementation of the Conditions of Approval imposed by CDFW through the issuance of this ITP, will avoid or reduce to below a level of significance any such potential effects. CDFW consequently finds that issuance of this ITP will not result in any significant, adverse impacts on the environment.

Findings Pursuant to CESA.
These findings are intended to document CDFW's compliance with the specific findings requirements set forth in CESA and related regulations. (Fish & G. Code § 2081, subs. (b)-(c); Cal. Code Regs., tit. 14, §§ 783.4, subds, (a)-(b), 783.5, subd. (c)(2).)

CDFW finds based on substantial evidence in the ITP application, Initial Study with Mitigated Negative Declaration and Finding of No Significant Impact (SCH No.: 2009081063), and subsequent revalidation of the MND in 2013, the results of 3 site visits and numerous consultations, and the administrative record of proceedings, that issuance of this ITP complies and is consistent with the criteria governing the issuance of ITPs pursuant to CESA:

(1) Take of Covered Species as defined in this ITP will be incidental to the otherwise lawful activities covered under this ITP;

(2) Impacts of the taking on Covered Species will be minimized and fully mitigated through the implementation of measures required by this ITP and as described in the MMRP. Measures include: (1) permanent habitat protection; (2) establishment of avoidance zones; (3) worker education; and (4) Monthly Compliance Reports. CDFW evaluated factors including an assessment of the importance of the habitat in the Project Area, the extent to which the Covered Activities will impact the habitat, and CDFW's estimate of the acreage required to provide for adequate compensation. Based on this evaluation, CDFW determined that the protection and management in perpetuity of 0.26-acre of restored habitat that is contiguous with other protected Covered Species habitat and/or is of higher quality than the habitat being destroyed by the Project, along with the minimization, monitoring, reporting, and funding requirements of this ITP minimizes and fully mitigates the impacts of the taking caused by the Project;

(3) The take avoidance and mitigation measures required pursuant to the conditions of this ITP and its attachments are roughly proportional in extent to the impacts of the taking authorized by this ITP;

(4) The measures required by this ITP maintain Permittee's objectives to the greatest extent possible;

(5) All required measures are capable of successful implementation;

(6) This ITP is consistent with any regulations adopted pursuant to Fish and Game Code sections 2112 and 2114;

(7) Permittee has ensured adequate funding to implement the measures required by this ITP as well as for monitoring compliance with, and the effectiveness of, those measures for the Project; and

(8) Issuance of this ITP will not jeopardize the continued existence of the Covered Species based on the best scientific and other information reasonably available, and this finding includes consideration of the species' capability to survive, and any adverse impacts of the taking on those abilities in light of (1) known population trends; (2) known threats to the species; and (3) reasonably foreseeable impacts on the species from other related projects and activities. Moreover, CDFW's finding is based, in part, on CDFW's express authority to amend the terms and conditions of this ITP without concurrence of the Permittee as necessary to avoid jeopardy and as required by law.

List of Tables and Figures.

Attachments.

Exhibits. (Please See ITP Application Package for Exhibits)

A. 95% Project Plan Sheets
B. CNDDB Reports for Covered Species
C. Photo Documentation

ISSUED BY THE CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

on October 6, 2015

for Edmund J Pert, Regional Manager
South Coast Region – Region Five

ACKNOWLEDGMENT

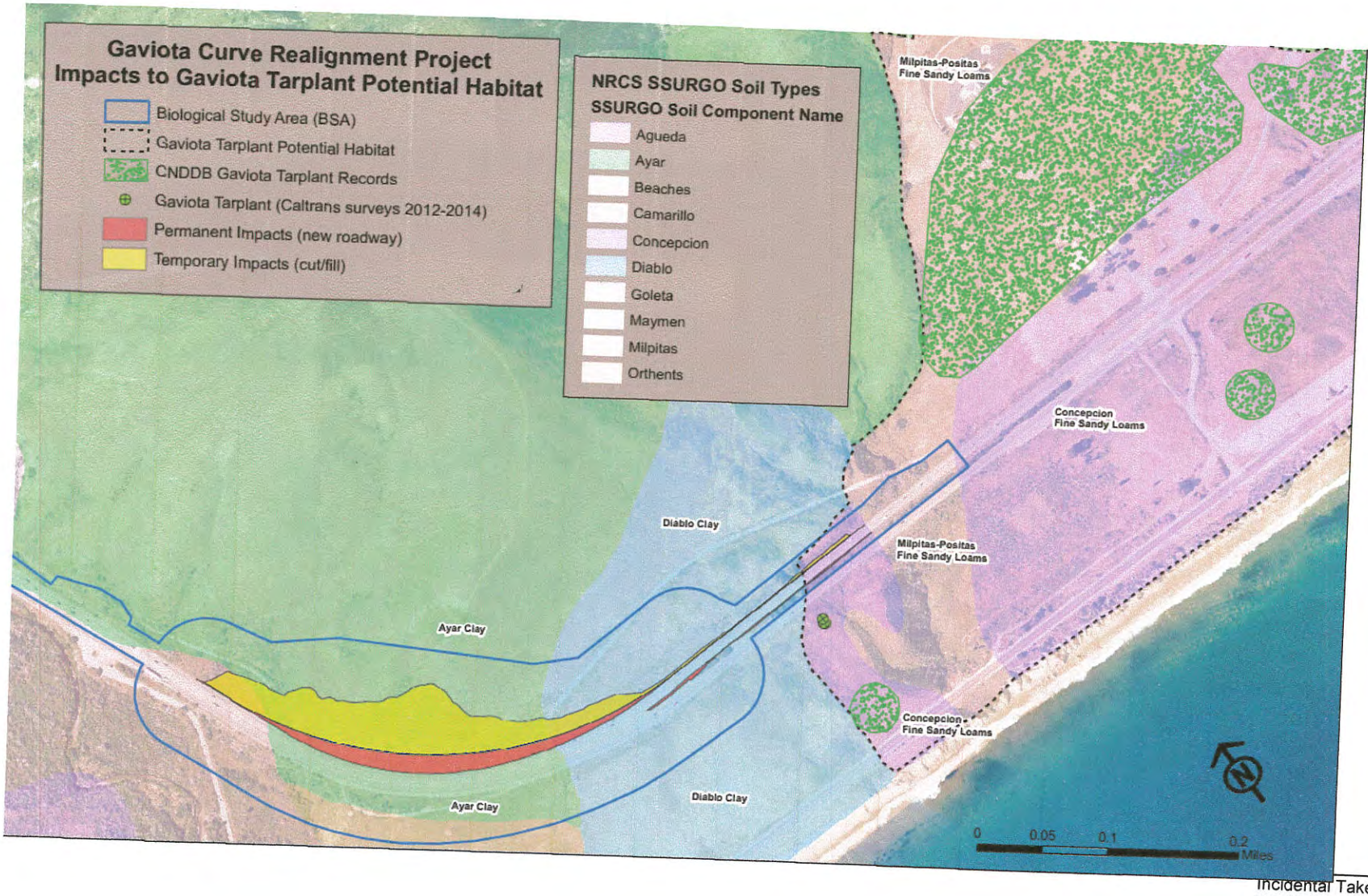
The undersigned: (1) warrants that he or she is acting as a duly authorized representative of the Permittee, (2) acknowledges receipt of this ITP, and (3) agrees on behalf of the Permittee *to comply with all terms and conditions*

By: Larry E. Bonner Date: 10-8-15

Printed Name: Larry E. Bonner Title: Senior Env. Planner

Figure 1. Project Location/Vicinity Map

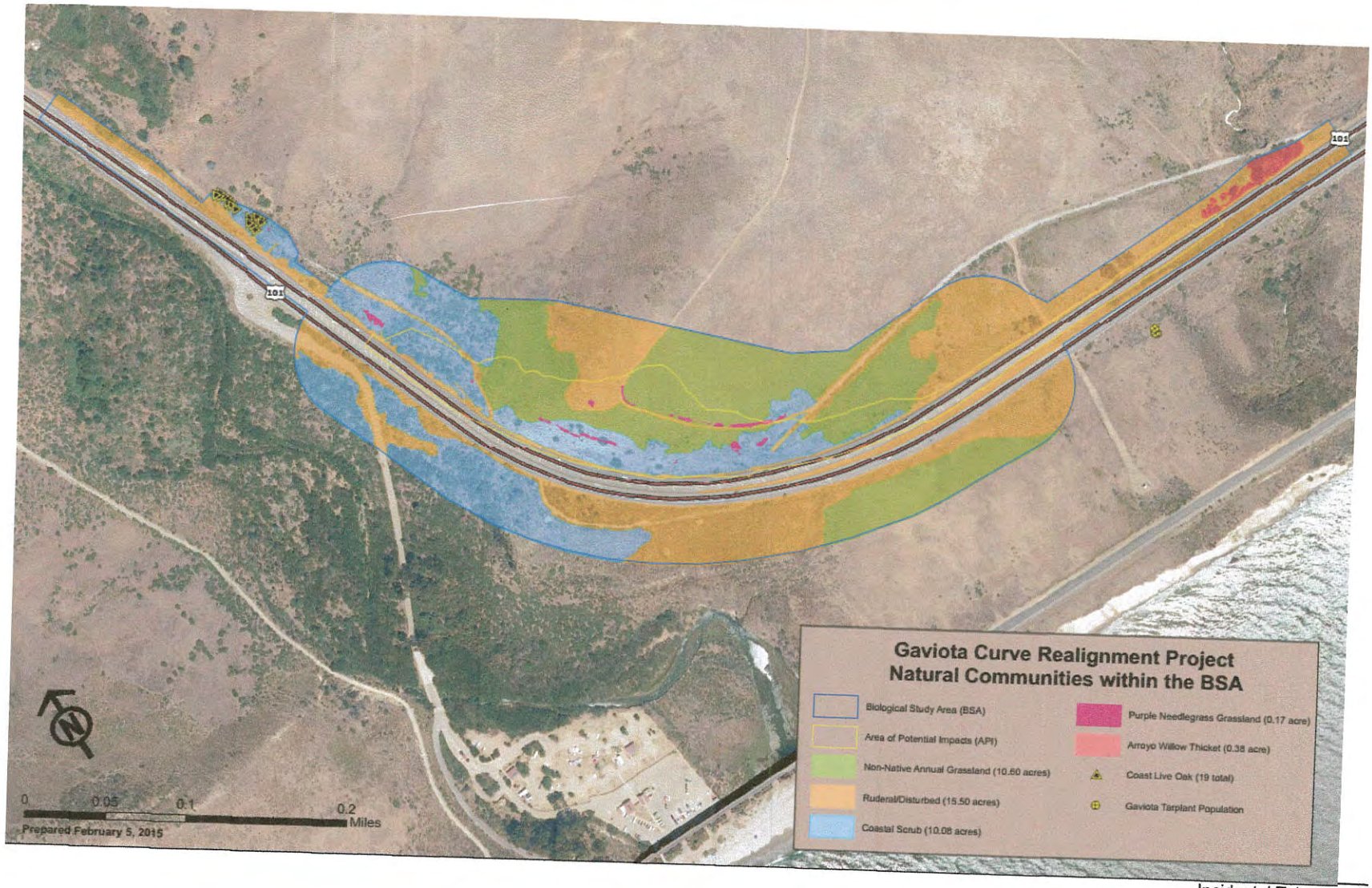
Figure 2



Incidental Take Permit
No. **2081-2015-047-05**

California Department of Transportation (Caltrans)
GAVIOTA CURVE REALIGNMENT PROJECT (EA 05-0T630)

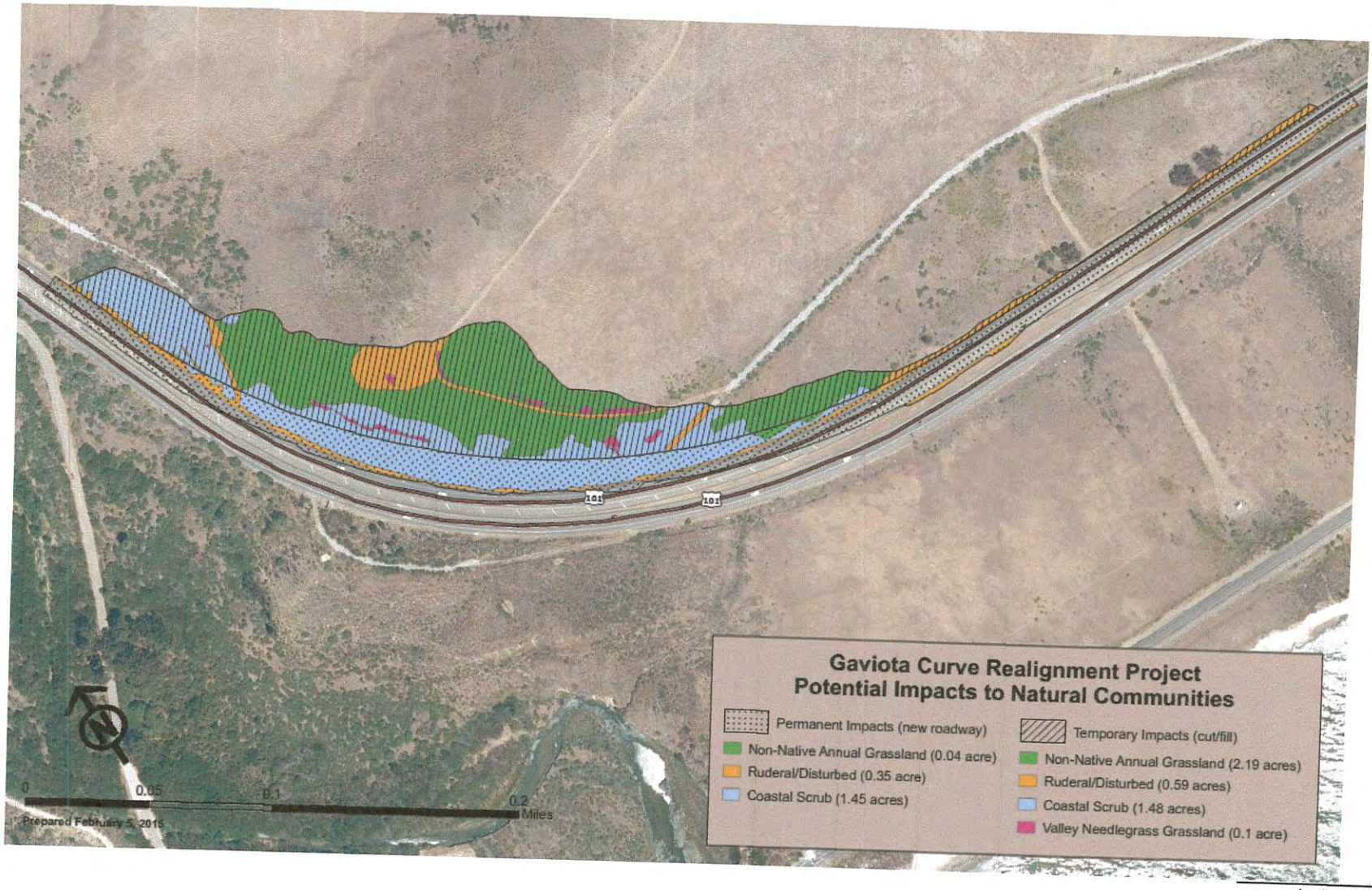
Figure 3



Incidental Take Permit
No. **2081-2015-047-05**

California Department of Transportation (Caltrans)
GAVIOTA CURVE REALIGNMENT PROJECT (EA 05-0T630)

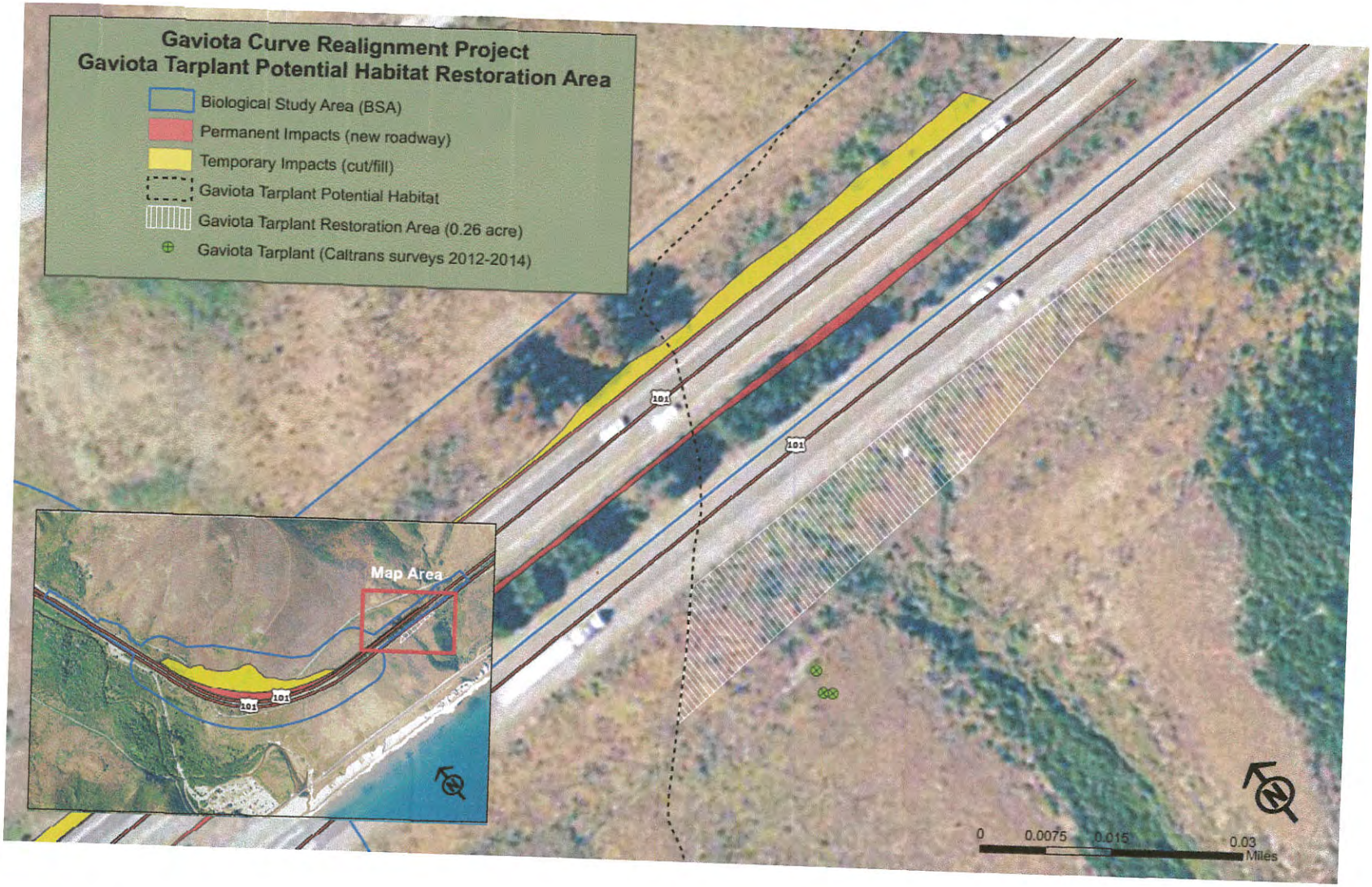
Figure 4



Incidental Take Permit
No. **2081-2015-047-05**

California Department of Transportation (Caltrans)
GAVIOTA CURVE REALIGNMENT PROJECT (EA 05-0T630)

Figure 5



Incidental Take Permit
No. **2081-2015-047-05**

California Department of Transportation (Caltrans)
GAVIOTA CURVE REALIGNMENT PROJECT (EA 05-0T630)

Attachment 1

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
MITIGATION MONITORING AND REPORTING PROGRAM (MMRP)
CALIFORNIA ENDANGERED SPECIES ACT
INCIDENTAL TAKE PERMIT NO. 2081-2015-047-05

PERMITTEE: California Department of Transportation (Caltrans)

PROJECT: GAVIOTA CURVE REALIGNMENT PROJECT (EA 05-0T630)

PURPOSE OF THE MMRP: The purpose of the MMRP is to ensure that the impacts minimization and mitigation measures required by the Department of Fish and Wildlife (CDFW) for the above-referenced Project are properly implemented, and thereby to ensure compliance with section 2081(b) of the Fish and Game Code and section 21081.6 of the Public Resources Code. A table summarizing the measures required by CDFW is attached. This table is a tool for use in monitoring and reporting in implementation of minimization and mitigation measures set forth in the California Incidental Take Permit (ITP) and in attachments to the ITP, and the omission of an ITP requirement from the attached table does not relieve the Permittee of the obligation to ensure the requirement is performed.

OBLIGATIONS OF PERMITTEE:
Minimization and mitigation measures must be implemented within the time periods indicated in the table that appears below. Permittee has the primary responsibility for monitoring compliance of all measures and for reporting to CDFW on the progress in implementing those measures. These monitoring and reporting requirements are set forth in the ITP itself and are summarized at the front of the attached table.

VERIFICATION OF COMPLIANCE, EFFECTIVENESS:
CDFW may, at its sole discretion, verify compliance with any mitigation measure or independently assess the effectiveness of any mitigation measure.

TABLE OF MINIMIZATION AND MITIGATION MEASURES:
The following items are identified for each measure: Minimization/Mitigation Measure, Source, Implementation Schedule, Responsible Party, and Status/Date/Initials. The Minimization/Mitigation Measure column summarizes the requirements of the ITP. The Source column identifies the ITP condition that sets form the measure. The Implementation Schedule column shows the date or phase when each measure will be implemented. The Responsible Party column identifies the person or agency that is primarily responsible for implementing the measure. The status/Date/Initials column shall be completed by the Permittee during preparation of each Status Report and the Final Mitigation Report, and must identify the implementation status of each measure, the date that status was determined, and the initials of the person determining the status.

	Minimization/Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
PRIOR TO START OF COVERED ACTIVITIES					
1	Permittee shall according to Measures 1-5 of Mitigation Compensation for Take (Section 4.2 of the ITP Application) ensure funding by providing a Funding Assurances Memo with sufficient monies to complete restoration activities and ensure the long-term maintenance of ESA signage. Written documentation to CDFW that Permittee has allocated sufficient funds in the Expenditure Authorization for the Project will ensure implementation of the Conditions of Approval.	ITP Condition #9.6	Before starting Covered Activities	Permittee	
2	9.5.1Restoration/Creation Implementation. Permittee provided a cost estimate of $23,000 for restoration and creation of on-site permanent and temporary effects to Covered Species habitat as described in Condition of Approval 9.3.	ITP Condition #9.5.1	Before starting Covered Activities	Permittee	
3	Before starting Covered Activities, Permittee shall designate a representative (Designated Representative) responsible for communications with CDFW and overseeing compliance with this ITP. Permittee shall notify CDFW in writing before starting Covered Activities of the Designated Representative's name, business address, and contact information, and shall notify CDFW in writing if a substitute Designated Representative is selected or identified at any time during the term of this ITP.	ITP Condition #6.1	Before starting Covered Activities	Permittee	
4	Permittee shall submit to CDFW in writing the name, qualifications, business address, and contact information of a biological monitor (Designated Biologist) at least 30 days before starting Covered Activities. Permittee shall ensure that the Designated Biologist is knowledgeable and experienced in the biology, natural history, and identification of the Covered Species. The Designated Biologist shall be responsible for monitoring Covered Activities to help minimize and fully mitigate or avoid the incidental take of individual Covered Species, should they be encountered, and to minimize disturbance of Covered Species' critical habitat. Permittee shall obtain CDFW approval of the Designated Biologist in writing before	ITP Condition #6.2	At least 30 days before starting Covered Activities	Permittee	

	Minimization/Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	starting Covered Activities, and shall also obtain approval in advance in writing if the Designated Biologist must be changed.				
5	Permittee shall conduct an education program for all persons employed or otherwise working in the Project Area before performing any work. The program shall consist of a presentation from the Designated Biologist that includes a discussion of the biology, general habitat where the Covered Species would most likely occur, if present, and general characteristics (both in flower and non-flower stages) of the Covered Species. The education program shall include information about the distribution and habitat needs of the Covered Species, sensitivity of the Covered Species to human activities, and equipment utilized that may have negative effects on for the Covered Species from Covered Activities. The education program shall include information related to status of the Covered Species pursuant to CESA, including legal protection, recovery efforts, penalties for violations and Project-specific protective measures described in this ITP. Permittee shall provide interpretation for non-English speaking workers, and the same instruction shall be provided to any new workers before they are authorized to perform work in the Project Area. Permittee shall prepare and distribute wallet-sized cards, or a fact sheet handout containing this information for workers to carry in the Project Area. Upon completion of the program, employees shall sign a form stating they attended the program and understand all protection measures. This training shall be repeated at least once annually for long-term and/or permanent employees that will be conducting work in the Project Area.	ITP Condition #6.4	Before starting Covered Activities	Permittee	

	Minimization/Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
6	Permittee shall initiate a trash abatement program before starting Covered Activities and shall continue the program for the duration of the Project. Permittee shall ensure that trash and food items are contained in animal-proof containers and removed at least once a week to avoid attracting opportunistic native wildlife searching for easy food such as bears, deer, and birds, and avoid non-native animals entering into habitat areas and attracting opportunistic predators such as ravens, coyotes, and feral dogs.	ITP Condition #6.6	Before starting Covered Activities	Permittee	
7	Before starting Covered Activities along each part of the route in active construction, Permittee shall clearly delineate the boundaries of the Project Area with fencing, stakes, or flags. Permittee shall restrict all Covered Activities to within the fenced, staked, or flagged areas. Permittee shall maintain all fencing, stakes, and flags until the completion of Covered Activities in that area. To ensure that environmentally sensitive areas (ESA) are not unnecessarily impacted during Covered Activities, orange plastic mesh fencing shall be placed and maintained by the contractor as directed by the Designated Biologist and illustrated in the project limits and boundaries for the Covered Activities (see Figures 2, 3, and 4 pages 21 and 23).	ITP Condition #6.9	Before starting Covered Activities	Permittee	
8	Permittee shall clearly delineate habitat of the Covered Species within the Project Area with posted signs, posting stakes, flags, and/or rope or cord, and place fencing as necessary to minimize the disturbance of Covered Species' habitat.	ITP Condition #6.10	Before starting Covered Activities	Permittee	
9	Project-related personnel shall access the Project Area using existing routes, or routes identified in the Project Description, and shall not cross Covered Species' habitat outside of or en route to the Project Area. Permittee shall restrict Project-related vehicle traffic to established roads,	ITP Condition #6.11	Before starting Covered Activities	Permittee	

	Minimization/Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	staging, and parking areas. Permittee shall ensure that vehicle speeds do not exceed 20 miles per hour to avoid vehicle collision with any animal(s) within the Project Area or traversing the roads. If Permittee determines construction of routes for travel is necessary outside of the Project Area, the Designated Representative shall contact CDFW for written approval before carrying out such an activity. CDFW may require an amendment to this ITP if additional take of Covered Species will occur as a result of the Project modification.				
10	Permittee shall confine all Project-related parking, storage areas, laydown sites, equipment storage, and any other surface-disturbing activities to the Project Area using, to the extent possible, previously disturbed areas. Additionally, Permittee shall not use or cross Covered Species' habitat outside of the marked Project Area unless provided for as described in Condition of Approval 6.11 (Project Access) of this ITP.	ITP Condition #6.12	Before starting Covered Activities	Permittee	
11	The Designated Representative shall notify CDFW 14 calendar days before starting Covered Activities and shall document compliance with all pre-Project Conditions of Approval before starting Covered Activities.	ITP Condition #7.1	Before starting Covered Activities	Permittee	
12	The Designated Biologist shall prepare a Covered Species relocation plan and submit to CDFW for review at least 30 days prior to Covered Activities occurring within documented areas known and/or potential Covered Species locations previously identified. Covered Activities within these areas may not proceed until CDFW has given written authorization to Permittee that the relocation plan has been reviewed and accepted. Generally, CDFW does not authorize the relocation of Covered Species due to possible unidentified impacts from genetic factors and/or disease. The Covered Species relocation plan should relocate the Covered Species to suitable habitat; but not	ITP Condition #8.1	At least 30 days before starting Covered Activities	Permittee	

	Minimization/Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	within habitat where currently thriving populations of the Covered Species exist.				
13	Prior to any activities in the Project Area, the Permittee shall conduct a pre-work survey to characterize the habitat with the potential to support Covered Species and photograph pre-work conditions. If any life stages of the Covered Species (seeds, seedlings, or mature plants) are found, the approved Designated Biologist shall contact CDFW. Only the approved Designated Biologist is authorized to collect and handle Covered Species. The Designated Biologist may be assisted by the Designated Monitors.	ITP Condition #8.2	Before starting Covered Activities	Permittee	
DURING COVERED ACTIVITIES					
14	To ensure compliance with the Conditions of Approval of this ITP, the Designated Biologist shall have authority to immediately stop any activity that does not comply with this ITP, and/or to order any reasonable measure to avoid the unauthorized take of an individual of the Covered Species. Neither the Designated Biologist, Designated Monitors, nor CDFW shall be liable for any costs incurred in complying with the terms and conditions of the ITP, including cease-work orders issued by CDFW.	ITP Condition #6.3	During Covered Activities	Permittee	
15	The Designated Biologist shall maintain a construction-monitoring notebook on-site throughout the construction period, which shall include a copy of this ITP with attachments and a list of signatures of all personnel who have successfully completed the education program. Permittee shall ensure a copy of the construction-monitoring notebook is available for review at the Project site upon request by CDFW.	ITP Condition #6.5	During Covered Activities	Permittee	
16	Permittee shall initiate a trash abatement program before starting Covered Activities and shall continue the program for the duration of the Project. Permittee shall ensure that trash and food items are contained in animal-proof	ITP Condition #6.6	During Covered Activities	Permittee	

	Minimization/Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	containers and removed at least once a week to avoid attracting opportunistic native wildlife searching for easy food such as bears, deer, and birds, and avoid non-native animals entering into habitat areas and attracting opportunistic predators such as ravens, coyotes, and feral dogs.				
17	Permittee shall prohibit use of erosion control materials potentially harmful to native species, such as monofilament netting (erosion control matting) or similar material, in potential Covered Species' habitat.	ITP Condition #6.8	During Covered Activities	Permittee	
18	Permittee shall clearly delineate habitat of the Covered Species within the Project Area with posted signs, posting stakes, flags, and/or rope or cord, and place fencing as necessary to minimize the disturbance of Covered Species' habitat.	ITP Condition #6.10	During Covered Activities	Permittee	
19	Project-related personnel shall access the Project Area using existing routes, or routes identified in the Project Description, and shall not cross Covered Species' habitat outside of or en route to the Project Area. Permittee shall restrict Project-related vehicle traffic to established roads, staging, and parking areas. Permittee shall ensure that vehicle speeds do not exceed 20 miles per hour to avoid vehicle collision with any animal(s) within the Project Area or traversing the roads. If Permittee determines construction of routes for travel is necessary outside of the Project Area, the Designated Representative shall contact CDFW for written approval before carrying out such an activity. CDFW may require an amendment to this ITP if additional take of Covered Species will occur as a result of the Project modification.	ITP Condition #6.11	During Covered Activities	Permittee	
20	Permittee shall confine all Project-related parking, storage areas, laydown sites, equipment storage, and any other surface-disturbing activities to the Project Area using, to the	ITP Condition #6.12	During Covered Activities	Permittee	

	Minimization/Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	extent possible, previously disturbed areas. Additionally, Permittee shall not use or cross Covered Species' habitat outside of the marked Project Area unless provided for as described in Condition of Approval 6.11 (Project Access) of this ITP.				
21	Permittee shall immediately stop and, pursuant to pertinent state and federal statutes and regulations, arrange for repair and clean up by qualified individuals of any fuel or hazardous waste leaks or spills at the time of occurrence, or as soon as it is safe to do so. Permittee shall exclude the storage and handling of hazardous materials from the Project Area and shall properly contain and dispose of any unused or leftover hazardous products off-site.	ITP Condition #6.13	During Covered Activities	Permittee	
22	Permittee shall provide CDFW staff with reasonable access to the Project and shall otherwise fully cooperate with CDFW efforts to verify compliance with or effectiveness of mitigation measures set forth in this ITP.	ITP Condition #6.14	During Covered Activities	Permittee	
23	The Designated Representative shall immediately notify CDFW in writing if it determines that the Permittee is not in compliance with any Condition of Approval of this ITP, including but not limited to any actual or anticipated failure to implement measures within the time periods indicated in this ITP and/or the Mitigation Monitoring and Reporting Plan (MMRP). The Designated Representative shall report any non-compliance with this ITP to CDFW within 24 hours.	ITP Condition #7.2	During Covered Activities	Permittee	
24	The Designated Biologist shall be on-site daily when Covered Activities occur. The Designated Biologist shall conduct compliance inspections to (1) minimize incidental take of the Covered Species; (2) prevent unlawful take of species; (3) check for compliance with all measures of this ITP; (4) check all exclusion zones; (5) ensure that signs, stakes, ESA fencing and other fencing are intact and that Covered Activities are only occurring in the Project Area. The Designated Representative or Designated Biologist	ITP Condition #7.3	During Covered Activities	Permittee	

	Minimization/Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	shall prepare daily written observation and inspection records summarizing: oversight activities and compliance inspections, observations of Covered Species, survey results, and monitoring activities required by this ITP. The Designated Biologist or Designated Monitors shall conduct compliance inspections a minimum of once per week during periods of inactivity and after clearing, grubbing, and grading are completed.				
25	The Designated Representative or Designated Biologist shall compile the observation and inspection records identified in Condition of Approval 7.3 (Compliance Monitoring) into a Monthly Compliance Report and submit it to CDFW along with a copy of the MMRP table with notes showing the current implementation status of each mitigation measure. Monthly Compliance Reports shall be submitted to CDFW's Regional Office at the office listed in the Notices section of this ITP and via e-mail to CDFW's Regional Representative. At the time of this ITP's approval, the CDFW Regional Representative is Ms. Jamie Jackson, Senior Environmental Scientist Specialist at: jamie.jackson@wildlife.ca.gov (or designated Caltrans Liaison). CDFW may at any time increase the timing and number of compliance inspections and reports required under this provision depending upon the results of previous compliance inspections. If CDFW determines the reporting schedule must be changed, CDFW will notify Permittee in writing of the new reporting schedule.	ITP Condition #7.4	During Covered Activities	Permittee, CDFW	
26	Permittee shall provide CDFW with an Annual Status Report (ASR) no later than January 31 of every year beginning with issuance of this ITP and continuing until CDFW accepts the Final Mitigation Report identified below. Each ASR shall include, at a minimum: (1) a summary of all Monthly Compliance Reports for that year identified in Condition of Approval 7.4 (Monthly Compliance Report); (2)	ITP Condition #7.5	During Covered Activities	Permittee	

	Minimization/Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	a general description of the status of the Project Area and Covered Activities, including actual or projected completion dates, if known; (3) a copy of the table in the MMRP with notes showing the current implementation status of each mitigation measure; (4) an assessment of the effectiveness of each completed or partially completed mitigation measure in avoiding, minimizing and mitigating Project impacts; (5) all available information about Project-related incidental take of the Covered Species; (6) an accounting of the number of acres subject to both temporary and permanent disturbance, both for the prior calendar year, and a total since ITP issuance; and (7) information about other Project impacts on the Covered Species.				
27	The Designated Biologist shall submit all observations of Covered Species to CDFW's California Natural Diversity Database (CNDDB) within 60 calendar days of the observation, and the Designated Biologist shall include copies of the submitted forms with the next Monthly Compliance Report or ASR, whichever is submitted first relative to the observation.	ITP Condition #7.6	During Covered Activities	Permittee	
28	Permittee shall immediately notify the Designated Biologist if a Covered Species is taken by a Project-related activity within the vicinity of the Project. The Designated Biologist or Designated Representative shall provide initial notification to CDFW by calling the Regional Office at (858) 467-4201. The initial notification to CDFW shall include information regarding the location and number of Covered Species and the ITP Number. Following initial notification, Permittee shall send CDFW a written report within two calendar days. The report shall include the date and time of the finding or incident, location of the Covered Species and if possible provide a photograph, explanation as to cause of take, and any other pertinent information.	ITP Condition #7.8	During Covered Activities	Permittee	

	Minimization/Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
29	Permittee shall minimize the area to be disturbed whenever vegetation must be cleared or access roads need to be repaired. The need to minimize the area disturbed and the limits of the work area shall be clearly explained to all contractors and equipment operators by Permittee inspectors, the Designated Representative, the Designated Biologist, or Designated Monitor.	ITP Condition #8.5	During Covered Activities	Permittee	
30	If any Covered Species are found in the Project footprint during construction, all work that could potentially harm the Covered Species shall stop immediately. Permittee shall immediately contact CDFW regarding the sighting to determine if relocation of the Covered Species is required before work may recommence. All Covered Species sightings confirmed by the Designated Biologist shall include the following documented information: the date, time, and location of each occurrence using Global Positioning System (GPS), the name of the party that identified the Covered Species, circumstances of the incident, the general condition and health of each individual and actions undertaken. Permittee shall submit this information to the CNDDB.	ITP Condition #8.6	During Covered Activities	Permittee	
POST COVERED ACTIVITIES					
31	No later than 45 days after completion of the Project, Permittee shall provide CDFW with a Final Mitigation Report including all mitigation measures. The Designated Biologist shall prepare the Final Mitigation Report which shall include, at a minimum: (1) a summary of all Monthly Compliance Reports and all ASRs; (2) a copy of the table in the MMRP with notes showing when each of the mitigation measures was implemented; (3) all available information about Project-related incidental take of the Covered Species; (4) information about other Project impacts on the Covered Species; (5) beginning and ending	ITP Condition #6.15	After Covered Activities Completed	Permittee	

	Minimization/Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	dates of Covered Activities; (6) an assessment of the effectiveness of this ITP's Conditions of Approval in minimizing and fully mitigating Project impacts of the taking on Covered Species; (7) recommendations on how mitigation measures might be changed to more effectively minimize take and mitigate the impacts of future projects on the Covered Species; and (8) any other pertinent information.				
32	Permittee shall create and restore a minimum of 0.26-acre of Covered Species habitat that will be maintained as optimal habitat for the Covered Species. Within 6 months of issuance of this ITP, Permittee shall prepare a Final Vegetation Restoration Plan (a Draft has already been approved by CDFW) to facilitate revegetation of the 0.26-acre and shall ensure that the Plan is successfully implemented by the contractor. The Plan shall include all previously agreed to detailed specifications for restoring all temporarily disturbed areas, such as seed mixes and application methods. The plan shall also include all previously agreed upon measures that indicate the best time of year for seeding to occur. Plantings undertaken between May and October shall include regular watering to ensure adequate growth. Described below are the minimum avoidance, minimization, restoration measures, and success criteria that must be included in the Final Vegetation Restoration Plan. The Draft HMMP has already been approved by the Department in writing prior to any Project related disturbances at the Project site. Described below are the minimum avoidance, minimization, restoration measures and success criteria that must be included in the Final HMMP. • The Covered Species Habitat Restoration (HR) site	ITP Condition #9.7	After Covered Activities Completed	Permittee	

	Minimization/Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	shall include no more than 5% non-native percent cover in any vegetation layer (tree, shrub, and herbaceous) in any year. • The HMMP shall contain measurements of species diversity, abundance, cover, etc., to ensure the heath of the habitat is at least as healthy as that of an identified, healthy, reference site. This data shall be collected for each vegetation layer (tree, shrub, and herbaceous) every year. • The HMMP shall contain a detailed plan to monitor the success of the Covered Species HR lands, including the use of a reference site and scientifically accepted sampling methodology for assessing success.				

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

IN REPLY REFER TO:
08EVEN00-2013-F-0174

September 9, 2013

Paul Andreano, Associate Environmental Planner/Biologist
Environmental Stewardship Branch
California Department of Transportation
50 Higuera Street
San Luis Obispo, California 93401-5415

Subject: Biological Opinion for the Gaviota Curve Realignment, Santa Barbara County, California (8-8-13-F-18)

Dear Mr. Andreano:

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion on the effects of the California Department of Transportation's (Caltrans) proposed Gaviota curve realignment project on the federally threatened California red-legged frog (*Rana draytonii*) and its critical habitat, and the federally endangered Gaviota tarplant (*Deinandra increscens* subsp. *villosa*) and its critical habitat. This biological opinion is issued in accordance with section 7 of the Endangered Species Act of 1973, as amended (Act) (16 U.S.C. 1531 et seq.). We received initial contact from you regarding the subject project in a letter dated February 28, 2013. Your letter requesting initiation of formal consultation, dated April 30, 2013, was received by our office on April 30, 2013. The subject project will be funded by the Federal Highway Administration (FHWA) and entails the County of Santa Barbara Public Works Department's (County) realignment of the northbound curve of U.S. Highway 101 (US-101) at Gaviota east of Gaviota Creek in Santa Barbara County. Caltrans has assumed FHWA's responsibilities under the Act for this action in accordance with Section 1313, Surface Transportation Project Delivery Program, of the Moving Ahead for Progress in the 21st Century Act (MAP-21) of 2012, as described in the National Environmental Policy Act (NEPA) assignment Memorandum of Understanding between FHWA and Caltrans (effective October 1, 2012) and codified in 23 U.S.C. 327.

This biological opinion was prepared using information in your April 30, 2013, request for initiation of consultation as well as information that accompanied your February 28, 2013, letter, including the biological assessment (BA) (Caltrans 2013), the natural environmental study (NES) (Caltrans 2012), the supplemental information Caltrans provided for the BA (P. Andreano, Caltrans, in litt. 2013a), additional information provided by Caltrans via electronic mail (e-mail) and telephone communications, and information in our files. A complete record of this consultation can be made available at the Ventura Fish and Wildlife Office.

CONSULTATION HISTORY

On March 4, 2013, we received a letter from Caltrans dated February 28, 2013, which included the BA and NES for the Gaviota curve realignment project. In your February 28, 2013, letter, you provided Caltrans' effects determinations for the California red-legged frog and its critical habitat and Gaviota tarplant and its critical habitat in relation to the proposed project activities. During a telephone conversation between Mark Elvin of my staff and you on April 10, 2013, Mr. Elvin requested additional information and clarifications regarding the proposed project description and your effects determinations. On April 30, 2013, you sent us a letter titled "Supplemental Information for Gaviota Curve Realignment Project Biological Assessment" (Andreano, in litt. 2013a) and on July 1, 2013, you sent us a memorandum modifying your previous effects determination for the least Bell's vireo (Andreano, in litt. 2013b). The outcome of all of the above-described communications was Caltrans making and providing us with the following final effects determinations: Gaviota tarplant - may affect, likely to adversely affect; Gaviota tarplant critical habitat - may affect, likely to adversely affect; California red-legged frog - may affect, likely to adversely affect; and California red-legged frog critical habitat - may affect, likely to adversely affect. Caltrans also determined that the proposed project may affect, but is not likely to adversely affect, the endangered tidewater goby (*Eucyclogobius newberryi*) and least Bell's vireo (*Vireo bellii pusillus*). The tidewater goby occurs nearby in Gaviota Creek, which is adjacent to, but outside of the area of direct impact. Caltrans has proposed to implement measures to avoid adverse effects to the tidewater goby, including: delineating and avoiding riparian areas; implementing erosion and sedimentation control measures; and staging, fueling and servicing project equipment at least 50 feet from riparian or wetland areas (Andreano, in litt. 2013a, b, c). Therefore, we concur with your determination that the proposed project may affect, but is not likely to adversely affect, the tidewater goby.

Least Bell's vireos have not been observed within the lower reaches of Gaviota Creek. Caltrans proposes to conduct focused surveys for the least Bell's vireo following Service guidelines wherever suitable habitat is present within 500 feet of the limits of construction. Surveys will be conducted within 1 year prior to the on-set of construction activities, and will be conducted yearly for the duration of construction activities associated with this project. If any least Bell's vireos are detected during these surveys, Caltrans will reinitiate consultation with the Service (Andreano, in litt. 2013a, b, c). Therefore, we concur with your determination that the proposed project may affect, but is not likely to adversely affect, the least Bell's vireo.

In your February 28, 2013, letter, you noted that Caltrans determined that the proposed project meets the eligibility criteria outlined in our May 4, 2011, Programmatic Biological Opinion for Projects Funded or Approved under the Federal Highway Administration's Federal Aid Program (8-8-10-F-58). We concur with this determination. Therefore, the California red-legged frog and its designated critical habitat will not be discussed further in this document.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

Caltrans proposes safety improvements along US-101, from 0.7 mile north of Beckstead Overcrossing to 0.9 mile south of Gaviota Tunnel in Santa Barbara County (Figure 1) (Caltrans 2013). Caltrans proposes to realign an existing curve on northbound US-101 to an adjacent 45.4-acre area. The northbound travel-way is currently a compound curve. A compound curve consists of two separate curve segments with decreasing radii. Caltrans proposes to cut the hillside back to realign the existing northbound compound curve with a single radius curve and widen the inside and outside shoulders along the northbound travel-way, adjust the vertical profile along the northbound approach, modify culverts, and remove a portion of the median barriers.

Curve Realignment
The proposed alignment would require excavation of a new cut slope roughly parallel to the existing cut slope and recessed 75 feet to the northeast from the apex of the curve. The proposed cut slope would reflect similar slope ratios to the existing cut slope.

Shoulder Widening
Both the inside and outside northbound shoulders would be widened and paved. Existing outside shoulders along the northbound lanes would be widened from 8 feet to 10 feet. The existing inside shoulders vary from 0 to 7 feet wide and would be widened to 10 to 12 feet.

Vertical Profile Modification
Vertical height of the northbound lane prior to the curve would be modified to meet current design standards for sight distance.

Median Barrier
A new concrete median barrier would replace the existing concrete median barrier to accommodate the proposed median width and grade. The concrete median barrier would also be adjusted to the immediate north of the Gaviota State Park at-grade intersection. The purpose of this modification is to accommodate larger vehicle turning movements from Gaviota State Park to northbound SR-101.

Culvert Modification
Drainage would be addressed by collecting the project's runoff to roadside ditches, into drainage inlets and ultimately into existing and/or newly constructed culverts that outlet on the west side of US-101. Drainage inlets would be upgraded and flare ends on outlets would be placed where applicable. The project proposes to place rock slope protection, within the Caltrans right-of-way (ROW), at locations where scouring occurs.

Soil Removal, Storage, and Transport
Caltrans estimates approximately 200,000 cubic yards of material would be excavated as a result

of the proposed project. Approximately 4,000 cubic yards of excavated material would be deposited in the new roadway. The balance of the excavated material would be transported to a location or locations that are unknown at this time. The contract would be written such that once excavated, the excavated material becomes the property of the contractor; it would be up to the contractor to decide how to dispose of it and where. Attachment 2 provides a plan sheet that delineates where the bulk of the excavated material would be removed (dark shaded area northeast of highway).

At this time, there is no information as to the exact locations of where excavated materials would be stockpiled and disposed of, or of the hauling schedule, as that would be determined by the contractor. The disposal locations would likely include one or more of these options that are in relatively close proximity to the proposed project: landfill (e.g., Tajiguas), quarry (e.g., Bee Rock), and other project site(s) that require fill material (i.e., another nearby Caltrans project). Caltrans provides guidance as to how the contractor may handle and dispose of soils in Section 19 of the Caltrans Standard Specifications (Caltrans 2010).

Figure 1. Project Vicinity Map (Caltrans 2013)

Equipment Used, Project Duration, and Phasing of Construction Operations
Work crews would use various types of heavy equipment as necessary to complete the proposed project. Project-related construction activities are currently scheduled to begin on August 1, 2017, and to continue through August 1, 2018. Table 1 displays a preliminary estimate of working days for construction activities. Details pertaining to the exact timing of the construction operations are not available at this time, as Caltrans Design typically does not develop construction schedules, the awarded contractor does. The contractor would be subject to the allotted working days provided by Caltrans Design (Table 1) and will develop a schedule within that total working day constraint.

Table 1. Approximate Number of Work Days per Construction Operation

Construction Operation	**Approximate number of work days**
Clearing and grubbing	30
Existing feature removal	30
Excavation of embankments construction	230
Structural section construction	40
Drainage feature construction	30
Approximate total number of working days	360

Caltrans proposes to incorporate the following avoidance and minimization measures into the proposed project to minimize effects to Gaviota tarplant and its critical habitat:

Gaviota tarplant specific avoidance and minimization measures, regardless of pre-construction survey findings for occupancy of Gaviota tarplant individuals:

1. A qualified botanist (approved by Service and the California Department of Fish and Wildlife (CDFW) to work with Gaviota tarplant) will oversee flagging of the perimeter of all approved work areas in Gaviota tarplant critical habitat prior to ground disturbance.
2. Prior to construction, a qualified biologist will conduct a training session for all construction personnel. At a minimum, the training will include a description of Gaviota tarplant and its habitat, the location of critical habitat within the project area (see Figure 2), the specific measures that are being implemented to conserve Gaviota tarplant, and the boundaries of proposed areas of disturbance.
3. Preconstruction surveys will be conducted within the Biological Study Area (BSA) during each blooming period to reassess the current distribution of Gaviota tarplant.
4. Prior to ground disturbance, to preserve the seed bank in the soil and the nutrient rich duff/topsoil, the top 2 inches of the soil in the general area supporting Gaviota tarplant will be collected for redistribution at the restoration/replacement site. When heavy equipment is used, the qualified biologist will monitor the activity. The soil collection area will be delineated in the field during the blooming period prior to ground

disturbance. Collection of the duff/topsoil at the restoration/replacement site and reapplication will occur as soon as possible.

5. Following excavations and other types of temporary ground disturbance in Gaviota tarplant critical habitat, regardless of the presence of Gaviota tarplant, the soil profile will be rebuilt using salvaged and stockpiled materials, replacing them on site, in reverse order as described below:
   a. Layers beneath the final seedbank layer will be well compacted.
   b. The seedbank layer should be more loosely compacted by spreading it dry or with minimal water. Tracking, rather than spraying, will be used to pack the seedbank layer into place. Soil stabilization should follow immediately.
   c. Replacement of seedbank and topsoil stockpiles will be monitored by a biologist approved by Service and CDFW for work with Gaviota tarplant.
   d. Following ground disturbance and seedbank replacement in Gaviota tarplant critical habitat, a compost blanket will be applied to disturbed soil areas that are at a 2:1 slope or flatter. Hydroseeding will be applied to exposed soil utilizing a native seed mix that will not outcompete Gaviota tarplant.

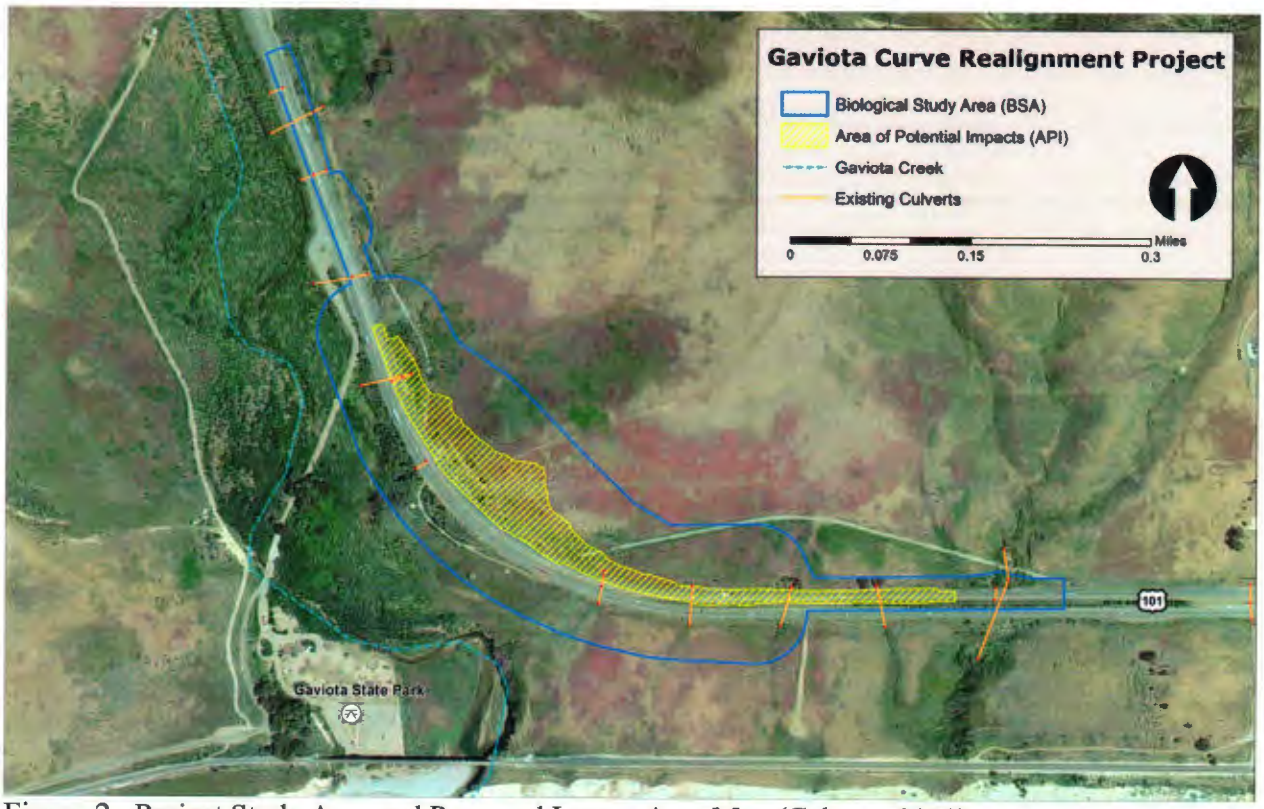


Figure 2. Project Study Area and Proposed Impact Area Map (Caltrans 2013)

In addition to the measures outlined above, Caltrans proposes to incorporate the following avoidance and minimization measures for Gaviota tarplant, should pre-construction surveys determine that it is growing within the area of proposed project impacts:

6. Where construction may impact occupied habitat during the growing season (between the first rain and the middle of September), standing and/or drying plants that still have ripening seed during the late fall of the year preceding construction will be collected by a Service and CDFW approved biologist. Plants will be collected by hand. The collected material will be dried immediately and stored dry to preserve the seeds. The salvaged plant material will be spread on restored habitat prior to final soil stabilization.
7. Employ the following "triple-lift topsoil salvage" procedures to conserve the soil profile and soil seed bank. All topsoil handling in occupied Gaviota tarplant habitat will be monitored by a qualified biologist approved by Service and CDFW to work with Gaviota tarplant.
   a. Clear all woody vegetation and stockpile separately in a location where it will be out of the way during construction.
   b. Scrape a 3- to 6-inch lift of soil from the area of Gaviota tarplant habitat where soil will be excavated. Stockpile this seedbank layer in a location where it will be out of the way during construction. Clearly mark the seedbank stockpile for identification and avoidance.
   c. Scrape off a second 6- to 8-inch lift of the sandy soil horizon (shallower if bedrock or other soil type is encountered, such as clay). Stockpile this topsoil lift in a location where it will not be disturbed during construction, and clearly mark it for identification and avoidance.
   d. Keep stockpiled seedbank dry and protected from wind erosion and disturbance per the measures for topsoil conservation throughout construction and until it will be replaced on the restored sites. Water should be sprayed on the stockpiles to crust the soil and reduce loss to wind erosion, but the spray should not be heavy enough to soak into the pile (to avoid soaking seeds and triggering seed germination).
   e. Salvaged seedbank that is being eroded by the wind may be stabilized by spraying with an organic soil binder used for hydroseeding.
   f. No irrigation or watering of Gaviota tarplant in the restoration/ replacement area is proposed.
8. The Gaviota tarplant restoration/replacement area will be delineated on the project plans and in the field with environmentally sensitive area (ESA) fencing, markers, or equivalent. The location will remain a conservation area within the Caltrans ROW permanently marked with ESA paddles and maintained in perpetuity.
9. The success goal will be 1:1 replacement of Gaviota tarplant. In order to ensure success, monitoring will occur annually for 3 years during the appropriate blooming period for Gaviota tarplant (typically July to September) to assess the vigor of the population and to determine if weeding and/or replacement are required. Annual monitoring reports will be prepared to evaluate whether success goals are being met and to propose adaptive management methods, if necessary.

In addition to the measures outlined above, Caltrans proposes to incorporate the following additional avoidance and minimization measures, which should help minimize adverse effects to Gaviota tarplant critical habitat, Gaviota tarplant, and other sensitive species that may be affected by the proposed project:

10. Annual habitat mapping of valley needlegrass grassland will continue within the project area until construction activities begin, to provide the most accurate distribution of valley needlegrass grassland with a greater than 10 percent cover of purple needlegrass within the project limits.
11. On slopes that are 2:1 or flatter, as delineated on contract documents, purple needlegrass plants will be removed before or during project activities, and subsequently replanted in appropriate soils within the project area.
12. Duff layers from impacted purple needlegrass will be stockpiled on site, as delineated on contract documents, and redistributed within the project area following construction.
13. Affected purple needlegrass habitat will be replaced onsite at a minimum ratio of 1:1 (in terms of area) using salvaged plants collected from the project site and a hydroseed mixture containing purple needlegrass seed with a 1- year plant establishment period.
14. Hydroseeding will be accompanied by application of native purple needlegrass straw containing purple needlegrass seed.
15. Follow up weed management will occur for 1 year following project completion within the project area to lessen long-term impacts to native perennial grassland.
16. During construction, the biological monitor(s) will ensure that the spread or introduction of invasive exotic plant species will be avoided to the maximum extent possible.
17. Only clean fill will be used. When practicable, invasive exotic plants within the project site will be removed and properly disposed. All vegetation removed from the construction site will be taken to a certified landfill to prevent the spread of invasive species. If soil from weedy areas must be removed off-site, the top 6 inches containing the seed layer in areas with weedy species will be disposed of at a certified landfill. Care will be taken to avoid including any species that occurs on the California Invasive Plant Council Invasive Plant Inventory in the Caltrans erosion control seed mix or landscaping plans for the project.
18. Construction equipment will be certified as "weed-free" by the biological monitor(s) before entering the construction site. If necessary, wash stations onsite will be established for construction equipment under the guidance of the biological monitor(s) in order to avoid/minimize the spread of invasive plants and/or seed within the construction area.
19. During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.
20. Prior to the onset of work, Caltrans will ensure that a plan is in place for prompt and effective response to any accidental spills. All workers will be informed of the importance of preventing spills and of the appropriate measures to implement should a spill occur.
21. Plants used in re-vegetation will consist of native riparian, wetland, and upland vegetation suitable for the area. Locally collected plant materials will be used to the extent practicable. Invasive, exotic plants will be controlled to the maximum extent practicable. This measure will be implemented in all areas disturbed by activities associated with the project, unless Caltrans and Service determine that it is not feasible or practical.

22. Habitat contours will be returned to their original configuration at the end of the project activities. This measure will be implemented in all areas disturbed by activities associated with the project, unless Caltrans and the Service determine that it is not feasible or modification of original contours would benefit the California red-legged frog.
23. The number of access routes, size of staging areas, and the total area of activity will be limited to the minimum necessary to achieve the project goals. ESAs will be delineated to confine access routes and construction areas to the minimum area necessary to complete construction, and minimize the impact to California red-legged frog habitat; this goal includes locating access routes and construction areas outside of aquatic habitat and riparian areas to the maximum extent practicable.
24. To control sedimentation during and after project implementation, Caltrans will implement Best Management Practices (BMPs). If BMPs are ineffective, Caltrans will attempt to remedy the situation immediately, in consultation with the Service.
25. Prior to ground breaking, a qualified biologist will conduct an environmental education and training session for all construction personnel.
26. Project employees will be directed to exercise caution when driving within the project area. A 20-mile per hour speed limit will be strongly encouraged within the project site. Cross-country travel by vehicles will be prohibited outside of the proposed areas of disturbance, unless authorized by CDFW. Project employees will be provided with written guidance governing vehicle use, speed limits on unpaved roads, fire prevention, and other hazards. Construction activity will be confined within the project site, which may include temporary access roads and staging areas specifically designated and marked for these purposes.
27. A litter control program will be instituted within the BSA.
28. All grindings and asphaltic-concrete waste will be stored within previously disturbed areas absent of habitat and at a minimum of 150 feet from any culvert, wash, pond, vernal pool, or stream crossing.
29. Restoration and revegetation work associated with temporary impacts will be done using California endemic plants appropriate for the location. To the maximum extent practicable, topsoil will be removed, cached, and returned to the site according to successful restoration protocols. Loss of soil from run-off or erosion will be prevented with straw bales, straw wattles, or similar means provided they do not entangle or block escape or dispersal routes of American badger.
30. The project construction area will be delineated with high visibility temporary fencing, flagging, or other barrier to prevent encroachment of construction personnel and equipment onto any sensitive areas during project work activities. Such fencing will be inspected and maintained daily until completion of the project and will be removed only when all construction equipment is removed from the site. No project activities will occur outside the delineated project area.

ANALYTICAL FRAMEWORK FOR THE JEOPARDY AND ADVERSE MODIFICATION DETERMINATIONS

Jeopardy Determination

The jeopardy analysis in this biological opinion relies on four components: (1) the *Status of the Species*, which describes the range-wide condition of Gaviota tarplant, the factors responsible for that condition, and its survival and recovery needs; (2) the *Environmental Baseline*, which analyzes the condition of Gaviota tarplant in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of Gaviota tarplant; (3) the *Effects of the Action*, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on Gaviota tarplant; and (4) the *Cumulative Effects*, which evaluates the effects of future, non-Federal activities in the action area on Gaviota tarplant.

In accordance with policy and regulation, the jeopardy determination is made by evaluating the effects of the proposed Federal action in the context of the current status of Gaviota tarplant, taking into account any cumulative effects, to determine if implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both the survival and recovery of Gaviota tarplant in the wild.

Adverse Modification Determination

This biological opinion does not rely on the regulatory definition of "destruction or adverse modification" of critical habitat at 50 CFR 402.02. Instead, we have relied on the statutory provisions of the Act to complete the following analysis with respect to critical habitat.

In accordance with policy and regulation, the adverse modification analysis in this biological opinion relies on four components: (1) the *Status of Critical Habitat*, which describes the range-wide condition of designated critical habitat for Gaviota tarplant in terms of primary constituent elements (PCEs), the factors responsible for that condition, and the intended recovery function of the critical habitat overall; (2) the *Environmental Baseline*, which analyzes the condition of the critical habitat in the action area, the factors responsible for that condition, and the recovery role of the critical habitat in the action area; (3) the *Effects of the Action*, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated and interdependent activities on the PCEs and how that will influence the recovery role of the affected critical habitat units; and (4) *Cumulative Effects*, which evaluates the effects of future non-Federal activities in the action area on the PCEs and how that will influence the recovery role of affected critical habitat units.

For purposes of the adverse modification determination, the effects of the proposed Federal action on the critical habitat of Gaviota tarplant are evaluated in the context of the range-wide condition of the critical habitat, taking into account any cumulative effects, to determine if the critical habitat range-wide would remain functional (or continue to allow the PCEs to be functionally established in areas of currently unsuitable but capable habitat) to serve its intended recovery role for Gaviota tarplant.

STATUS OF THE SPECIES

Gaviota Tarplant

Gaviota tarplant was federally listed as endangered on March 20, 2000 (65 FR 14888). We designated critical habitat for Gaviota tarplant on November 7, 2002 (Service 2002). The subspecies is also listed by the State of California as endangered.

Gaviota tarplant germinates in response to substantial rainfall. Seedlings have been observed as early as January (URS 1988). Plants grow through the spring and peak flowering ranges from late May to late July, depending on climatic conditions. By late summer or fall, most plants have died although a few continue to flower and produce seed (All American Pipeline Company (AAPC) 1992). Nearly all plants generally die by mid-October, but some can survive and flower until January.

Gaviota tarplant is associated with grasslands comprised of native needlegrass (*Nassella* spp.), nonnative wild oats (*Avena* spp.), ripgut brome (*Bromus diandrus*), and other herbs and grasses. The grasslands intergrade with coastal sage scrub composed of California sagebrush (*Artemisia californica*), coyote brush (*Baccharis pilularis*), sawtooth golden bush (*Hazardia squarrosa*), and California buckwheat (*Eriogonum fasciculatum*) (Service 2011, California Natural Diversity Database (CNDDB) 2013). Gaviota tarplant is found on sandy soils associated with marine terraces and uplifted marine sediments and ranges in elevation from 40 feet along the lowest terraces to 1,500 feet (Hendrickson et al.1998, CNDDB 2013, Wilken 1998, Service 2011, University of California Riverside Herbarium 2013). At the higher elevations (above 700 feet), the taxon occurs in grasslands (CNDDB 2013, Wilken 1998).

As is typical of annual plant species, the number of individuals present above-ground from one year to the next varies dramatically and most likely depends on climatic conditions such as amount and timing of rainfall, and temperature regimes during critical stages of germination and seedling growth. In some years, patches may contain few to no individuals, but a seed bank likely persists in the soil (Howald 1989).

Threats to Gaviota tarplant include destruction of individual plants, habitat loss and degradation from the development and decommissioning of oil and gas facilities and pipelines, incompatible fire management practices, residential and commercial development, and competition with nonnative weeds (Service 2000). Within the last few years, several aggressive nonnative plants, veldt grass (*Ehrharta calycina*), harding grass (*Phalaris aquaticus*), and *Eucalyptus* spp. have invaded the Gaviota coast and pose a serious threat to Gaviota tarplant and the remaining coastal prairie habitat (Meyer, pers. comm. 2001; Service 2011).

Generally, Gaviota tarplant appears to have few predators. Grazing and browsing animals such as horses, cattle, and deer avoid the strong smelling, resinous plants when feeding. Some predation on immature fruit (usually disk achenes) by small black flower beetles has been noted in wild populations (AAPC 1995).

The presence of Gaviota tarplant has been observed to have a positive correlation to some types of soil disturbance, which may increase seed coat permeability through abrasion. Light disturbance during the dry season such as occasional foot, livestock, or vehicular traffic is thought to enhance tarplant growth. Its presence along footpaths, livestock trails, and roadsides is thought to demonstrate this species' correlation with disturbance (URS 1988; AAPC 1990). More intense disturbance, however, such as excavation of the soil profile, may temporarily enhance germination but is more likely to stimulate growth of competitive nonnative species. Disturbance when the soil is wet is likely to kill tarplant seeds as well as young seedlings (AAPC 1995).

At the time the taxon was first described in 1982, Gaviota tarplant was known only from marine terraces in the immediate vicinity of Gaviota with plants only known to occur up to several kilometers in either direction along the immediate coast (Tanowitz 1982). Then between 2000 and 2002, Gaviota tarplant was reported at several new locations ranging westward from Gaviota along the coast, in the Santa Ynez Mountains, and at Point Arguello (CNDDB 2013). After Gaviota tarplant was reported from these new locations, it was then considered to occur along the coast west to Point Conception and north along the coast to Point Sal, as well as in two areas in the mountains of the western Transverse Ranges: in the Santa Ynez Mountains and the Tranquillion Mountain/Sudden Peak areas. Currently, it is recognized as having a highly localized distribution in western Santa Barbara County, California with seven main populations: Lion's Head (near Point Sal), Point Arguello, Tranquillion Mountain/Sudden Peak, Point Conception, Hollister Ranch, Santa Ynez Mountains, and Gaviota (CCH 2013; CNDDB 2013; Baldwin 2007, 2009, 2012; Elvin, in litt. 2007, 2010a, 2010b; Service 2011). Populations may also occur in undocumented locations.

We have not developed a recovery plan for Gaviota tarplant to which we can refer to assess its recovery status. In the absence of a recovery plan, we default to the general conservation of the species. For a species like Gaviota tarplant that has threats throughout its range, recovery would necessitate the conservation of much of the remaining habitat that supports the species. In addition, conducting actions to reduce or remove threats to the species and restoration of suitable habitat that has been disturbed but otherwise remains undeveloped would be a priority. Lastly, efforts to establish the species in unoccupied but otherwise suitable habitat would contribute to its recovery.

Critical Habitat for Gaviota Tarplant

We designated approximately 9,709 acres as critical habitat for Gaviota tarplant on November 7, 2002 (Service 2002). The areas designated as critical habitat are in three units, located in the Santa Ynez Mountains and along the Gaviota Coast, and include the appropriate soils and associated grassland and coastal sage scrub plant communities (primary constituent elements) that support Gaviota tarplant. All of the critical habitat units are occupied by the subspecies as well as intervening suitable habitat that provides space for population expansion, formation of new colonies, and shifts in population location which may occur over decades as habitat suitability changes due to geomorphic or other events (e.g., slope failure, wildfire). In addition,

the three units contain habitat needed to support the ecological associates (e.g., pollinators, seed dispersal agents, mycorhizzal fungi) that maintain extant populations of Gaviota tarplant, and the primary constituent elements of its critical habitat.

The primary constituent elements of critical habitat for Gaviota tarplant are:

1. Sandy soils associated with coastal terraces adjacent to the coast or uplifted marine sediments at interior sites up to 3.5 miles inland from the coast; and

2. Plant communities that support associated species, including needlegrass grassland and coastal sage scrub communities, particularly where the following associated species are found: needlegrass species, California sagebrush, coyote bush, sawtooth golden bush, and California buckwheat.

ENVIRONMENTAL BASELINE

The implementing regulations for section 7(a)(2) of the Act define the "action area" as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 *Code of Federal Regulations* 402.02). For the purposes of this biological opinion, we consider the action area to include all areas within biological study area, as described in the Description of the Proposed Action section of this biological opinion and the biological assessment (Caltrans 2013), as well as any staging areas for equipment or material and areas where restoration efforts will be undertaken and any adjacent areas (i.e., downwind, downstream) that may be affected by project activities or byproducts (i.e., noise, dust, erosion).

Gaviota Tarplant

No Gaviota tarplant individuals were found within the BSA during field surveys, but they were identified just outside the proposed project area (Caltrans 2012, 2013; CCH 2013; CNDDB 2013). Caltrans identified one small colony of Gaviota tarplant (3 plants) on August 17, 2012, approximately125 feet south of the BSA near its eastern edge. The plants were flowering at that time (Caltrans 2013). Suitable habitat (consisting of appropriate soils or vegetation) occurs within the action area. Gaviota tarplant seeds may occur within the proposed project area as part of the seedbank of the Gaviota population of Gaviota tarplant.

We have not developed a recovery plan for Gaviota tarplant to which we can refer to assess its recovery status. In the absence of a recovery plan, we default to the general conservation of the species. For a species like Gaviota tarplant that has threats throughout its range, recovery would necessitate the conservation of much of the remaining habitat that supports the species. In addition, conducting actions to reduce or remove threats to the species and restoration of suitable habitat that has been disturbed but otherwise remains undeveloped would be a priority. Lastly, efforts to establish the species in unoccupied but otherwise suitable habitat would contribute to its recovery.

Critical Habitat for Gaviota Tarplant

The proposed action would occur within the Conception-Gaviota Unit of designated critical habitat. This unit consists of a 23-mile-long stretch of habitat along the coast from Point Conception, east to Gaviota, and encompasses 7,848 acres. This unit is comprised primarily of privately owned lands (99 percent), and also includes State lands at Gaviota State Park (1 percent). This unit is particularly important because it supports most of the known populations of Gaviota tarplant that occur along the immediate coast. This includes the Point Conception, Hollister Ranch, and Gaviota populations. The Gaviota population was once extensive but is currently in decline. The Conception-Gaviota Unit contains the following features that are essential for the conservation of the species: (1) sandy soils associated with coastal terraces adjacent to the coast or uplifted marine sediments at interior sites up to 3.5 miles inland from the coast; and (2) plant communities that support associated species, including needlegrass grassland and coastal sage scrub communities, particularly where the following associated species are found: needlegrass species, California sagebrush, coyote bush, sawtooth golden bush, and California buckwheat. Approximately 4.74 acres of Gaviota tarplant critical habitat occur within the BSA for the proposed project and an undetermined acreage that is within the action area, but outside of the BSA. The area within the BSA represents approximately 0.0691 percent (by area) of the Conception-Gaviota Unit and approximately 0.0558 percent of the total critical habitat throughout the range of the species.

EFFECTS OF THE ACTION

This proposed action would affect all Gaviota tarplant (individuals and seeds) and all Gaviota tarplant critical habitat within the construction area. Because Caltrans proposes to implement protective measures and because some of the effects are temporary in nature, we anticipate that few, if any, Gaviota tarplant are likely to be killed or injured during project implementation. However, Gaviota tarplant that may not be detected during the initial pre-construction surveys may be killed or injured during project implementation.

Gaviota Tarplant

The proposed project activities would result in the permanent loss of 1.72 acres of Gaviota tarplant habitat and an unknown number of Gaviota tarplant seeds that may be a part of this population's seed bank. An additional 3.03 acres of suitable habitat would be temporarily affected during the course of the project (Caltrans 2012). Caltrans (2012) stated that permanent impacts would primarily consist of new pavement and shoulders proposed along the northbound lane, and temporary impacts would primarily consist of cut/fill limits on the steep slopes above the northbound lane (Caltrans 2012). Temporary habitat disturbance could result from project activities, access, and the use of staging areas. Indirect effects to Gaviota tarplant may occur in the form of altered surface hydrology, potentially resulting in increased erosion; an increase, decrease, or changes in the period and amounts of moisture content in the soil to which the subspecies has adapted; increases in the abundance of nonnative plants species as a result of the project activities; dust that could affect reproduction; and loss or change in the abundance of

pollinators. However, Caltrans proposes to minimize loss of soil from run-off or erosion with straw bales, straw wattles, or similar means.

Additionally, Caltrans proposes to offset adverse effects to Gaviota tarplant by conserving, enhancing, restoring, or creating approximately 8.19 acres of Gaviota tarplant habitat (Caltrans 2012). The precise locations of these areas have not been determined yet. Caltrans proposes to translocate soil from the area of permanent loss to another suitable site within the BSA. Caltrans expects to conduct habitat improvement (i.e., remove eucalyptus plants and other nonnative species) in proximity to the BSA within the Gaviota population of Gaviota tarplant (Caltrans 2013, Andreano, in litt. 2013c). The restoration and habitat improvement efforts may result in the loss of or injury to some Gaviota tarplant individuals, but would result in greater benefits to Gaviota tarplant overall.

Critical Habitat for Gaviota Tarplant

The entire action area is located within the 7,848-acre Conception-Gaviota critical habitat unit for Gaviota tarplant. The proposed action would result in the loss of 4.74 acres of habitat that support the primary constituent elements of critical habitat for Gaviota tarplant. This consists of 1.72 acres of permanent impacts and 3.03 acres of temporary impacts. This represents approximately 0.0691 percent (by area) of the Conception-Gaviota Unit and approximately 0.0558 percent of the total critical habitat throughout the range of the species. The proposed action also may affect Gaviota tarplant critical habitat through indirect effects that may occur in the form of altered surface hydrology, potentially resulting in increased erosion or drying of some areas; an increase, decrease, or changes in the period(s) and amount(s) of moisture content in the soil to which the subspecies has adapted; increases in the abundance of nonnative plants species as a result of the project activities; and loss or change in the abundance of pollinators that could cause the erosion of diversity. These effects could decrease the quality or quantity of Gaviota tarplant critical habitat.

Caltrans anticipates that CDFW will require a Section 2081 Incidental Take Permit for the State-listed Gaviota tarplant to complete this proposed project. It is expected that permit would require compensatory permanent habitat protection and perpetual management of up to 5.16 acres for permanent impacts to potential Gaviota tarplant habitat (a 3:1 compensatory mitigation ratio for 1.72 acres of permanent impacts) and up to 3.03 acres for temporary impacts to potential Gaviota tarplant habitat (a 1:1 compensatory mitigation ratio for 3.03 acres of temporary impacts), resulting in conservation and enhancement of a total of 8.19 acres of suitable Gaviota tarplant habitat within the Conception-Gaviota Unit. Restoration and enhancement activities may include cutting down, trimming, or digging up nonnative species such as *Eucalyptus* spp., *Cortaderia* spp., or *Pennisetum* spp. These activities may temporarily damage or degrade Gaviota tarplant habitat or primary constituent elements, but would result in overall beneficial effects to critical habitat such that the quality and quantity of critical habitat is greater after the restoration efforts than before.

The proposed action will not appreciably reduce the ability of the Conception-Gaviota critical

habitat unit to provide for the conservation of Gaviota tarplant because other suitable and occupied habitat for Gaviota tarplant occur nearby within the Unit and would be available during construction and following completion of the proposed action and there will be a net increase in the quality and quantity of suitable habitat in this critical habitat unit.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. We are unaware of any non-Federal actions that are reasonably certain to occur in the action area.

CONCLUSION

After reviewing the current status of Gaviota tarplant and its designated critical habitat, the environmental baseline for the action area, the effects of the proposed project, and the cumulative effects, it is the Service's biological opinion that Caltrans' proposal to realign the curve of US-101 at the mouth of Gaviota Creek is not likely to jeopardize the continued existence of Gaviota tarplant or destroy or adversely modify its designated critical habitat.

We have reached these conclusions because:

1. Most of the effects to habitat would be temporary in nature; therefore, we do not think the project is likely to substantially interfere with the species reproduction and distribution in the long term or appreciably reduce the ability of the habitat units to provide for the conservation of the species and the PCEs they require.

2. Few, if any, Gaviota tarplant are likely to be killed or injured during project activities; and Caltrans has proposed measures to reduce the adverse effects of the proposed work on Gaviota tarplant; therefore, we do not think the project is likely to substantially reduce the species' numbers throughout its range.

3. The proposed action will not appreciably reduce the conservation value of the Conception-Gaviota Unit for Gaviota tarplant because the area within which the PCEs would be permanently impacted is very small in relation to the conservation function of the critical habitat designation, the remaining impacts would be temporary, and the measures Caltrans proposes to offset the effects.

REPORTING REQUIREMENTS

Caltrans must provide a report to the Service within 120 days following the completion of the activities covered by this biological opinion. The report must document the number of Gaviota tarplant individuals killed or injured during the course of the project and the amount of Gaviota

tarplant critical habitat permanently lost and temporarily lost, a summary of which measures were employed to minimize effects and how effective they were, and any suggestions of how these measures could be changed to improve conservation of these species while facilitating compliance with the Act. This document will assist the Service in evaluating terms and conditions for conservation of Gaviota tarplant and its habitat during future projects.

The ongoing effects of the project on Gaviota tarplant and its critical habitat must be monitored and reported to the Service through annual reports for the duration of the project. These reports enable the Service to determine how much habitat has been temporarily and permanently affected by the covered actions and how many Gaviota tarplant individuals have been killed or injured.

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 programs 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. Caltrans should require qualified biologists to relocate any southwestern pond turtles (*Clemmys marmorata pallida*), coast range newts (*Taricha torosa*), two-striped garter snakes (*Thamnophis hammondii*) and any other reptiles or amphibians found within work areas to suitable habitat outside of the survey area, if such actions are in compliance with State laws.

2. Caltrans should work to remove nonnative plants from their right of ways, use native vegetation for revegetation and erosion control, eliminate the use of nonnative plants in revegetation and erosion control aspects of all of their projects, comply with Executive Order 13112 (as applicable) to prevent the introduction of invasive species (such as iceplant (*Carpobrotus* spp.), fountain grass (*Pennisetum setaceum*), feathertop grass (*Pennisetum villosum*), and eucalyptus (*Eucalyptus* spp.)).

3. Caltrans should work to reduce the effects of *Eucalyptus* spp. in the Gaviota coast region and at the Gaviota population of Gaviota tarplant. Several species of *Eucalyptus* are having serious adverse effects on this Gaviota tarplant population. Some of the *Eucalyptus* at issue grow on Caltrans ROWs or other properties owned by Caltrans. Caltrans has equipment and knowledge that can help remove this threat to this population of Gaviota tarplant. Additionally, we recommend Caltrans share information, techniques, or practices that they find to be helpful in these efforts with other stakeholders in their efforts to protect and conserve Gaviota tarplant at the Gaviota population and elsewhere throughout the range of the species.

4. Caltrans should continue involving the Service in long-range planning so their projects

are designed and implemented in a manner that meets the conservation needs of listed species and their critical habitat, as was done during this consultation.

The Service requests notification of the implementation of any conservation recommendations so we may be kept informed of actions that minimize or avoid adverse effects or that benefit listed species and their habitats.

REINITIATION NOTICE

This concludes formal consultation on your proposed funding and approval of the Gaviota curve realignment project in the Gaviota area, Santa Barbara County. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this biological opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this biological opinion; or (4) a new species is listed or critical habitat is designated that may be affected by the action. In instances where the amount of extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

If you have any questions regarding this biological opinion, please contact Mark A. Elvin of my staff at (805) 644-1766, extension 258.

Sincerely,

Stephen P. Henry
Acting Field Supervisor

Enclosure

REFERENCES CITED

[AAPC] All American Pipeline Company. 1990. Progress report, Gaviota tarplant mitigation plan. August 10, 1990. Submitted to Non-game Heritage Division, California Department of Fish and Game and Energy Division, Resource Management Department, Santa Barbara County. 30 pp.

[AAPC] All American Pipeline Company. 1992. Progress report for 1991, Gaviota tarplant mitigation plan. Submitted to Non-game Heritage Division, California Department of Fish and Game and Energy Division, Resource Management Department, Santa Barbara County. January 30, 1992. 25 pp.

[AAPC] All American Pipeline Company. 1995. Mitigation and management plan for Gaviota tarplant (*Hemizonia increscens* subsp. *villosa*). Report submitted to California Department of Fish and Game, Non-game Natural Heritage Division, Sacramento. 4 pp.

Baldwin, B.G. 2007. A systematic investigation of *Deinandra increscens*, with special reference to subsp. *villosa*. Final report on file at Ventura Fish and Wildlife Office. 19 pp. + appendices.

Baldwin, B.G. 2009. Morphological and molecular reconsideration of *Deinandra increscens* subsp. *villosa*. Final report on file at Ventura Fish and Wildlife Office. 18 pp. + appendices.

Baldwin, B.G. 2012. *Deinandra*. In: B.G. Baldwin, D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken (eds), The Jepson manual: Vascular plants of California, second edition. U.C. Press, Berkeley, California. Pp. 296-301.

[Caltrans] California Department of Transportation. 2010. Standard Specifications Manual. Retrieved May 13, 2013, from California Department of Transportation Web site: http://www.dot.ca.gov/hq/esc/oe/specifications/std_specs/2010_StdSpecs/2010_StdSpecs.pdf.

[Caltrans] California Department of Transportation. 2012. Gaviota curve realignment project natural environment study. Project number: 05-00020029/EA 05-0T630. San Luis Obispo, California. 77 pp. + appendices.

[Caltrans] California Department of Transportation. 2013. Gaviota curve realignment project biological assessment. Project number: 05-00020029/EA 05-0T630. San Luis Obispo, California. 82 pp.

California Natural Diversity Data Base. 2013. Rarefind: A database application for the California Department of Fish and Wildlife, Natural Heritage Division data, California Natural Diversity Data Base, Sacramento.

[CCH] Consortium of California Herbaria. 2013. Information regarding *Deinandra increscens* subsp. *villosa* from herbarium specimens deposited in the following herbaria: CAS, DS, JEPS, NY, POM, RSA, SBBG, SD, SDSU, UC, UCR, and UCSB. http://ucjeps.berkeley.edu/consortium/.

Hendrickson, B., W.R. Ferren Jr., and T. Klug. 1998. Botanical resources of the Hollister Ranch, Santa Barbara County, California. Prepared for Hollister Ranch Conservancy. Museum of Systematics and Ecology, Department of Ecology, Evolution, and Marine Biology, University of California Santa Barbara. Environmental report No. 10.

Howald, A. 1989. Report to the Fish and Game Commission on the status of Gaviota tarplant (*Hemizonia increscens* subsp. *villosa*). California Department of Fish and Game. Sacramento. 14 pp.

Tanowitz, B.D. 1982. Taxonomy of *Hemizonia* sect. Madiomeris (Asteraceae: Madiinae). Systematic Botany 7: 314-339.

[UCR] University of California Riverside Herbarium. 2013. Herbarium specimens of *Deinandra increscens* subsp. *villosa* [=*Hemizonia increscens* subsp. *villosa*].

[URS] URS Consultants. 1988. Management of the Gaviota tarweed, *Hemizonia increscens* subsp. *villosa*. Prepared for Chevron U.S.A., Inc. 19 pp.

[Service] U.S. Fish and Wildlife Service. 2000. Endangered and threatened wildlife and plants; final rule for endangered status for four plants from south central coastal California. Federal Register 65: 14888-14898.

[Service] U.S. Fish and Wildlife Service. 2002. Endangered and threatened wildlife and plants; designation of critical habitat for *Eriodictyon capitatum* (Lompoc yerba santa) and *Deinandra increscens* subsp. *villosa* (Gaviota tarplant). Federal Register 67: 67968-67990.

[Service] U.S. Fish and Wildlife Service. 2011. *Deinandra increscens* subsp. *villosa* (Gaviota tarplant) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Ventura, California. 34 pp.

Wilken, D. 1998. California native species field survey forms for *Deinandra increscens* subsp. *villosa*. Submitted to the Natural Diversity Data Base, California Department of Fish and Game. Dated August 18, 1998.

IN LITTERAS

Andreano, P. 2013a. Memorandum including supplemental information for Gaviota curve realignment project (Caltrans EA: 05-0T640; FWS File: 81440-2011-SLI-0302) biological assessment. April 30, 2013.

Andreano, P. 2013b. Memorandum regarding a change in the effects' determination for least Bell's vireo. Associate Environmental Planner/Biologist, SWCA Environmental Consultants, Representing Department of Transportation District 5, Central Coast Environmental Management Branch. California Department of Transportation. San Luis Obispo, California. July 1, 2013.

Andreano, P. 2013c. Electronic message regarding restoration and habitat improvement activities conducted as part of the project description. Associate Environmental Planner/Biologist, SWCA Environmental Consultants, Representing Department of Transportation District 5, Central Coast Environmental Management Branch. California Department of Transportation. San Luis Obispo, California. May 21, 2013.

Elvin, M.A. 2007. Unpublished data, field notes regarding Point Conception site visit with Dr. Bruce Baldwin of University of California, Berkeley, and Luanne Lum of Vandenberg Air Force Base. U.S. Fish and Wildlife Service, Ventura, California. July 23, 2007.

Elvin, M.A. 2010a. Unpublished data, field notes regarding Government Point site visit with Mary Meyer of California Department of Fish and Game, Jessica Peak of Padre and Associates, and Brian Dugas of Padre and Associates to examine *Deinandra increscens* subsp. *villosa*. U.S. Fish and Wildlife Service, Ventura, California. August 17, 2010.

Elvin, M.A. 2010b. Unpublished data, field notes regarding Vandenberg Air Force Base site visit with Luanne Lum of Vandenberg Air Force Base. U.S. Fish and Wildlife Service, Ventura, California. September 7, 2010.

PERSONAL COMMUNICATIONS

Meyer, M. 2001. Telephone conversation with Connie Rutherford, U.S. Fish and Wildlife Service. Gaviota tarplant. Plant Ecologist, California Department of Fish and Game. Ventura, California. April 30, 2001.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

IN REPLY REFER TO:
81440-2010-F-0382

May 4, 2011

Rich Krumholz, District Director
California Department of Transportation
50 Higuera Street
San Luis Obispo, California 93401-5415

Subject: Programmatic Biological Opinion for Projects Funded or Approved under the Federal Highway Administration's Federal Aid Program (8-8-10-F-58)

Dear Mr. Krumholz:

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion regarding projects funded under the Federal Highway Administration's (FHWA) Federal Aid Program that are likely to adversely affect the federally threatened California red-legged frog (*Rana draytonii*) and its designated critical habitat. This document also contains our programmatic concurrence for projects conducted under the Federal Aid Program that are not likely to adversely affect the California red-legged frog or its critical habitat. The development of this programmatic biological opinion and concurrence are the result of a collaborative effort between the California Department of Transportation (Caltrans) and the Service.

Pursuant to the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), the FHWA assigned and Caltrans assumed responsibilities for consultation and coordination with resource agencies for most projects within the state of California (FHWA 2007). The delegation of authority stipulates that correspondence regarding consultations be addressed to Caltrans, even if the FHWA initiated the consultation. Consequently, we have developed this biological opinion in accordance with this direction.

This biological opinion, which has been prepared in accordance with section 7(a)(2) of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act), evaluates the effects of certain activities, authorized by Caltrans, on the California red-legged frog and its critical habitat, within the Ventura Fish and Wildlife Office's area of responsibility in San Benito, Santa Cruz, Monterey, San Luis Obispo, and Santa Barbara, Counties, California. We believe that California red-legged frog populations in Ventura and Los Angeles Counties are so isolated from other California red-legged frog populations, that they do not meet the eligibility criteria described in the Description of the Proposed Action section of this biological opinion (Criterion 4.).

This biological opinion and programmatic concurrence were prepared primarily with information provided by the California Department of Transportation and information in our files. A complete record of this consultation can be made available upon on request.

CONSULTATION HISTORY

Since the listing of the California red-legged frog in 1996, the FHWA, in conjunction with Caltrans, consulted with the Service's Ventura Fish and Wildlife Office on numerous projects that the FHWA determined were likely to adversely affect the California red-legged frog. The FHWA, Caltrans, and the Service recognized that many of these projects resulted in minor effects to the California red-legged frog and its habitat. Additionally, many of the protective measures included in our previous biological opinions were very similar. Consequently, the Service, FHWA, and Caltrans determined that a programmatic approach to the consultation process was appropriate. Staff from the Service's Ventura Fish and Wildlife Office, FHWA, and Caltrans coordinated extensively during the preparation of a programmatic biological opinion we issued to FHWA in 2003 (Service 2003).

The Service designated critical habitat for the California red-legged frog, on March 17, 2010, (75 Federal Register (FR) 12816). The 2003 programmatic biological opinion does not address critical habitat for the California red-legged frog, so any biological opinion tiered from the 2003 programmatic and issued after critical habitat was designated must include a complete analysis of the effects of the proposed action on critical habitat for the California red-legged frog. Therefore, to further streamline the consultation process achieved with the 2003 programmatic, a complete analysis of the effects of the proposed actions on critical habitat for the California red-legged frog is included in this biological opinion.

Since 2003, we have issued 26 biological opinions that are tiered off of our programmatic biological opinion (Service 2003). Construction on 16 of those projects is complete and we have included additional information on those projects in the Environmental Baseline section of this biological opinion. Caltrans and the Service consider this biological opinion a reinitiation of formal consultation on the 14 projects that have not been completed, or where the proposed action would adversely affect critical habitat for the California red-legged frog.

Although we have strived to issue biological opinions tiered from the 2003 programmatic in a much shorter timeframe than required by Federal regulation (50 CFR 402), at times the large number of formal consultations to be completed has limited our ability to provide these documents within expedited timeframes. Therefore, Caltrans and the Service recognize that we could further streamline the 2003 programmatic by avoiding tiered biological opinions, resulting in a more efficient process.

ADMINISTRATION OF THE PROGRAMMATIC BIOLOGICAL OPINION

Caltrans will prepare all required environmental documents for individual projects that would be conducted pursuant to this biological opinion, including those needed to satisfy its

responsibilities under the Act, the National Environmental Policy Act, and the California Environmental Quality Act.

For all proposed actions that Caltrans determine are likely to adversely affect the California red-legged frog or its critical habitat, Caltrans will consider whether the action:

1. Meets the suitability criteria, as described in the Description of the Proposed Action section of this biological opinion; and

2. Whether the proposed activities and anticipated effects to California red-legged frogs fall within the scope of this biological opinion.

At least 90 days prior to conducting any activities that it determines are likely to adversely affect the California red-legged frog or its critical habitat, Caltrans will notify the Ventura Fish and Wildlife Office, in writing, of projects they propose to conduct under the auspices of this biological opinion. If the Service determines that use of this programmatic biological opinion is not appropriate for the proposed action, we will notify Caltrans in writing within 30 days, and the standard provisions for section 7 consultation will apply. The regulations which implement section 7 allow the Service up to 90 days to conclude formal consultation and an additional 45 days to prepare our biological opinion. If we require additional information to complete our biological opinion, we will describe our needs in our letter; if additional information is not required, we will consider consultation to have been initiated on the date we received the original notification of Caltrans' intent to conduct their proposed project pursuant to the programmatic consultation.

At a minimum, the following information will accompany Caltrans' project notification to the Service:

1. A 7.5-minute topographic map (and aerial photographs if possible) of the proposed project site, as well as photographs of the project site;

2. A written description of the activity, including, but not limited to, construction methods, time of year the work would occur, a habitat restoration plan, and a construction monitoring plan;

3. One cross-section and a minimum of one plan view indicating water bodies, vegetation types, work areas, roads (including temporary construction access roads), restoration sites, refueling and staging areas that will be located within the existing or proposed public right-of-way or temporary construction easements, and environmentally sensitive areas proposed to protect habitat of the California red-legged frog;

4. The names and credentials of biologists who will conduct surveys for, monitor, and handle California red-legged frogs will be provided to the Service 30 days prior to the start of construction. Once the Service approves a biologist, Caltrans would not need to

provide their credentials for subsequent projects conducted pursuant to this consultation; and

5. Information resulting from any site visits, surveys, or habitat assessments conducted for the proposed action.

By January 31 of each year this consultation is in effect, Caltrans will provide to the Service's Ventura Fish and Wildlife Office, a list of projects for which it used this consultation. Caltrans will provide sufficient information on the list to identify the projects that occurred in the previous year under the provisions of this biological opinion. The annual list will assist the Ventura Fish and Wildlife Office in ensuring that it has received the required Project Completion Reports that are described later in this document. Caltrans may also use the occasion of providing the list to recommend changes to the consultation that are more protective of the California red-legged frog and its habitat while simplifying compliance with the Act.

ADMINISTRATION OF THE PROGRAMMATIC INFORMAL CONSULTATION

For all proposed actions that Caltrans determines may affect, but are not likely to adversely affect, the California red-legged frog or its critical habitat, Caltrans will determine if the proposed action meets the suitability criteria for our programmatic concurrence, as described in the Description of the Proposed Action section of this biological opinion. If Caltrans determines the proposed action meets the suitability criteria for concurrence, it will notify our office in writing, at least 30 days prior to the start of construction. We will review Caltrans' notification and respond in in writing, or via electronic mail, if we have concerns or questions regarding the proposed action, or if we have any additional information that we believe may influence Caltrans' determination.

At a minimum the following information will accompany the notification:

1. Caltrans must include a rationale in its notification to us, as to how adverse effects to the California red-legged frog and its critical habitat will be avoided.

2. A 7.5-minute topographic map and aerial photographs of the project site, as well as photographs of the project site. The location of the project, any restoration sites, and all known locations of California red-legged frogs within 2 miles of the project site will be identified on the map and photographs;

3. A written description of the activity, including, but not limited to, construction methods, avoidance measures in addition to those required under this programmatic biological opinion, time of year the work would occur, habitat restoration plans, and construction monitoring plans;

4. One cross-section and a minimum of one plan view indicating water bodies, vegetation types, work areas, roads (including temporary construction access roads), restoration

sites, refueling and staging areas that will be located within the existing or proposed public right-of-way or temporary construction easements, and Environmentally Sensitive Areas proposed to protect habitat of the California red-legged frog; and

5. The results of information gathered by following the procedures in the Service's guidance for assessing habitat quality and field surveys for the California red-legged frog.

Staff from the Service's Ventura Fish and Wildlife Office will be available to provide technical assistance during all phases of consultation. Technical assistance can include assisting Caltrans with determinations of effects, development of project-specific designs and protective measures, modifications of survey protocols, and any other issues that may arise. Technical assistance may be transmitted by the Service in the form of telephone calls, electronic mail, or written correspondence.

BIOLOGICAL OPINION

ANALYTICAL FRAMEWORK FOR THE JEOPARDY AND ADVERSE MODIFICATION DETERMINATIONS

Jeopardy Determination

The jeopardy analysis in this biological opinion relies on four components: (1) the *Status of the Species*, which evaluates the range-wide condition of the California red-legged frog, the factors responsible for that condition, and the species' survival and recovery needs; (2) the *Environmental Baseline*, which evaluates the condition of the California red-legged frog in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the California red-legged frog; (3) the *Effects of the Action*, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on the California red-legged frog; and (4) the *Cumulative Effects*, which evaluates the effects of future, non-Federal activities in the action area on the California red-legged frog.

In accordance with policy and regulation, the jeopardy determination is made by evaluating the effects of the proposed federal action in the context of the current status of the California red-legged frog, taking into account any cumulative effects, to determine if implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both the survival and recovery of the California red-legged frog.

The jeopardy analysis in this biological opinion places an emphasis on consideration of the range-wide survival and recovery needs of the California red-legged frog and the role of the action area in the survival and recovery of the subspecies as the context for evaluation of the significance of the effects of the proposed federal action, taken together with cumulative effects, for purposes of making the jeopardy determination.

Adverse Modification Determination

This biological opinion does not rely on the regulatory definition of "destruction or adverse modification" of critical habitat at 50 CFR 402.02. Instead, we have relied on the statutory provisions of the ESA to complete the following analysis with respect to critical habitat.

In accordance with policy and regulation, the adverse modification analysis in this biological opinion relies on four components: (1) the *Status of Critical Habitat*, which evaluates the range-wide condition of designated critical habitat for the California red-legged frog in terms of primary constituent elements (PCEs), the factors responsible for that condition, and the intended recovery function of the critical habitat overall; (2) the *Environmental Baseline*, which evaluates the condition of the critical habitat in the action area, the factors responsible for that condition, and the recovery role of the critical habitat in the action area; (3) the *Effects of the Action*, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated and interdependent activities on the PCEs and how that will influence the recovery role of the affected critical habitat units; and (4) *Cumulative Effects*, which evaluates the effects of future non-Federal activities in the action area on the PCEs and how that will influence the recovery role of affected critical habitat units.

For purposes of the adverse modification determination, the effects of the proposed federal action on the critical habitat of the California red-legged frog are evaluated in the context of the range-wide condition of the critical habitat, taking into account any cumulative effects, to determine if the critical habitat range-wide would remain functional (or would retain the current ability for the PCEs to be functionally established in areas of currently unsuitable but capable habitat) to serve its intended recovery role for the California red-legged frog.

The analysis in this biological opinion places an emphasis on using the intended range-wide recovery function of critical habitat for the California red-legged frog and the role of the action area relative to that intended function as the context for evaluating the significance of the effects of the proposed Federal action, taken together with cumulative effects, for purposes of making the adverse modification determination.

DESCRIPTION OF THE PROPOSED ACTION

Eligibility Criteria for the Programmatic Biological Opinion

To make use of this programmatic biological opinion, the Caltrans must ensure that a proposed project satisfies the following criteria:

Criterion 1: Actions that would be appropriately considered in this biological opinion are likely to result in adverse effects to the California red-legged frog and its critical habitat, but would not affect the long-term viability of the population in the action area Caltrans and the Service have previously consulted on numerous projects that met these criteria. These projects include: retrofitting of bridges to reduce damage that may be caused by earthquakes; repair, widening,

and replacement of bridges; repair of stream bank protection; replacement of low-flow stream crossings with bridges; small-scale stabilization of stream slopes; minor improvement of drainage; replacement of culverts; rehabilitation of highway surfaces; and improvement of the safety and operation of highways.

Criterion 2: To qualify for use of this programmatic biological opinion, the measures to reduce or avoid adverse effects to the California red-legged frog and its critical habitat, provided herein, must be implemented; these measures may be modified on a project-specific basis upon the agreement of the Caltrans and the Service.

Criterion 3: The projects must be single and complete, and not part of larger actions or associated with other development projects including, but not limited to, housing subdivisions, commercial or industrial developments, or golf courses.

Criterion 4: The projects must not, in the Service's view, take place in areas where populations of California red-legged frogs are so isolated that even the small effects described in this biological opinion may have substantial impacts.

Minimization of Adverse Effects

Caltrans will ensure that projects implemented in accordance with this biological opinion will be designed to avoid or minimize adverse effects to the California red-legged frog and its critical habitat. At a minimum, the following measures will be incorporated into the projects:

1. Only Service-approved biologists will participate in activities associated with the capture, handling, and monitoring of California red-legged frogs. Biologists authorized under this biological opinion do not need to re-submit their qualifications for subsequent projects conducted pursuant to this biological opinion, unless we have revoked their approval at any time during the life of this biological opinion.

2. Ground disturbance will not begin until written approval is received from the Service that the biologist is qualified to conduct the work, unless the individual(s) has/have been approved previously and the Service has not revoked that approval.

3. A Service-approved biologist will survey the project site no more than 48 hours before the onset of work activities. If any life stage of the California red-legged frog is found and these individuals are likely to be killed or injured by work activities, the approved biologist will be allowed sufficient time to move them from the site before work begins. The Service-approved biologist will relocate the California red-legged frogs the shortest distance possible to a location that contains suitable habitat and that will not be affected by activities associated with the proposed project. The relocation site should be in the same drainage to the extent practicable. Caltrans will coordinate with the Service on the relocation site prior to the capture of any California red-legged frogs.

4. Before any activities begin on a project, a Service-approved biologist will conduct a training session for all construction personnel. At a minimum, the training will include a description of the California red-legged frog and its habitat, the specific measures that are being implemented to conserve the California red-legged frog for the current project, and the boundaries within which the project may be accomplished. Brochures, books, and briefings may be used in the training session, provided that a qualified person is on hand to answer any questions.

5. A Service-approved biologist will be present at the work site until all California red-legged frogs have been relocated out of harm's way, workers have been instructed, and disturbance of habitat has been completed. After this time, the State or local sponsoring agency will designate a person to monitor on-site compliance with all minimization measures. The Service-approved biologist will ensure that this monitor receives the training outlined in measure 4 above and in the identification of California red-legged frogs. If the monitor or the Service-approved biologist recommends that work be stopped because California red-legged frogs would be affected in a manner not anticipated by Caltrans and the Service during review of the proposed action, they will notify the resident engineer (the engineer that is directly overseeing and in command of construction activities) immediately. The resident engineer will either resolve the situation by eliminating the adverse effect immediately or require that all actions causing these effects be halted. If work is stopped, the Service will be notified as soon as possible.

6. During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

7. All refueling, maintenance, and staging of equipment and vehicles will occur at least 60 feet from riparian habitat or water bodies and in a location from where a spill would not drain directly toward aquatic habitat (e.g., on a slope that drains away from the water). The monitor will ensure contamination of habitat does not occur during such operations. Prior to the onset of work, Caltrans will ensure that a plan is in place for prompt and effective response to any accidental spills. All workers will be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur.

8. Habitat contours will be returned to their original configuration at the end of project activities. This measure will be implemented in all areas disturbed by activities associated with the project, unless the Service and Caltrans determine that it is not feasible or modification of original contours would benefit the California red-legged frog.

9. The number of access routes, size of staging areas, and the total area of the activity will be limited to the minimum necessary to achieve the project goals. Environmentally Sensitive Areas will be delineated to confine access routes and

construction areas to the minimum area necessary to complete construction, and minimize the impact to California red-legged frog habitat; this goal includes locating access routes and construction areas outside of wetlands and riparian areas to the maximum extent practicable.

10. Caltrans will attempt to schedule work activities for times of the year when impacts to the California red-legged frog would be minimal. For example, work that would affect large pools that may support breeding would be avoided, to the maximum degree practicable, during the breeding season (November through May). Isolated pools that are important to maintain California red-legged frogs through the driest portions of the year would be avoided, to the maximum degree practicable, during the late summer and early fall. Habitat assessments, surveys, and coordination between Caltrans and the Service during project planning will be used to assist in scheduling work activities to avoid sensitive habitats during key times of the year.

11. To control sedimentation during and after project implementation, Caltrans, and the sponsoring agency will implement best management practices outlined in any authorizations or permits issued under the authorities of the Clean Water Act that it receives for the specific project. If best management practices are ineffective, Caltrans will attempt to remedy the situation immediately, in coordination with the Service.

12. If a work site is to be temporarily dewatered by pumping, intakes will be completely screened with wire mesh not larger than 0.2 inch to prevent California red-legged frogs from entering the pump system. Water will be released or pumped downstream at an appropriate rate to maintain downstream flows during construction. Upon completion of construction activities, any diversions or barriers to flow will be removed in a manner that would allow flow to resume with the least disturbance to the substrate. Alteration of the stream bed will be minimized to the maximum extent possible; any imported material will be removed from the stream bed upon completion of the project.

13. Unless approved by the Service, water will not be impounded in a manner that may attract California red-legged frogs.

14. A Service-approved biologist will permanently remove any individuals of non-native species, such as bullfrogs (*Rana catesbeiana*), signal and red swamp crayfish (*Pacifasticus leniusculus; Procambarus clarkii*), and centrarchid fishes from the project area, to the maximum extent possible. The Service-approved biologist will be responsible for ensuring his or her activities are in compliance with the California Fish and Game Code.

15. If Caltrans demonstrates that disturbed areas have been restored to conditions that allow them to function as habitat for the California red-legged frog, these areas will not be included in the amount of total habitat permanently disturbed.

16. To ensure that diseases are not conveyed between work sites by the Service-approved biologist, the fieldwork code of practice developed by the Declining Amphibian Populations Task Force will be followed at all times. A copy of the code of practice is enclosed.

17. Project sites will be re-vegetated with an assemblage of native riparian, wetland, and upland vegetation suitable for the area. Locally collected plant materials will be used to the extent practicable. Invasive, exotic plants will be controlled to the maximum extent practicable. This measure will be implemented in all areas disturbed by activities associated with the project, unless the Service and Caltrans determine that it is not feasible or practical.

18. Caltrans will not use herbicides as the primary method used to control invasive, exotic plants. However, if Caltrans determines the use of herbicides is the only feasible method for controlling invasive plants at a specific project site, it will implement the following additional protective measures for the California red-legged frog:

    a. Caltrans will not use herbicides during the breeding season for the California red-legged frog;

    b. Caltrans will conduct surveys for the California red-legged frog immediately prior to the start of any herbicide use. If found, California red-legged frogs will be relocated to suitable habitat far enough from the project area that no direct contact with herbicides would occur;

    c. Giant reed and other invasive plants will be cut and hauled out by hand and the painted with glyphosate or glyphosate-based products, such as Aquamaster® or Rodeo®;

    d. Licensed and experienced Caltrans staff or a licensed and experienced contractor will use a hand-held sprayer for foliar application of Aquamaster® or Rodeo® where large monoculture stands occur at an individual project site;

    e. All precautions will be taken to ensure that no herbicide is applied to native vegetation.

    f. Herbicides will not be applied on or near open water surfaces (no closer than 60 feet from open water).

    g. Foliar applications of herbicide will not occur when wind speeds are in excess of 3 miles per hour.

    h. No herbicides will be applied within 24 hours of forecasted rain.

i. Application of all herbicides will be done by a qualified Caltrans staff or contractors to ensure that overspray is minimized, that all application is made in accordance with label recommendations, and with implementation of all required and reasonable safety measures. A safe dye will be added to the mixture to visually denote treated sites. Application of herbicides will be consistent with the U.S. Environmental Protection Agency's Office of Pesticide Programs, Endangered Species Protection Program county bulletins.

j. All herbicides, fuels, lubricants, and equipment will be stored, poured, or refilled at least 60 feet from riparian habitat or water bodies in a location where a spill would not drain directly toward aquatic habitat. Caltrans will ensure that contamination of habitat does not occur during such operations. Prior to the onset of work, Caltrans will ensure that a plan is in place for a prompt and effective response to accidental spills. All workers will be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur.

19. Upon completion of any project for which this programmatic consultation is used, Caltrans will ensure that a Project Completion Report is completed and provided to the Ventura Fish and Wildlife Office. A copy of the form is enclosed. Caltrans should include recommended modifications of the protective measures if alternative measures would facilitate compliance with the provisions of this consultation. In addition, Caltrans will reinitiate formal consultation in the event any of the following thresholds are reached as a result of projects conducted under the provisions of this consultation:

Caltrans will reinitiate consultation when, as a result of projects conducted under the provisions of this consultation:

a. 10 California red-legged frog adults or juveniles have been killed or injured in any given year. (For this and all other standards, an egg mass is considered to be one California red-legged frog.);

b. 50 California red-legged frogs have been killed or injured in total;

c. 20 acres of critical habitat for the California red-legged frog that include the primary constituent elements of aquatic breeding and non-breeding aquatic habitat and upland and dispersal habitat have been permanently lost in any given year;

d. 100 acres of critical habitat for the California red-legged frog that include the primary constituent elements of aquatic breeding and non-breeding aquatic habitat and upland and dispersal habitat have been permanently lost in total;

e. 100 acres of critical habitat for the California red-legged frog that include the primary constituent elements of aquatic breeding and non-breeding aquatic habitat and upland and dispersal habitat have been temporarily disturbed in any given year; or

f. 500 acres of critical habitat for the California red-legged frog that include the primary constituent elements of aquatic breeding and non-breeding aquatic habitat and upland and dispersal habitat have been temporarily disturbed in total.

Total acreages of dispersal habitat that may be adversely affected would be confined to the Caltrans or County rights-of-way that occur adjacent to roads, and would be linear in nature. Dispersal habitat for the California red-legged frog adjacent to roads and highways, within these rights-of-way, is generally less ecologically valuable to the California red-legged frog than larger blocks of habitat. Road corridors and associated disturbances may lead to reduced habitat quality resulting in decreased abundance or density of breeding individuals (Forman et al. 2003).

PROGRAMMATIC INFORMAL CONSULTATION

In addition to the numerous formal consultations we have conducted with Caltrans, we have also conducted many informal consultations and concurred that many of Caltrans' proposed projects are not likely to adversely affect the California red-legged frog or its critical habitat. Many of these projects are very similar to the type of projects we are considering in the subject formal consultation (e.g., bridge and culvert replacements). Because many of the avoidance measures associated with our previous concurrences are very similar, and we are often working on multiple concurrence letters simultaneously, Caltrans and the Service believe a programmatic approach to projects that are not likely to adversely affect the California red-legged frog or its critical habitat is appropriate.

Criteria for the Programmatic Concurrence

Projects that are not likely to adversely affect the California red-legged frog, or its critical habitat, must have only discountable, insignificant, or completely beneficial effects to the subspecies and its critical habitat. The Services (1998) defines the term discountable as extremely unlikely and unexpected; the term insignificant relates to the size of the impact (i.e., unable to meaningfully measure, detect, or evaluate). To make use of this programmatic informal consultation for actions that may affect, but are not likely to adversely affect the California red-legged frog or its critical habitat, Caltrans must demonstrate that the project satisfies the following criteria:

Criterion 1: California red-legged frogs are not known to occur at the proposed project site and were not found during surveys following the Guidelines for surveys and habitat assessments (Service 2007); however, the potential may exist for individuals to occur at the proposed project site because no barriers exist to preclude dispersal of California red-legged frog from nearby suitable habitat.

Criterion 2: Any effects to critical habitat must be discountable, insignificant, or completely beneficial to the California red-legged frog.

Criterion 3: The measures to avoid adverse effects to the California red-legged frog and its critical habitat, provided herein, must be implemented; these measures may be modified on a

project-specific basis to achieve avoidance of adverse effects upon the agreement of Caltrans and the Service.

Measures to Avoid Adverse Effects

For projects to qualify for the programmatic concurrence, at a minimum Caltrans will ensure that the following measures are implemented to avoid adverse effects to the California red-legged frog and its critical habitat:

1. A biologist with experience in the identification of all life stages of the California red-legged frog, and its critical habitat (75 FR 12816), will survey the project site no more than 48 hours before the onset of work activities. If any life stage of the California red-legged frog is detected the Service will be notified prior to the start of construction. If Caltrans and the Service determine that adverse effects to the California red-legged frog or its critical habitat cannot be avoided, the proposed project will not commence until the Caltrans completes the appropriate level of consultation with the Service.

2. Work activities will take place during the dry season, between April 1 and November 1, when water levels are typically are at their lowest, and California red-legged frogs are likely to be more detectable. Should activities need to be conducted outside of this period, Caltrans may conduct or authorize such activities after obtaining the Service's written approval.

3. Before work begins on any proposed project, a biologist with experience in the ecology of the California red-legged frog, as well as the identification of all its life stages, will conduct a training session for all construction personnel, which will include a description of the California red-legged frog, its critical habitat, and specific measures that are being implemented to avoid adverse effects to the subspecies during the proposed project.

4. If any life stage of the California red-legged frog is detected in the project area during construction, work will cease immediately and the resident engineer, authorized biologist, or biological monitor will notify the Ventura Fish and Wildlife Office via telephone or electronic mail. If Caltrans and the Service determine that adverse effects to California red-legged frogs cannot be avoided, construction activities will remain suspended until Caltrans and the Service complete the appropriate level of consultation.

5. During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

6. Prior to the onset of work, Caltrans will ensure that a plan is in place for prompt and effective response to any accidental spills. All workers will be informed of the importance of preventing spills and of the appropriate measures to implement should a spill occur.

7. All refueling, maintenance, and staging of equipment and vehicles will occur at least 60 feet from aquatic or riparian habitat and not in a location from where a spill would drain directly toward aquatic habitat. The monitor will ensure contamination of aquatic or riparian habitat does not occur during such operations by implementing the spill response plan described in measure 6.

8. Plants used in re-vegetation will consist of native riparian, wetland, and upland vegetation suitable for the area. Locally collected plant materials will be used to the extent practicable. Invasive, exotic plants will be controlled to the maximum extent practicable. This measure will be implemented in all areas disturbed by activities associated with the project, unless Caltrans and the Service determine that it is not feasible or practical.

9. Habitat contours will be returned to their original configuration at the end of project activities in all areas that have been temporarily disturbed by activities associated with the project, unless Caltrans and the Service determine that it is not feasible or modification of original contours would benefit the California red-legged frog.

10. The number of access routes, size of staging areas, and the total area of the activity will be limited to the minimum necessary to achieve the project goals. Environmentally Sensitive Areas will be delineated to confine access routes and construction areas to the minimum area necessary to complete construction, and minimize the impact to habitat for the California red-legged frog; this goal includes locating access routes and construction areas outside of aquatic habitat and riparian areas to the maximum extent practicable.

11. To control sedimentation during and after project implementation, Caltrans will implement best management practices outlined in any authorizations or permits, issued under the authorities of the Clean Water Act that it receives for the specific project. If best management practices are ineffective, Caltrans will attempt to remedy the situation immediately, in coordination with the Service.

12. If a work site is to be temporarily dewatered by pumping, the intake will be screened with wire mesh not larger than 0.2 inch to prevent any California red-legged frogs not initially detected from entering the pump system. If California red-legged frogs are detected during dewatering, and adverse effects to California red-legged frogs cannot be avoided, construction activities will remain suspended until Caltrans and the Service complete the appropriate level of consultation.

13. Upon completion of construction activities, any diversions or barriers to flow will be removed in a manner that would allow flow to resume with the least disturbance to the substrate. Alteration of the creek bed will be minimized to the maximum extent possible; any imported material will be removed from the stream bed upon completion of the project.

14. Unless approved by the Service, water will not be impounded in a manner that may attract California red-legged frogs.

15. A qualified biologist will permanently remove any individuals of exotic species, such as bullfrogs, crayfish, and centrarchid fishes from the project area, to the maximum extent possible. The biologist will be responsible for ensuring his or her activities are in compliance with the California Fish and Game Code.

16. To ensure that diseases are not conveyed between work sites by the Service-approved biologist, the enclosed fieldwork code of practice developed by the Declining Amphibian Populations Task Force will be followed at all times.

This concurrence is based on the proposed avoidance measures, as well as the other criteria that a specific project must meet to qualify for use of this informal consultation. This concurrence does not authorize capture, handling, or relocation of California red-legged frogs. If at any time Caltrans determines: 1) their proposed action is likely to adversely affect the California red-legged frog or its critical habitat; and 2) the proposed project meets criteria for the programmatic biological opinion, Caltrans should notify our office immediately. If Caltrans is able to adhere to the protective measures described previously in the programmatic biological opinion, the work may continue and Caltrans will notify the Service in writing that they are proceeding with the project under the programmatic biological opinion. If at any time Caltrans or the Service conclude that the proposed action does not meet the suitability criteria for the programmatic biological opinion, all work must cease until the appropriate level of consultation has been completed.

STATUS OF THE SPECIES/CRITICAL HABITAT

California red-legged frog

The California red-legged frog was federally listed as threatened on May 23, 1996 (61 FR 25813). The Service has published a recovery plan (Service 2002).

The historical range of the California red-legged frog extended coastally from southern Mendocino County and inland from the vicinity of Redding, California, southward to northwestern Baja California, Mexico (Jennings and Hayes 1985; Storer 1925). The California red-legged frog has been extirpated or nearly extirpated from 70 percent of its former range. Historically, this species was found throughout the Central Valley and Sierra Nevada foothills. Four additional occurrences have been recorded in the Sierra Nevada foothills since listing, bringing the total to five extant populations, compared to approximately 26 historical records (71 FR 19244). Currently, California red-legged frogs are only known from 3 disjunct regions in 26 California counties and 1 disjunct region in Baja California, Mexico (Grismer 2002; Fidenci 2004; R. Smith and D. Krofta, in litt. 2005).

California red-legged frogs have been found at elevations that range from sea level to about 5,000 feet. In the Sierra Nevada Mountains, California red-legged frogs typically occur below 4,000 feet and occurrences above this elevation are atypical for the subspecies (71 FR 19244).

The California red-legged frog uses a variety of habitat types, including various aquatic systems, riparian, and upland habitats. The diet of California red-legged frogs is highly variable. Hayes and Tennant (1985) found invertebrates to be the most common food item of adults. Vertebrates, such as Pacific chorus frogs (*Pseudacris regilla*) and California mice (*Peromyscus californicus*), represented over half of the prey mass eaten by larger frogs (Hayes and Tennant 1985). Feeding activity occurs along the shoreline and on the surface of the water. Hayes and Tennant (1985) found juveniles to be active diurnally and nocturnally, whereas adults were largely nocturnal.

California red-legged frogs breed from November through March; earlier breeding has been recorded in southern localities (Storer 1925). Males appear at breeding sites from 2 to 4 weeks before females (Storer 1925). Female California red-legged frogs deposit egg masses on emergent vegetation so that the masses float on the surface of the water (Hayes and Miyamoto 1984). Egg masses contain about 2,000 to 5,000 moderate-sized, dark reddish brown eggs (Storer 1925; Jennings and Hayes 1985). Eggs hatch in 6 to 14 days (Storer 1925). Larvae undergo metamorphosis 3.5 to 7 months after hatching (Storer 1925; Wright and Wright 1949). Sexual maturity can be attained at 2 years of age by males and 3 years of age by females (Jennings and Hayes 1985); adults may live 8 to 10 years (Jennings et al. 1992) although the average life span is considered to be much lower. The California red-legged frog is a relatively large aquatic frog ranging from 1.5 to 5 inches from the tip of the snout to the vent (Stebbins 1985).

California red-legged frogs breed in aquatic habitats. Larvae, juveniles and adults have been collected from streams, creeks, ponds, marshes, plunge pools and backwaters within streams, dune ponds, lagoons, and estuaries. California red-legged frogs frequently breed in artificial impoundments, such as stock ponds, if conditions are appropriate. Although California red-legged frogs successfully breed in streams and riparian systems, high spring flows and cold temperatures in streams often make these sites risky environments for eggs and tadpoles. The importance of riparian vegetation for this species is not well understood. When riparian vegetation is present, California red-legged frogs spend considerable time resting and feeding in it; the moisture and camouflage provided by the riparian plant community likely provide good foraging habitat and may facilitate dispersal in addition to providing pools and backwater aquatic areas for breeding.

Juvenile and adult California red-legged frogs may disperse long distances from breeding sites throughout the year. They can be encountered living within streams at distances exceeding 1.8 miles from the nearest breeding site, and have been found up to 400 feet from water in adjacent dense riparian vegetation (Bulger et. al 2003). During periods of wet weather, starting with the first rains of fall, some individuals may make overland excursions through upland habitats. Most of these overland movements occur at night. Bulger et al. (2003) found marked California red-legged frogs in Santa Cruz County making overland movements of up to 2 miles over the course

of a wet season. These individual frogs were observed to make long-distance movements that are straight-line, point to point migrations over variable upland terrain rather than using riparian corridors for movement between habitats. For the California red-legged frog, suitable habitat is potentially all aquatic and riparian areas within the range of the species and includes any landscape features that provide cover and moisture (61 FR 25813).

Habitat loss and alteration, combined with over-exploitation and introduction of exotic predators, were important factors in the decline of the California red-legged frog in the early to mid-1900s. Continuing threats to the California red-legged frog include direct habitat loss due to stream alteration and loss of aquatic habitat, indirect effects of expanding urbanization, competition or predation from non-native species including the bullfrog, catfish (*Ictalurus* spp.), bass (*Micropterus* spp.), mosquito fish (*Gambusia affinis*), red swamp crayfish, and signal crayfish. Chytrid fungus (*Batrachochytrium dendrobatidis*) is a waterborne fungus that can decimate amphibian populations, and is considered a threat to California red-legged frog populations.

Critical Habitat for the California Red-legged Frog

On March 17, 2010, the Service designated critical habitat for the California red-legged frog (75 FR 12816). In total, 1,636,609 million acres was designated as critical habitat for the California red-legged frog in 27 California counties. The current designation better reflects the lands containing those essential habitat features necessary for the conservation of the California red-legged frog than did earlier designations that had been subject to litigation. A detailed discussion of the methods used in developing proposed critical habitat can be found in the final rule (75 FR 12816).

We have identified the physical or biological features essential to the conservation of the species, the Primary Constituent Elements (PCEs), that may require special management considerations or protection. Because not all life-history functions require all the PCEs, not all areas designated as critical habitat will contain all the PCEs. Based on our current knowledge of the life-history, biology, and ecology of the California red-legged frog, we determined the California red-legged frog's PCEs to consist of: 1) aquatic breeding habitat; 2) aquatic non-breeding habitat; 3) upland habitat;, and 4) dispersal habitat. Detailed descriptions of these PCEs can be found in the final rule (75 FR 12816). The following is a brief summary of the PCEs:

1) Aquatic breeding habitat consists of standing bodies of fresh water (with salinities less than 4.5 part per thousand), including natural and manmade (stock) ponds, slow moving streams or pools within streams and other ephemeral or permanent water bodies that typically become inundated during winter rains and hold water for a minimum of 20 weeks in all but the driest of years.

2) Aquatic non-breeding habitat consists of the freshwater habitats as described for aquatic breeding habitat but which may or may not hold water long enough for the subspecies to complete the aquatic portion of its lifecycle but which provide for shelter, foraging,

predator avoidance, and aquatic dispersal habitat of juvenile and adult California red-legged frogs.

3) Upland habitat consists of upland areas adjacent to or surrounding breeding and non-breeding aquatic and riparian habitat up to a distance of one mile in most cases (i.e., depending on surrounding landscape and dispersal barriers) including various vegetation types such as grassland, woodland, forest, wetland, or riparian areas that provide shelter, forage, and predator avoidance for the California red-legged frog. Upland habitat should include structural features such as boulders, rocks and organic debris (e.g., downed trees, logs), small mammal burrows, or moist leaf litter.

4) Dispersal habitat consists of accessible upland or riparian habitat within and between occupied or previously occupied sites that are located within one mile of each other, and that support movement between such sites. Dispersal habitat includes various natural habitats, and altered habitats such as agricultural fields, that do not contain barriers (e.g., heavily traveled roads without bridges or culverts) to dispersal. Dispersal habitat does not include moderate- to high-density urban or industrial developments with large expanses of asphalt or concrete, nor does it include large lakes or reservoirs over 50 acres in size, or other areas that do not contain those features identified in PCE 1, 2, or 3 as essential to the conservation of the species.

ENVIRONMENTAL BASELINE

The implementing regulations for section 7(a)(2) of the Act define the "action area" as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02). For the purposes of this biological opinion, we consider the action area to include the areas within Santa Cruz, San Benito Monterey, San Luis Obispo, Santa Barbara Counties that support the California red-legged frog, or its critical habitat, and that have the potential to be affected directly or indirectly by federally-funded projects. Caltrans projects that would be appropriately conducted pursuant to this biological opinion would occur within the Caltrans or County rights-of-way. Based on the anticipated impacts of the 26 projects we have consulted on and the documented effects of the 15 projects that Caltrans has completed under our previous programmatic biological opinion (Service 2003), we are not aware of any indirect effects which extend beyond the Caltrans or County right-of-way. Therefore, we assume the area within the right-of-way of each of the projects conducted pursuant to this programmatic biological opinion will encompass the direct and indirect effects of the proposed action.

All or portions of the following three recovery units (as defined in the Recovery Plan for the California red-legged frog (Service 2002) are included in the action area:

The Central Coast Recovery Unit includes, generally, the coastal portions of Santa Cruz, Monterey, and San Luis Obispo Counties. This recovery unit supports the greatest number of drainages currently occupied by the California red-legged frog.

The Diablo Range and Salinas Valley Recovery Unit includes, generally, San Benito County and the inland portions of Santa Cruz, Monterey, and San Luis Obispo Counties. This recovery unit supports "no more than 10 percent of the historic localities (of the California red-legged frog) within the Salinas basin and inner Coast Ranges " (Service 2002). Santa Barbara County and portions of San Luis Obispo Counties are within the Northern Transverse Ranges and Tehachapi Mountains Recovery Unit. California red-legged frogs are patchily distributed in the interior portion of this recovery unit and occur in numerous coastal streams in Santa Barbara County.

From April 2003 through June 2010, we issued 26 biological opinions that were tiered off of our previous programmatic biological opinion with FHWA (Service 2003). Under those 26 biological opinions we authorized the incidental take of 34 California red-legged frogs in the form of injury or mortality. Five tiered biological opinions authorized the incidental take of two California red-legged frogs, one biological opinion authorized the incidental take of four California red-legged frogs, and 20 biological opinions authorized the incidental take of one California red-legged frog.

Based on the information contained in the requests for consultation, we calculated the amount of aquatic and upland habitats that we estimate will be permanently lost and temporarily disturbed when construction of these projects has been completed (Appendix 1).

Construction has been completed on 15 projects (Appendix 2) that were conducted under the programmatic biological opinion (Service 2003). No California red-legged frogs were injured or killed during construction of these 15 projects. Five of the Project Completion Reports for these 15 projects did not include the amount of wetland or upland habit impacts. Of the 10 other completed projects, none exceeded the reinitiation thresholds identified in our 2003 programmatic biological opinion (Service 2003).

Critical Habitat

Because our previous programmatic biological opinion (Service 2003) did not address critical habitat, the Project Completion Reports associated with that biological opinion do not include the amount of critical habitat affected by each completed project in terms of the PCEs. Instead, the Project Completion Reports require that the amount of wetland and riparian habitat temporarily and permanently affected by a project be reported. We interpret the amount of wetland habitat affected by a project to include either breeding, non-breeding habitat, or both, and the riparian habitat component to include upland habitat and/or dispersal habitat. The amount of critical habitat for the California red-legged frog that has been adversely affected as a result of the 15 completed projects consists of: 0.033-acre of aquatic habitat for the California red-legged frog that was permanently lost and 0.1-acre that was temporarily disturbed; 0.20-acre of upland habitat that were permanently lost and 0.12-acre that were temporarily disturbed.

Nineteen critical habitat units may be adversely affected by actions conducted pursuant to this biological opinion. These critical habitat units occur in Santa Cruz, San Benito, Monterey, San Luis Obispo, and Santa Barbara Counties. The physical and biological features important to the

conservation of the California red-legged frog are included in the following descriptions from the final rule 75(FR) 12816:

SCZ-1, North Coastal Santa Cruz County

This unit consists of approximately 72,249 acres of land and is located along the coastline of northern Santa Cruz County, plus a small area in southern San Mateo County, from approximately Green Oaks Creek to Wilder Creek. The unit includes the following watersheds: Green Oaks Creek, Waddell Creek, East Waddell Creek, Scott Creek, Big Creek, Little Creek, San Vicente Creek, Laguna Creek, and Majors Creek. The unit is mapped from occurrences recorded at the time of listing and subsequent to the time of listing and is currently occupied. SCZ-1 contains the features that are essential for the conservation of the species. The unit also contains aquatic habitat for breeding and non-breeding activities (PCE 1 and PCE 2), and upland habitat for foraging and dispersal activities (PCE 3 and PCE 4). SCZ-1 provides connectivity between occupied sites along the coast and farther inland. In addition, it contains high-quality habitat, indicated by high density of extant occurrences, permanent and ephemeral aquatic habitat suitable for breeding, and accessible upland areas for dispersal, shelter, and food. The unit represents one of two areas designated for critical habitat in Santa Cruz County and is the northern extent of the central coast recovery unit.

The physical and biological features essential to the conservation of California red-legged frog in the SCZ-1 unit may require special management considerations or protection due to water diversions, which may alter aquatic habitats and thereby result in the direct or indirect loss of egg masses, juveniles, or adults.

SCZ-2, Watsonville Slough

This unit consists of approximately 4,057 acres of land and is located along the coastal plain in southern Santa Cruz County, north of the mouth of the Pajaro River and seaward of California Highway 1. It includes locations in the Watsonville Slough system, including all or portions of Gallighan, Hanson, Harkins, Watsonville, Struve, and the West Branch of Struve sloughs. The unit includes portions of the Corralitos Lagoon and Mouth of the Pajaro River watersheds. The unit is mapped from occurrences recorded at the time of listing and subsequent to the time of listing. SCZ-2 contains the features that are essential for the conservation of the species. This unit is currently occupied, and contains permanent and ephemeral aquatic habitat for breeding and non-breeding activities (PCE 1 and PCE 2), and contains upland habitat for foraging, dispersal activities, and shelter (PCE 3 and PCE 4). SCZ-2 also provides connectivity between occupied sites along the coast and farther inland.

The physical and biological features essential to the conservation of California red-legged frog in the SCZ-2 unit may require special management considerations or protection due predation by nonnative species, and due to urbanization and the presence of introduced invasive plants, both of which may alter aquatic or upland habitats and thereby result in the direct or indirect loss of egg masses or adults.

MNT-1, Elkhorn Slough

This unit consists of approximately 519 acres of land and is located along the coastal plain in northern Monterey County, inland from the town of Moss Landing, and it is mapped from occurrences recorded at the time of listing and subsequent to the time of listing. This unit is currently occupied. The unit includes the eastern edge of the Elkhorn Slough watershed and the western edge of the Strawberry Canyon watershed. MNT-1 contains the features that are essential for the conservation of the species. This unit contains aquatic habitat for breeding and non-breeding activities (PCE 1 and PCE 2), and upland habitat for foraging and dispersal activities (PCE 3 and PCE 4). The designation of MNT-1 is expected to prevent further fragmentation of habitat in this portion of the species' range, contains permanent and ephemeral aquatic habitats suitable for breeding, and contains upland areas for dispersal, shelter, and food. We have determined that these attributes are essential to the conservation of the species. Elkhorn Slough is unique in that it is a large estuary/freshwater slough system not typically found on the California coast. The unit consists entirely of private land.

The physical and biological features essential to the conservation of California red-legged frog in the MNT-1 unit may require special management considerations or protection due to pesticide exposure, trematode infestation, disease, and predation by nonnative species, which may affect aquatic or upland habitats and thereby result in the direct or indirect loss of egg masses or adults.

MNT-2, Carmel River

This unit consists of approximately 119,492 acres of land, is located south and southeast of the city of Monterey, and includes locations in the Carmel River drainage and nearby San Jose Creek. The unit includes the following watersheds and portions of watersheds: the southern portion of Carmel Bay, Carmel Valley, Robinson Canyon, San Jose Creek, Las Garces Creek, Hitchcock Canyon, the western portion of Lower Tularcitos Creek, Klondike Canyon, Black Rock Creek, Pine Creek, Danish Creek, Cachagua Creek, Lower Finch Creek, Bear Canyon, Bruce Fork, and Miller Canyon. It is mapped from occurrences recorded at the time of listing and subsequent to the time of listing. MNT-2 contains the features that are essential for the conservation of the species. The unit is currently occupied and contains permanent and ephemeral aquatic habitat for breeding and non-breeding activities (PCE 1 and PCE 2), and upland habitat for foraging, dispersal activities, and shelter (PCE 3 and PCE 4). The unit is the largest designated within Monterey County.

The physical and biological features essential to the conservation of California red-legged frog in the MNT-2 unit may require special management considerations or protection due to predation by nonnative species, urbanization, and water pumping and diversions, which may alter aquatic or upland habitats and thereby result in the direct or indirect loss of egg masses or adults.

MNT-3, Big Sur Coast

This unit consists of approximately 27,542 acres of land; is located along the Big Sur coastline in Monterey County, approximately from the mouth of the Little Sur River south to McWay Canyon; and includes locations in and around the Big Sur River drainage. The unit includes the following watersheds: Point Sur, Big Sur River, Ventana Creek, Sycamore Canyon, and Partington Creek. This unit was not known to be occupied at the time of listing, but surveys conducted subsequent to the time of listing show that this unit is currently occupied. Based on life history and population dynamics of the species we have determined that the area was most likely occupied at the time of listing. MNT-3 is essential for the conservation of the species because it contains the largest coastal habitat within Monterey Bay region and provides for connectivity to more interior units further north. MNT-3 also contains permanent and ephemeral aquatic habitat for breeding and non-breeding activities (PCE 1 and PCE 2), and upland habitat for foraging, dispersal activities, and shelter (PCE 3 and PCE 4). MNT-3 is currently occupied by the species.

The physical and biological features essential to the conservation of California red-legged frog in the MNT-3 unit may require special management considerations or protection due to predation by non-native species, urbanization, and water pumping and diversions, which may alter aquatic or upland habitats and thereby result in the direct or indirect loss of egg masses or adults.

SNB-1, Hollister Hills/San Benito River

This unit consists of approximately 36,294 acres of land and is located in northwestern San Benito County in the San Benito River drainage. The unit includes the following watersheds and portions of watersheds: the southern portions of San Justo Reservoir, Northeast Hollister Hills, and Upper Bird Creek; Left Fork Bird Creek; Sulfur Canyon; and the western portions of Arroyo Hondo, Willow Grove School, Paicines Ranch, and Lower Pescadero Creek. It is mapped from occurrences recorded at the time of listing and subsequent to the time of listing near Saint Frances Retreat, San Juan Oaks, Azalea Canyon, Bird Creek, Hollister Hills State Vehicle Recreation Area, Paicines Reservoir, and Tres Pinos Creek. SNB-1 contains the features that are essential for the conservation of the species. The unit contains aquatic habitat for breeding and non-breeding activities (PCE 1 and PCE 2), and upland habitat for foraging and dispersal activities (PCE 3 and PCE 4). SNB-1 also provides essential connectivity between sites on the coast plain and inner Coast Range. SNB-1 is occupied by the species, is expected to prevent further fragmentation of habitat in this portion of the species' range, and contains permanent and ephemeral aquatic habitats suitable for breeding and accessible upland areas for dispersal, shelter, and food.

The physical and biological features essential to the conservation of California red-legged frog in the SNB-1 unit may require special management considerations or protection due to predation by nonnative species, and habitat disturbance, which may alter aquatic and upland habitats and thereby result in the direct or indirect loss of egg masses or adults.

SNB-2, Antelope Creek/Upper Tres Pinos Creek

This unit consists of approximately 17,356 acres of land and is located in central San Benito County along the Tres Pinos Creek drainage within the Antelope Creek watershed. This unit was not known to be occupied at the time of listing, but surveys conducted subsequent to the time of listing show that this unit is currently occupied, and based on life history and population dynamics of the species we have determined that the area was most likely occupied at the time of listing. It is mapped from occurrence records in and along Tres Pinos Creek between the confluences of Boulder and Willow Springs Creeks. SNB-2 is essential for the conservation of the species because it provides aquatic habitat for breeding and non-breeding activities (PCE 1 and PCE 2), and upland habitat for foraging and dispersal activities (PCE 3 and PCE 4). SNB-2 is occupied by the species, is expected to prevent fragmentation of habitat in this portion of the species' range, and contains permanent and ephemeral aquatic habitats suitable for breeding and accessible upland areas for dispersal, shelter, and food. The unit consists entirely of private land. The physical and biological features essential to the conservation of California red-legged frog in the SNB-2 unit may require special management considerations or protection due to predation by nonnative species, overgrazing and trampling of aquatic and upland habitat by feral pigs, and recreational activities, which may alter aquatic and upland habitats and thereby result in the direct or indirect loss of egg masses or adults.

SNB-3, Pinnacles National Monument

This unit consists of approximately 63,753 acres of land; is located in the Gabilan Range at Pinnacles National Monument, about 3.5 miles west of the town of San Benito in southern San Benito County; and is mapped from occurrences recorded at the time of listing and subsequent to the time of listing. The unit includes the following watersheds: Gloria Lake, Bickmore Canyon, Sulfur Creek, and George Hansen Canyon. SNB-3 contains the features that are essential for the conservation of the species. The unit contains aquatic habitat for breeding and non-breeding activities (PCE 1 and PCE 2), and upland habitat for foraging and dispersal activities (PCE 3 and PCE 4). SNB-3 is expected to prevent further fragmentation of habitat in this portion of the species' range; contains permanent and ephemeral aquatic habitat suitable for breeding; contains accessible upland areas for dispersal, shelter, and food; and is occupied by the species.

The physical and biological features essential to the conservation of California red-legged frog in the SNB-3 unit may require special management considerations or protection due to predation by nonnative species, overgrazing and trampling of aquatic and upland habitat by feral pigs, and recreational activities, which may alter aquatic and upland habitats and thereby result in the direct or indirect loss of egg masses or adults.

SLO-1, Cholame

This unit consists of approximately 18,018 acres of land; and is located in northeastern San Luis Obispo, northwestern Kern, and southwestern Kings Counties; includes locations in the Cholame Creek drainage; and is mapped from occurrences recorded at time of listing and subsequent to

the time of listing. The unit includes portions of the following watersheds: the southern portion of Blue Point, the western portion of Jack Canyon, and the eastern portion of Palo Prieto Canyon. SLO-1 contains the features that are essential for the conservation of the species. The unit contains aquatic habitat for breeding and non-breeding activities (PCE 1 and PCE 2), and upland habitat for foraging and dispersal activities (PCE 3 and PCE 4). SLO-1 contains permanent and ephemeral aquatic habitats suitable for breeding; contains accessible upland areas for dispersal, shelter, and food; and is occupied by the species.

The physical and biological features essential to the conservation of California red-legged frog in the SLO-1 unit may require special management considerations or protection due to highway construction, overgrazing, and water diversions, which may alter aquatic or upland habitats and thereby result in the direct or indirect loss of egg masses or adults.

SLO-2, Piedras Blancas to Cayucos Creek

This unit consists of approximately 82,673 acres of land and is located along the coast in northwestern San Luis Obispo County from approximately Arroyo de Los Chinos southward to just before but not including Whale Rock Reservoir. The unit includes the following watersheds: Arroyo de los Chinos, Lower Arroyo de la Cruz, Arroyo del Corral, Oak Knoll Creek, Broken Bridge Creek, Pico Creek, Upper San Simeon Creek, Lower San Simeon Creek, Steiner Creek, Upper Santa Rosa Creek, Lower Santa Rosa Creek, and Lower Green Valley Creek. The unit is mapped from occurrences recorded at the time of listing and subsequent to the time of listing. SLO-2 contains the features that are essential for the conservation of the species. The unit contains aquatic habitat for breeding and non-breeding activities (PCE 1 and PCE 2), and upland habitat for foraging and dispersal activities (PCE 3 and PCE 4). SLO-2 provides connectivity within the Santa Lucia Range, and between this range and the inner Coast Range in San Luis Obispo County. This unit is occupied by the species. The unit contains high-quality habitat, indicated by high density of extant occurrences, permanent and ephemeral aquatic habitats suitable for breeding, and accessible upland areas for dispersal, shelter, and food.

The physical and biological features essential to the conservation of California red-legged frog in the SLO-2 unit may require special management considerations or protection due to predation by nonnative species, water diversion, overgrazing, and urbanization, which may alter aquatic or upland habitats and thereby result in the direct or indirect loss of egg masses or adults due to habitat modification.

SLO-3, Willow and Toro Creeks to San Luis Obispo

This unit consists of approximately 116,517 acres of land and is located near the coast in central San Luis Obispo County and extends about 1.9 miles north of the town of Morro Bay southward to just north and east of the city of San Luis Obispo. The unit includes the following watersheds: Old Creek, Whale Rock Reservoir, the southern portion of Hale Creek, Morro Bay, San Luisito Creek, the western and southern portions of Santa Margarita Creek, Choro Reservoir, Stenner Lake, Reservoir Canyon, Trout Creek, and Big Falls Canyon. The unit is mapped from

occurrences recorded at the time of listing and subsequent to the time of listing. SLO-3 contains the features that are essential for the conservation of the species. The unit is currently occupied and contains permanent and ephemeral aquatic habitat for breeding and non-breeding activities (PCE 1 and PCE 2), and upland habitat for foraging, dispersal, and shelter (PCE 3 and PCE 4). SLO-3 provides connectivity within the Santa Lucia Range, and between this range and the inner Coast Range in San Luis Obispo County.

The physical and biological features essential to the conservation of California red-legged frog in the SLO-3 unit may require special management considerations or protection due to predation by nonnative species, water diversion, overgrazing, and urbanization, which may alter aquatic or upland habitats and thereby result in the direct or indirect loss of egg masses or adults due to habitat modification.

SLO-4, Upper Salinas River

This unit consists of approximately 34,463 acres of land, is located at the base of Garcia Mountain about 17 miles east of the City of San Luis Obispo, is mapped from occurrences recorded subsequent to the time of listing, and is currently occupied by the species. Based on the life history and population dynamics of the species we have determined that the area was most likely occupied at the time of listing. The unit includes the following watersheds: Horse Mesa, Douglas Canyon, American Canyon, and Coyote Hole. This unit is essential for the conservation of the species because it is the only unit in San Luis Obispo County entirely within the interior Coast Range and provides connectivity between populations in the coastal areas and populations farther inland. SLO-4 also contains permanent and ephemeral aquatic habitats consisting of natural and manmade ponds surrounded by emergent vegetation and marshland with upland dispersal habitat comprised of riparian areas for dispersal, shelter, and foraging.

The physical and biological features essential to the conservation of California red-legged frog in the SLO-4 unit may require special management considerations or protection due to predation by nonnative species, and due to water diversion, overgrazing, and urbanization, which may alter aquatic or upland habitats and thereby result in the direct or indirect loss of egg masses or adults due to habitat modification.

STB-1, La Brea Creek

This unit consists of approximately 25,164 acres of land, is located in Los Padres National Forest in northern Santa Barbara County, and is mapped from occurrences recorded at the time of listing and subsequent to the time of listing. The unit includes the following watersheds: Bear Canyon, the southern portion of Smith Canyon, Rattlesnake Canyon, Lower South Fork La Brea Creek, and the eastern portion of Lower La Brea Creek. STB-1 contains the features that are essential for the conservation of the species. The unit contains aquatic habitat for breeding and non-breeding activities (PCE 1 and PCE 2), and upland habitat for foraging and dispersal activities (PCE 3 and PCE 4).

The physical and biological features essential to the conservation of California red-legged frog in the STB-1 unit may require special management considerations or protection due to recreational activities, which may alter aquatic or upland habitats and thereby result in the direct or indirect loss of egg masses or adults.

STB-2, San Antonio Terrace

This unit consists of approximately 12,066 acres of land, is located in northwestern Santa Barbara County near the coast, extends from about Casmalia south to the Santa Lucia Canyon near the Purisima Hills, and is mapped from occurrences recorded subsequent to the time of listing. Based on the life history and population dynamics of the species we have determined that the area was most likely occupied at the time of listing. The unit includes the following watersheds: Graciosa Canyon and Lions Head. STB-2 provides connectivity between coastal populations and populations in the Transverse Ranges. STB-2 also contains aquatic habitat for breeding and non-breeding activities (PCE 1 and PCE 2), and upland habitat for foraging and dispersal activities (PCE 3 and PCE 4). This unit is currently occupied by the species.

The physical and biological features essential to the conservation of California red-legged frog in the STB-2 unit may require special management considerations or protection due to recreational activities, which may alter aquatic or upland habitats and thereby result in the direct or indirect loss of egg masses or adults.

STB-3, Sisquoc River

This unit consists of approximately 47,559 acres of land and is located in northern Santa Barbara County and includes locations in the Sisquoc River drainage and is mapped from occurrences recorded at the time of listing and subsequent to the time of listing. The unit contains the following watersheds: the southern portion of Tunnel Canyon, Burro Canyon, Sulphur Creek, Lower Manzano Creek, Middle Manzano Creek, Fir Canyon, Upper Cachuma Creek, and the northern portion of Happy Canyon. STB-3 contains the features that are essential for the conservation of the species. The unit contains aquatic habitat for breeding and non-breeding activities (PCE 1 and PCE 2), and upland habitat for foraging and dispersal activities (PCE 3 and PCE 4). STB-3 is occupied by the species, provides connectivity between locations along the coast and the Transverse Ranges, and is essential in stabilizing populations of the species in tributaries to the Santa Ynez River.

The physical and biological features essential to the conservation of California red-legged frog in the STB-3 unit may require special management considerations or protection due predation by nonnative species, recreational activities, and poor water management practices which may alter aquatic or upland habitats and thereby result in the direct or indirect loss of egg masses or adults.

STB-4, Jalama Creek

This unit consists of approximately 7,685 acres of land and is located along the coast in southwestern Santa Barbara County about 4.4 miles south of the City of Lompoc, and is mapped from occurrences recorded at the time of listing and subsequent to the time of listing. The unit includes the Casper Creek watershed. STB-4 contains the features that are essential for the conservation of the species. The unit includes aquatic habitat for breeding and non-breeding activities (PCE 1 and PCE 2), and upland habitat for foraging and dispersal activities (PCE 3 and PCE 4). STB-4 is occupied by the species and provides connectivity between locations along the coast and the Santa Ynez River watershed.

The physical and biological features essential to the conservation of California red-legged frog in the STB-4 unit may require special management considerations or protection due to predation by nonnative species and habitat disturbance, which may alter aquatic and upland habitats and thereby result in the direct or indirect loss of egg masses or adults.

STB-5, Gaviota Creek

This unit consists of approximately 12,888 acres of land, is located along the coast in southern Santa Barbara County about 3 miles southwest of the town of Buellton, and is mapped from occurrences recorded at the time of listing and subsequent to the time of listing. The unit includes the following watersheds: Cañada de las Cruces and Cañada de la Gavota. STB-5 contains the features that are essential for the conservation of the species. The unit contains aquatic habitat for breeding and non-breeding activities (PCE 1 and PCE 2), and upland habitat for shelter, foraging and dispersal activities (PCE 3 and PCE 4). STB-5 is occupied by the species and provides connectivity between locations along the coast and the Santa Ynez River watershed.

The physical and biological features essential to the conservation of California red-legged frog in the STB-5 unit may require special management considerations or protection due to predation by nonnative species and poor water management practices, which may alter aquatic or upland habitats and thereby result in the direct or indirect loss of egg masses or adults. Populations in this unit may also require special management or protection due to their potential importance in stabilizing California red-legged frog populations in tributaries to the Santa Ynez River.

STB-6, Arroyo Quemado to Refugio Creek

This unit consists of approximately 11,985 acres of land, is located along the coast in southern Santa Barbara County about 5 miles south of the town of Solvang, and is mapped from occurrences recorded at the time of listing and subsequent to the time of listing. The unit includes the Tajiguas Creek watershed. STB-6 contains the features that are essential for the conservation of the species. The unit contains aquatic habitat for breeding and non-breeding activities (PCE 1 and PCE 2), and upland habitat for foraging and dispersal activities (PCE 3 and PCE 4). STB-6 is occupied by the species, provides connectivity between locations along the

coast and the Santa Ynez River watershed, and contains permanent and ephemeral aquatic habitats suitable for breeding, and upland areas for dispersal, shelter, and food.

The physical and biological features essential to the conservation of California red-legged frog in the STB-6 unit may require special management considerations or protection due to predation by nonnative species and poor water management practices, which may alter aquatic or upland habitats and thereby result in the direct or indirect loss of egg masses or adults. Populations in this unit may also require special management or protection due to their potential importance in stabilizing California red-legged frog populations in tributaries to the Santa Ynez River.

STB-7, Upper Santa Ynez River and Matilija Creek

This unit consists of approximately 145,121 acres of land, is located in southeastern Santa Barbara County about 5 miles north of the City of Santa Barbara, and extends into western Ventura County at Matilija Creek. It is mapped from occurrences recorded at the time of listing and subsequent to the time of listing. The unit includes the following watersheds: Los Lauveles Canyon, Redrock Canyon, Oso Canyon, Buckhorn Creek, Camuesa Creek, Devils Canyon, Indian Creek Campground, Upper Mono Creek, Lower Mono Creek, Blue Canyon Upper Agua Caliente Canyon, Diablo Canyon, Lower Agua Caliente Canyon, Juncal Canyon, Lower Matilija Creek, North Fork Matilija Creek, and Cozy Dell Canyon. STB-7 contains the features that are essential for the conservation of the species. This unit contains aquatic habitat for breeding and non-breeding activities (PCE 1 and PCE 2), and upland habitat for foraging and dispersal activities (PCE 3 and PCE 4). STB-7 is occupied by the species and provides connectivity between locations along the coast, in the Sierra Madre Mountains, and in the Ventura River watershed. It is important to species conservation and the persistence of the species in the Matilija watershed because it contains permanent and ephemeral aquatic habitats suitable for breeding, and upland areas for dispersal, shelter, and food in that portion of the unit, which will provide connectivity between populations within the Transverse Ranges and will prevent further isolation of breeding locations near the limit of the geographic range of the species. The unit as a whole contains high-quality habitat, indicated by the high density of extant occurrences, permanent and ephemeral aquatic habitat suitable for breeding, and accessible upland areas for dispersal, shelter, and food.

The physical and biological features essential to the conservation of California red-legged frog in the STB-7 unit may require special management considerations or protection due to predation by nonnative species, flood control activities, road maintenance, and recreational activities, which may alter aquatic and upland habitats and thereby result in the direct or indirect loss of egg masses or direct death of adults.

EFFECTS OF THE ACTION

California Red-legged Frog

Activities that are evaluated under this biological opinion are those that would not cause ecosystem-scale changes and are not likely to contribute to the decline of the California red-legged frog. These activities would also not preclude any of the potentially affected critical habitat units from providing the primary constituent elements necessary to support the essential life history functions (i.e., reproduction, feeding, and sheltering) of the California red-legged frog.

Direct impacts to adults, sub-adults, tadpoles, and eggs of the California red-legged frog in the footprint of projects evaluated by this biological opinion may include injury or mortality from being crushed by earth moving equipment, construction debris, and worker foot traffic. These impacts will be reduced by minimizing and clearly demarcating the boundaries of the project areas and equipment access routes and locating staging areas outside of riparian areas or other water bodies. Scheduling work activities to avoid sensitive areas, such as breeding pools during the breeding season and isolated aquatic refuges during dry periods, as proposed by Caltrans, would substantially reduce adverse effects.

The capture and handling of California red-legged frogs to move them from a work area may result in injury or mortality. Mortality may occur as a result of improper handling, containment, or transport of individuals or from releasing them into unsuitable habitat. Improper handling, containment, or transport of individuals would be reduced or prevented by use of a Service-approved biologist. California red-legged frogs may attempt to return to the capture site, especially if it contains suitable breeding habitat and the relocation site is a different pond or creek than the capture site. California red-legged frogs attempting to return to capture sites are likely to be more susceptible to predation, exposure to the elements, and vehicle stikes if they attempt to return to the original capture site. Relocating California red-legged frogs within the same drainage or water body, if possible, will reduce this threat. Overall, relocation as proposed by Caltrans is intended to reduce the risk of injury or mortality from the direct effects described above.

Construction activities, including noise and vibration, may cause California red-legged frogs to temporarily abandon habitat adjacent to work areas. This disturbance may increase the potential for predation and desiccation when California red-legged frogs leave shelter sites.

Tadpoles may be entrained by pump intakes if such devices are used to dry out work areas. However, Caltrans will ensure that pump intakes are covered with wire mesh not larger than 0.2 inch to preclude juvenile California red-legged frogs and tadpoles from entering pump intakes.

Some potential also exists for disturbance of habitat to cause the spread or establishment of non-native invasive species, such as giant reed (*Arundo donax*) or salt cedar (*Tamarix* spp.). Once established, these species degrade habitat values through several mechanisms (Service 1999).

Breeding pools surrounded by large amounts of salt cedar and giant reed may dry faster because their rates of evapotranspiration are generally greater than those of native riparian species. The abundance and diversity of prey species are generally less in dense stands of giant reed and salt cedar than in areas dominated by native plants. Additionally, these invasive species can eventually out-compete native plant species and displace them; dense aggregations of salt cedar can cause soils to become hypersaline because these plants concentrate salt from water and then excrete it onto the surrounding ground. Caltrans has proposed measures to prevent the spread or introduction of these species, such as minimizing the number of access routes, size of staging areas, and the total area of the activity; restoring disturbed areas with native species. These measures should reduce or eliminate this adverse effect.

Some actions proposed by Caltrans may involve the use of herbicides to control or eliminate non-native plant species. There are currently 66 pesticides are not approved for use in habitat for the California red-legged frog (Center for Biological Diversity v. Johnson and Nastri; case number C-02-1580-JSW). Caltrans has been exempted from this injunction for upland and riparian projects and projects that are 60 feet or more from bodies of water (G. Ruggerone pers. comm. 2007). However because California red-legged frogs may occur in upland habitat up to one mile from suitable aquatic habitat, there is still a potential for California red-legged frogs to be adversely affected by Caltrans' use of herbicides in uplands.

If Caltrans uses herbicides, Glyphosate (formulated as Rodeo® or Aquamaster®) is probably the most likely herbicide to be used. Glyphosate is the active ingredient in a variety of herbicides including Roundup®, Rodeo®, Aquamaster®, Buccaneer®, Glyfos®, Honcho®, Touchdown®, Vision®, Duramax®, Rattler®, and others. Glyphosate is a systemic herbicide that will kill broadleaf and grass species by inhibiting the production of aromatic amino acids in plants and some microorganisms that are necessary to build proteins (Devine et al. 1993). Because many animals lack the synthesis pathway that glyphosate disrupts, it is considered to have low potential to cause toxicity in animals (Devine et al. 1993). Most glyphosate products are formulated to contain surfactants that allow the active ingredients to spread over and penetrate the plant cuticles. Surfactants can be the most toxic portion of a pesticide product. The surfactant associated with many glyphosate products is a polyethoxylated tallowamine (POEA) surfactant.

California red-legged frog eggs, tadpoles, juveniles and adults can be exposed to glyphosate products and POEA surfactants in aquatic habitats through direct overspray of wetlands, drift from treated areas, or contaminated runoff from treated areas. The half-life of glyphosate in pond water ranges between 12 days and 10 weeks (Extoxnet 1996). Additionally, juvenile and adult California red-legged frogs can also be exposed to glyphosate in terrestrial habitats that have been treated. Glyphosate and POEA readily binds to soil particles and can be degraded by microbes in 7 to 70 days depending on soil conditions (Giesy et al. 2000). The half-life of glyphosate in soil can range from three to 249 days and the POEA surfactant in Roundup has a soil half-life of less than one week (Forest Service 1997).

No information is available regarding the toxicity of glyphosate products specifically to California red-legged frogs. Studies exploring the lethal and sublethal effects of glyphosate products on other amphibians, including similar frog species classified in the same genus as the California red-legged frog (*Rana*) are available but are largely focused on aquatic life stages of the species and formulations of glyphosate that include surfactants. Roundup Original Max®, a glyphosate product with POEA surfactant, was demonstrated to be moderately to highly toxic to nine species of frog and toad tadpoles including five *Rana* species: wood frog (*Rana sylvatica)*, leopard frog (*Rana pipiens*), Cascades frog (*Rana cascadae*), green frog (*Rana clamitans*), and American bullfrog (*Rana catesbeiana*) (Relyea and Jones 2009). Because the biology of these species is very similar to the California red-legged frog, we assume the effects of POEA surfactants and glyphosate formulations containing POEA, would be the same on the California red-legged frog. Mann and Bidwell (1999) also found evidence of acute toxicity to four Australian frog species exposed to Roundup,® while the isopropylamine (IPA) salt of glyphosate (the active constituent in Roundup®) was found to be non-toxic. The mortality of tadpoles is hypothesized to be caused by the lysis of gill cells from exposure to surfactants (Lajmanovich et al. 2003, Edington et al. 2004) resulting in either to asphyxiation or loss of osmotic stability (Able 1974) indicating that the life stage during which frogs and toads have gills may be particularly vulnerable. Glyphosate products containing POEA surfactants have also been shown to have sub-lethal effects to amphibians including decreased size, increased time to metamorphosis, tail malformations, and gonadal abnormalities (Govindarajulu 2008, Howe et al. 2004).

Several studies suggest that the toxicity of glyphosate products is linked with the surfactant, and not the glyphosate. Howe et al. (2004) compared the toxicity of glyphosate alone, to glyphosate with POEA surfactant, and POEA alone, on green frogs. Results indicated that the toxicity of glyphosate with POEA surfactant was similar to the POEA surfactant alone, which was much greater than glyphosate alone, indicating that the POEA was responsible for the toxic effects. In a comprehensive review of studies involving the effects of glyphosate on amphibians Govindarajulu (2008) concluded that the toxic effect of glyphosate products containing POEA are due to the POEA rather than the active glyphosate ingredient.

These studies indicate that glyphosate products formulated with POEA surfactants will likely kill or injure California red-legged frogs in aquatic habitats, with tadpoles being particularly vulnerable. Because glyphosate and POEA readily bind to soil and sediments, these chemicals may be less available to California red-legged frogs in terrestrial habitats; however, research is needed to determine toxicity mechanisms and thresholds from terrestrial exposure. Based on the literature (Howe 2004, Govindarajulu 2008), adverse effects to California red-legged frogs from the use of glyphosate products can be minimized through the use of products that do not contain a surfactant. Formulations that lack a surfactant include Rodeo and Aquamaster, which have been approved by the Environmental Protection Agency, through their registration process, for aquatic use.

A low-toxicity, non-POEA surfactant that works well with Rodeo® or Aquamaster® is Agri-Dex®, produced by Helena Chemicals. We are not aware of any information regarding the

toxicity of Agri-Dex® on amphibians, but based on the data available, Monheit et al. (2004) concluded crop oil-based surfactants (i.e. Agri-Dex®) are probably less acutely toxic to fish, aquatic invertebrates and one frog species tested, than some other types of surfactants. The amount of Agri-Dex® that resulted in acute toxicity (i.e., >1000 parts per million (ppm) (Helena Chemical Company 2004, Washington State Department of Ecology and Agriculture 2004) was levels of magnitude higher than other surfactants tested including POEA (1.6 to 0.65ppm in Haller and Stocker 2003, Giesy et al. 2000, Folmar et al. 1979). It is important to note that so called crop oil-based surfactants, which suggest these products are vegetable-based, are actually petroleum products (Forest Service 1997). There could be sub-lethal adverse effects or long-term adverse effects to California red-legged frogs, from chronic exposure to these chemicals, that have not been documented. Overall, Agri-Dex® may be less toxic than other surfactants, but the use of glyphosate without a surfactant is probably even less toxic to the California red-legged frog.

The protective measures proposed by Caltrans, including surveys prior to the application of herbicides, capture and relocation of California red-legged frogs out of harm's way and restricting the use of herbicides to the non-breeding season (dry summer months) will greatly reduce the potential for injury or mortality of the California red-legged frog as a result of herbicide use.

If water that is impounded during or after work activities creates favorable habitat conditions fornon-native predators, such as bullfrogs, crayfish, and centrarchid fishes, California red-legged frogs may suffer abnormally high rates of predation. Additionally, any time California red-legged frogs are concentrated in a small area at unusually high densities, native predators such as herons, egrets, opossums (*Didelphis virginiana*), and raccoons (*Procyon lotor*) may feed on them opportunistically. Finally, if impoundments occupied by California red-legged frogs were to dry out as a result of construction activity, California red-legged frogs may die of desiccation or be eaten by predators as they attempt to find other suitable habitat. Caltrans' proposal to avoid creating impoundments of water within project areas is likely to reduce these effects.

Trash left during or after project activities could attract predators to work sites, which could, in turn, prey on California red-legged frogs. For example, raccoons are attracted to trash and also prey opportunistically on California red-legged frogs. This potential impact will be reduced or avoided by careful control of waste products at all work sites as proposed by Caltrans.

Chytridiomycosis is an infectious disease that affects amphibians worldwide, and is caused by the chytrid fungus. Chytrid fungus is a water-borne fungus that can be spread through direct contact between aquatic animals and by a spore that can move short distances through the water. The fungus only attacks the parts of a frog's skin that have keratin (thickened skin), such as the mouthparts of tadpoles and the tougher parts of adults' skin, such as the toes. The fungus can decimate amphibian populations, causing fungal dermatitis which usually results in death in 1 to 2 weeks, but not before infected animals may have spread the fungal spores to other ponds and streams. Once a pond or waterway has become infected with chytrid fungus, the fungus stays in the water for an undetermined amount of time. Chytrid fungus could be spread if infected

California red-legged frogs are relocated and introduced into areas with healthy California red-legged frogs. It is also possible during the relocation of California red-legged frogs that infected equipment or clothing could introduce chytrid fungus into areas where it did not previously occur. Caltrans proposes to implement the fieldwork code of practice developed by the Declining Amphibian Populations Task Force which should reduce or eliminate the potential for movement of chytrid fungus.

Accidental spills of hazardous materials or careless fueling or oiling of vehicles or equipment could degrade aquatic or upland habitat to a degree where California red-legged frogs are adversely affected or killed. The potential for this impact to occur will be reduced by Caltrans' proposal to require: all refueling, maintenance, and staging of equipment and vehicles to occur at least 60 feet from riparian habitat or water bodies and not in a location from where a spill would drain directly toward aquatic habitat; the monitor to ensure contamination of habitat does not occur during such operations; that a plan is in place for prompt and effective response to any accidental spills; and all workers to be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur.

Workers may intentionally or unintentionally disturb, injure, or kill California red-legged frogs. The potential for this impact to occur will be reduced by Caltrans' proposal to conduct pre-construction training informing workers of the presence and protected status of this species and the measures that are being implemented to protect it during project activities.

Work in streams or in floodplains could cause unusually high levels of siltation downstream. This siltation could smother eggs of the California red-legged frog and alter the quality of habitat to the extent that use by individuals of the species is precluded. Implementing best management practices and reducing the area to be disturbed to the minimum necessary, as proposed by Caltrans, will likely assist in reducing the amount of sediment that is washed downstream, as a result of project activities.

Caltrans has proposed that consultation would be reinitiated if 10 California red-legged frogs or 20 tadpoles are killed or injured in any given year, or if 50 California red-legged frogs are killed or injured in total. However, because of the measures that Caltrans has proposed to reduce the level of injury or morality, we expect that few California red-legged frogs would be killed or injured in any given year. Additionally, based on reproductive biology the subspecies, loss of 10 California red-legged frogs or 20 tadpoles in any given year, throughout the seven counties covered by this consultation, is not likely to compromise the conservation of the subspecies because this number represents a very small portion of the total breeding individuals assumed to be present in this region.

Critical Habitat for the California Red-legged Frog

Actions conducted pursuant to this biological opinion may be located within any one of the 19 aforementioned critical habitat units in five counties. The PCEs of critical habitat for the

California red-legged frog include: (1) aquatic breeding habitat, (2) aquatic non-breeding habitat, (3) upland habitat, and (4) dispersal habitat.

The PCEs associated with individual project sites may be permanently or temporarily altered as a result of projects conducted pursuant to this biological opinion. However, we anticipate that the effects of those projects, which must meet the criteria for use of this biological opinion, will be of such a small scale that they will not preclude the PCEs from supporting the essential life history functions of the California red-legged frog. For example, a bridge retrofitted for earthquake safety may have slightly larger footings as a result of the project. Such a minor permanent loss of aquatic habitat is not likely to compromise the ability of a stream to support the aquatic life stages of the California red-legged frog.

The reinitiation thresholds that Caltrans has proposed will ensure that the conservation of the California red-legged frog is not compromised within the affected critical habitat units. These upper limits for permanent loss of aquatic, upland, and dispersal habitat (20 acres in any given year or 100 acres in total) and upland habitat (20 acres in any given year or 100 acres in total), and temporary disturbance (100 in any given year, or 500 acrestotal over the life of the biological opinion) would be spread across the 19 critical habitat units, in which the activities covered by this biological opinion would be implemented. Given the wide distribution of a relatively minor amount of disturbance or loss of aquatic, upland, and dispersal habitat, and the high potential that most disturbance would recover within a few years, we expect the PCEs in each of the affected critical habitat units to continue to provide the life history functions essential to the conservation of the California red-legged frog.

The protective measures included in the Description of the Proposed Action section of this biological opinion would minimize adverse effects to the PCEs of critical habitat for the California red-legged frog. Based on the suitability criteria to qualify for use of this biological opinion, and the protective measures Caltrans would implement, we anticipate that any effects to critical habitat for the California red-legged frog would be temporary or minor. We do not expect such minor or temporary effects to preclude a critical habitat unit from supporting the PCEs and associated life history functions (i.e., reproduction, dispersal, feeding, and sheltering) of critical habitat for the California red-legged frog.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

At this time, we do not know the specific locations of future projects that may be conducted pursuant to this biological opinion, other than that they would be sited within the Caltrans rights-of-way in San Benito, Santa Cruz, Monterey, San Luis Obispo, and Santa Barbara Counties. We

are unaware of any future non-Federal actions that are reasonably certain to occur within the action area.

CONCLUSION

After reviewing the current status of the California red-legged frog, its critical habitat, the environmental baseline, the effects of the action, projects that could be authorized under the provisions of this programmatic biological opinion, and the cumulative effects, it is the Service's biological opinion that the Caltrans' proposed action is not likely to jeopardize the continued existence of the California red-legged frog or destroy or adversely modify its critical habitat.

We have reached this conclusion because:

1. The notification process described previously allows us to review each proposed action to determine if it meets falls within the scope of this programmatic biological opinion, and to ensure the effects are not likely to be outside of the limited levels we anticipate;

2. Few California red-legged frogs are likely to be killed or injured during project activities;

3. Caltrans has established a threshold that will trigger reinitiation of formal consultation (based on a finite number of California red-legged frogs that would be injured or killed), which would not result in population level impacts to this species;

4. In comparison with the amount of critical habitat available to the California red-legged frog in San Benito, Santa Cruz, Monterey, San Luis Obispo, and Santa Barbara Counties, a relatively small amount of critical habitat would be permanently lost within each critical habitat unit and relative to the entire critical habitat designation;

5. Although we anticipate that some minor or temporary adverse effects to the PCEs in each of the 19 affected critical habitat units may occur, we do not anticipate effects of this nature to preclude those PCEs from providing the essential life history functions (i.e., reproduction, dispersal, feeding, and sheltering) necessary to ensure the conservation of the California red-legged frog because Caltrans has established a threshold of affected acres of habitat types that comprise the PCEs, that will trigger reinitation of formal consultation; and

6. Caltrans has proposed numerous measures to reduce the adverse effects of the proposed activities on the California red-legged frog and its critical habitat.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat

modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of an incidental take statement contained in a biological opinion.

The measures described below are non-discretionary and Caltrans must make them binding conditions of any contract, permit, or funding to contractors or County Governments for the exemption in 7(o)(2) to apply. Caltrans has a continuing duty to regulate the activities covered by this incidental take statement. If Caltrans fails to adhere to the terms and conditions of the incidental take statement, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, Caltrans must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR 402.14(i)(3)].

This biological opinion evaluates the effects of a certain scope and scale of actions that Caltrans may undertake in San Benito, Santa Cruz, Monterey, San Luis Obispo, and Santa Barbara Counties on the California red-legged frog, and its critical habitat. Because of the protective measures that Caltrans has proposed, we expect that few California red-legged frogs would be killed in any given year. All California red-legged frogs found within project areas that meet the suitability criteria described in this biological opinion may be captured and relocated. However, because capture and relocation is intended to reduce the potential for injury or mortality, and Caltrans will use biologists experienced in the capture and handling of California red-legged frogs, we anticipate that few, if any, California red-legged frogs will be injured or killed as a result of capture and relocation efforts. Finally, there is a potential for a number of California red-legged frogs to be taken as a result of exposure to herbicides, during which some may be killed or injured. The protective measures Caltrans has proposed, including conducting surveys prior to the application of herbicides, capture and relocating California red-legged frogs out of harm's way, and restricting the use of herbicides to the non-breeding season (dry summer months) of the California red-legged frog will greatly reduce the potential for injury or mortality as a result of herbicide use.

Based on the triggers for reinitiation of formal consultation that Caltrans has identified in their proposed action, we anticipate that no more than 10 adult or subadult California red-legged frogs, 10 egg masses, or 20 tadpoles would be injured or killed in a given year, or 50 California red-legged frogs during the life of this biological opinion, will be injured or killed as a result of the proposed action.

Incidental take of California red-legged frog adults, subadults, or tadpoles may be difficult to detect for the following reasons: (1) the California red-legged frog is generally difficult to detect

due to its small body size; (2) finding a dead or impaired specimen is unlikely; (3) losses may be masked by seasonal fluctuations in hydrology unrelated to the project. However, the maximum number of individuals proposed to be killed or injured each year is a relatively small portion of the population of California red-legged frogs in the action area. We do not expect the loss of these few California red-legged frog adults, subadults, egg masses, or tadpoles to compromise the ability of the species to survive and recover. Given the reproductive biology of the species, described in the Status of the Species section of this biological opinion, this number also represents a very small portion of the total number of individuals assumed to be present throughout the sub species' range. Given the wide distribution of a relatively minor amount of disturbance or temporary loss of habitat, the high potential that most disturbed areas would recover within a few years, and the ability of the California red-legged frog to survive in varying conditions, we expect the overall effect on the habitat of the California red-legged frog by the proposed activities to be minor.

This biological opinion does not exempt any activity from the prohibitions against take contained in section 9 of the Act that is not incidental to the action as described in this biological opinion. Take that occurs outside of demarcated work areas or from any activity not described in this biological opinion is not exempted from the prohibitions against take described in section 9 of the Act.

REASONABLE AND PRUDENT MEASURES

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize the take of California red-legged frogs:

1. Biologists must be authorized by the Service before they survey for, capture, and relocate California red-legged frogs from work areas.

2. Caltrans must further minimize the potential for transmitting Chytrid fungus to new locations.

The Service's evaluation of the effects of the proposed action includes consideration of the measures to minimize the adverse effects of the proposed action on the California red-legged frog that were developed by Caltrans and the Service and repeated in the Description of the Proposed Action portion of this biological opinion. Any subsequent changes in these measures proposed by Caltrans may constitute a modification of the proposed action and may warrant reinitiation of formal consultation, as specified at 50 CFR 402.16. These reasonable and prudent measures are intended to supplement the protective measures that were proposed by Caltrans as part of the proposed action.

TERMS AND CONDITIONS

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

1. The following terms and conditions implement reasonable and prudent measure 1:

   1.1 Chuck Cesena, Mitch Dallas, Tom Edell, Jennifer Moonjian, Morgan Robertson, Lisa Schicker, Nancy Siepel, Jim Walth, Lisa Schicker, Cathy Stettler, and Sarah Paulson are authorized to capture, handle, relocate, survey and monitor for California red-legged frogs. Paul Holmes is authorized to independently survey and monitor for California red-legged frogs, and may capture, handle, and relocate California red-legged frogs under the direct supervision of the biologists authorized above. If Caltrans wishes to use additional biologists, it must provide their qualifications to the Service at least 30 days before they are to begin work. Additional biologists must not capture, handle, or monitor California red-legged frogs (unless under the direct, on-site supervision of the biologists authorized above) without written approval from the Service.

   1.2 Prior to the onset of grading and construction activities, Service-approved biologists must identify appropriate areas to receive translocated California red-legged frog adults and tadpoles in the action area. These areas must be in proximity to the capture site, outside of any area likely to be adversely impacted by construction activities, provide suitable habitat, and be free of exotic predatory species (e.g., bullfrogs, crayfish) to the best of the Service-approved biologist's knowledge.

   1.3 If the affected aquatic habitat includes a creek or river system, the relocation site must be within the same drainage.

   1.4 If the affected aquatic habitat includes a pond or other isolated water body, Caltrans must receive the Services approval, in writing, prior to relocating any California red-legged frogs.

If Chytrid fungus is known to occur in the drainage or pond where the proposed action would occur, California red-legged frogs must not be relocated into different drainages or ponds, without prior written approval from the Service.

REPORTING REQUIREMENTS

In addition to the pre-project notification, Caltrans must submit an annual list of projects they conducted under this programmatic concurrence and programmatic biological opinion, as described in the Description of the Proposed Action section of this document. In addition, the

enclosed Project Completion form describes the information that Caltrans must provide to the Ventura Fish and Wildlife Office upon the completion of each specific project conducted under this programmatic concurrence and programmatic biological opinion.

DISPOSITION OF DEAD OR INJURED SPECIMENS

Within 3 days of locating any dead or injured California red-legged frogs, Caltrans must notify the Ventura Fish and Wildlife Office by telephone [(805) 644-1766] and in writing (2493 Portola Road, Suite B, Ventura, California 93003). The report must include the date, time, and location of the carcass, a photograph, cause of death, if known, and any other pertinent information.

Care must be taken in handling dead specimens to preserve biological material in the best possible state for later analysis. Should any injured California red-legged frogs survive, the Service must be contacted regarding their final disposition.

The remains of California red-legged frogs found in San Benito, Santa Cruz, or Monterey Counties must be placed with the California Academy of Sciences Herpetology Department (Contact: Jens Vindum, Senior Collections Manager, California Academy of Sciences Herpetology Department (herpetology@calacademy.org), 55 Music Concourse Drive, San Francisco, California 94118.

The remains of California red-legged frogs found in San Luis Obispo, Santa Barbara, Ventura, or Los Angeles Counties must be placed with the Santa Barbara Natural History Museum (Contact: Paul Collins, Santa Barbara Natural History Museum, Vertebrate Zoology Department, 2559 Puesta Del Sol, Santa Barbara, California 93460, (805) 682-4711, extension 321). Caltrans must make arrangements regarding proper disposition of potential museum specimens prior to implementation of any actions conducted pursuant to this biological opinion.

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 programs 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.

1. We recommend that Caltrans expand its regional planning efforts for the California red-legged frog to further facilitate an ecosystem approach to conservation while attempting to recognize, at an early stage of planning, where conflicts between conservation of the California red-legged frog and future transportation projects may arise.

2. We encourage Caltrans, biological consultants, and/or other researchers to participate in research on California red-legged frogs. Research topics could include, but are not limited to: metapopulation dynamics, dispersal and migration studies, and the effects of

predation and habitat quality on California red-legged frogs. We encourage Caltrans to coordinate with the Service and the California Department of Fish and Game to develop research proposals under the Service's Endangered Species Conservation Grants (Section 6 Traditional) Program.

The Service requests notification of the implementation of any conservation recommendations, so we may be kept informed of actions that minimize or avoid adverse effects to or benefit the California red-legged frog and its habitat.

REINITIATION NOTICE

This concludes formal consultation on projects funded under the Federal Highway Administration's Federal Aid program that are likely to adversely affect the California red-legged frog, its critical habitat, or its proposed critical habitat. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law), and if (1) the amount or extent of incidental take is exceeded, (2) new information reveals effects of the agency action may affect listed species or critical habitat in a manner or to an extent not considered in this opinion, (3) the agency action is subsequently modified in a manner that causes an effect on listed species or critical habitat that was not considered in this opinion, or (4) a new species is listed or critical habitat is designated that may be affected by the action.

If you have any questions, please contact Steve Kirkland of my staff at (805) 644-1766, extension 267.

Sincerely,

Diane K. Noda

Diane K. Noda
Field Supervisor

Enclosures
Caltrans Project Completion Report
The Declining Amphibian Populations Task Force Fieldwork Code of Practice

Project	Biological Opinion	Permanent Aquatic	Permanent Upland	Temp Aquatic	Temp. Upland	Critical Habitat
Picachio Road Bridge	2006	.5	0.18		.39	no
Bob Jones Bike	2007	0	0		0.39	no
Chittendon Pass	2006	0	0.27	0	0.25	no
Harkin Slough Br. Over Struve slough	2006	0.004	0.12	.08	1.16	no
Harkin Slough Br. Over Watsonville Slough	2004	0.25	0.22	0	0.71	no
Cienega Rd. Bridge	2006	0.404	0.404	0	1.19	no
San Benito River Bridge	2006	0	0	0.002	0.159	no
Salinas Rd. Interchange	2006	0.9	0.09	0	0.43	no
Pfiefer Big Sur Left Turn Lane	2006	0.002	0.26	0.002	1.2	no
Hwy 101 widening-SR 135-166	2006	0	0.22	0.25	0	no
San Simeon Creek Bridges	2006	0.3	1.8	0.4	0.25	yes*
San Luis Bay Drive	2005	0	0.25	0.005	3	no
Hollister Ave. Interchange	2005	0	0.21	0	0.084	no
Lone Tree Rd. Bridge	2005	0.005	0.19	0.005	0.27	no
Breaker Point CURE	2004	0.06	0	0.006	0	no
Jalama Creek Bridge	2004	0	0	0.24	0	yes*
Murphy Rd. Bridge	2004	0	0	0	0.22	no
Paulsen-Whiting Bridge	2004	0	0.09	0.06	0.03	no
Hollister Road Bridge	2004	0.04	0.03	0.16	0.3	yes(proposed)
Amesti Road Repair (lost funding)	2003	0.04	0.03	0.16	0.323	no
Main Street Bridge Replacement, Cambria	2007	0.19	1.13	.03	0.03	yes*
Harmony Left turn lane	2007	0.1	0.8	0.029	0.28	no
Gilardi Road Bridge Replacement	2009	0	0.1	0.035	0.333	yes*
Los Osos Valley Road Widening	2008	0.35	1.75	0.5	4.2	yes*
California Coastal Trail Gaviota Segment	2009	0	0.15	0	0.5	yes*
Guadalupe Ditches Project	2010	0	0	3.42	0	no

Appendix 1. Amount of California red-legged frog habitat anticipated to be permanently lost and temporarily disturbed.
***Construction not completed and project within March 17, 2010 critical habitat designation**

Project	Biological Opinion	Construction completed	Perm. Aquatic	Temp. Aquatic	Perm. Upland	Temp. Upland
Picachio Road Bridge	2006	2007	Not reported	Not reported	Not reported	Not reported
Bob Jones Bike Path #3	2007	2008	None reported	None reported	None reported	0.138
Chittendon Pass	2006	2009	None reported	Not reported	Not reported	Not reported
Harkin Slough Road over Struve slough	2006	2008	0.004	0.61	0.44	0.71
Harkin Slough Road over Watsonville Slough	2004	2007	0.007	2.88	0	0
Cienega Rd. Bridge	2006	2007	0.032	None reported	0.404	0.159
Pfiefer Big Sur Left Turn Lane	2006	2009	Not reported	Not reported	Not reported	Not reported
Lone Tree Rd. Bridge	2005	2008	0.005	0.005	0.19	None reported
Breaker Point CURE	2004	2006	0.138	0.219	(Included in acres of riparian)	1.33
Murphy Rd. Bridge	2004	2006	Not reported	Not reported	Not reported	Not reported
Paulsen-Whiting Bridge	2004	2006	Not reported	Not reported	Not reported	0.3
San Luis Bay Drive Bridge	2005	2007	0.002	0.034	0.238	0.562
Hollister Road Bridge	2004	2009	0.033	0.15	0.20	0.12
Harmony Left turn lane	2007	2008	0.37	.014	0.016	0.10
San Benito River Bridge Seismic Retrofit	2006	2007	Not reported	Not reported	Not reported	Not reported

Appendix 2. Amount of California red-legged frog habitat permanently lost and temporarily disturbed as a result of the completed project.

REFERENCES CITED

Abel, P.D. 1974. Toxicity of synthetic detergents to fish and aquatic invertebrates. Journal of Fish Biology 6: 279-298.

Bulger, J.B., N.J. Scott, Jr., and R.B. Seymour. 2003. Terrestrial activity and conservation of adult red-legged frogs *Rana aurora draytonii* in coastal forests and grasslands. Biological Conservation 110:85-95.

Devine, M.D., Duke, S.O., and Fedtke, C. 1993. Physiology of herbicide action. Prentice Hall, Englewood Cliffs, NJ.

Edington, A.N., Sheridan, P.M., Stephenson, G.R., Thompson, D.G., and Boermans, H.J. 2004. Comparative effects of ph and Vision herbicide on two life stages of four anuran amphibian species. Environmental Toxicology and Chemistry. 23(4)815-822.

Extension Toxicology Network [EXTOXNET]. 1996. Glyphosate pesticide information profile. Available at: http://extoxnet.orst.edu/pips/glyphosa.htm. Accessed June 17, 2010.

Federal Highway Administration. 2007. Letter from Gene Fong, Division Administrator, California Division, to Diane Noda, Field Supervisor, Ventura Fish and Wildlife Office regarding the California Department of Transportation's Delegation Federal authority pursuant the Section 6005 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). Dated July 17, 2007. Sacramento, California.

Fidenci, P. 2004. The California red-legged frog, *Rana aurora draytonii*, along the Arroyo Santo Domingo, Northern Baja California, Mexico. The Herpetological Journal, Volume 88. London, England.

Folmar, L.C., H.O. Sanders, and A.M. Julin. 1979. Toxicity of the herbicide glyphosate and several of its formulations to fish and aquatic invertebrates. Archives of Environmental Contamination and Toxicology 8:269-278.

Foreman, R.T.T., D. Sperling, J.A. Bissonette, A.P. Clevenger, C.D. Cutshall, V.H. Dale, L. Fahrig, R. France, C.R. Goldman, K. Heanue, J.A. Jones, F.J. Swanson, T. Turrentine, T.C. Winter. 2003. Road ecology: science and solutions. Island Press, Washington, Covelo, London. 481 pages. 2003. Road Ecology. Island Press. Washington D.C.

Gisey, J.P., Dobson, S., and Solomon, K.R. 2000. Ecotoxicological risk assessment for Roundup herbicide. Review of Environmental Contamination and Toxicology. 167:35-120.

Govindarajulu, P.P. 2008. Literature review of impacts of glyphosate herbicide on amphibians: What risks can the silvicultual use of this herbicide pose for amphibians in B.C.? Wildlife Report No. R-28. British Colombia, Ministry of Environment. Victoria, B.C.Grismer, L. 2002. Reptiles and amphibians of Baja California, Including its Pacific island and the islands in the Sea of Cortez. University of California Press, Berkeley and Los Angeles, California.

Haller, W.T. and R.K. Stocker. 2003. Toxicity of 19 adjuvants to juvenile Lepomis macrochirus (bluegill sunfish). Environmental Toxicology and Chemistry. 22(3).

Hayes, M.P. and M.M. Miyamoto. 1984. Biochemical, behavioral and body size differences between Rana aurora aurora and R. a. draytonii. Copeia 1984(4):1018-1022.

Hayes, M.P. and M.R. Jennings. 1988. Habitat correlates of distribution of the California red-legged frog (*Rana aurora draytonii*) and the foothill yellow-legged frog (*Rana boylii*): Implications for management. Pp. 144-158. In Proceedings of the symposium on the management of amphibians, reptiles, and small mammals in North America. R. Sarzo, K.E. Severson, and D.R. Patton (technical coordinators). U.S.D.A. Forest Service General Technical Report RM-166.

Hayes, M.P. and M.R. Tennant. 1985. Diet and feeding behavior of the California red-legged frog, *Rana aurora draytonii* (Ranidae). The Southwestern Naturalist 30(4):601-605.

Helena Chemical Company. 2004. Technical data sheet No. AGDX080596, for Agri-Dex product.

Howe, C.M., Berrill, M., Pauli, B.D., Helbing, C.C., Werry, K., Veldhoen, N. 2004. Toxicity of glyphosate-based pesticides to four North American frog species. Environmental Toxicology and Chemistry. 23(8)1928-1938.

Jennings, M.R., and M.P. Hayes. 1985. Pre-1900 over harvest of California red-legged frogs (*Rana aurora draytonii*): The inducement for bullfrog (*Rana catesbeiana*) introduction. Herpetologica 31(1):94-103.

Jennings, M.R., M.P. Hayes, and D.C. Holland. 1992. A petition to the U.S. Fish and Wildlife Service to place the California red-legged frog (*Rana aurora draytonii*) and the western pond turtle (*Clemmys marmorata*) on the list of endangered and threatened wildlife and plants.

Lajmanovich, R.C., Sandoval, M.T., Peltzer, P.M. 2003. Induction of Mortality and Malformation in *Scinax nasicus* tadpoles exposed to glyphosate formulations. Bulletin of Environmental Contamination and Toxicology. 70:612-618.

Mann, R.M. and J.R. Bidwell. 1999. The toxicity of glyphosate and several glyphosate formulations to four species of southwestern Australian frogs. Archives of Environmental Contamination and Toxicology. 36:193-199.

Monheit, S., J.R. Leavitt and J. Trumbo. 2004. The ecotoxicology of surfactants use with Glyphosate based herbicides. Noxious Times. Volume Number 6, Summer 2004.

Relyea, R.A. and Jones, D.K. 2009. The toxicity of Roundup Original Max to 13 species of larval amphibians. Environmental Toxicology and Chemistry. 28(9)2004-2008.

Smith, R. and D. Krofta. 2005. Field notes documenting the occurrence of California red-legged frogs in Baja California, Mexico. In litt.

Stebbins, R.C. 1985. A field guide to western reptiles and amphibians. Houghton Mifflin Company, Boston, Massachusetts.

Storer, T.I. 1925. A synopsis of the amphibia of California. University of California Publications in Zoology 27:1-342.

U.S. Fish and Wildlife Service. 1999. Recovery plan for the arroyo southwestern toad. Portland, Oregon.

U.S. Fish and Wildlife Service. 2002. Recovery plan for the California red-legged frog (*Rana aurora draytonii*). Portland, Oregon.

U.S. Fish and Wildlife Service. 2003. Programmatic biological opinion for projects funded or approved under the Federal Aid Program (HDA-CA, File #: Section 7 with Ventura USFWS, Document #: S38192) (1-8-02-F-68). Ventura, California.

U.S. Forest Service. 1997. Glyphosate herbicide information profile. U.S. Forest Service Pacific Northwest Region.

U.S. Fish and Wildlife Service and National Marine Fisheries Service. 1998. Endangered species consultation handbook - procedures for conducting consultation and conference activities under section 7 of the Endangered Species Act. U.S. Government printing office, Washingtion, D.C.

Washington State Department of Ecology and Agriculture. 2004. Summary of aquatic acute toxicity data for five spray adjuvants, and NPDES permit no. WAG-99 3000.

Wright, A.H. and A.A. Wright. 1949. Handbook of frogs and toads of the United States and Canada. Comstock Publishing Company, Inc., Ithaca, NY. xii + 640 pp.

PERSONAL COMMUNICATIONS

Ruggerone, G. 2007. Telephone conversation regarding the California Department of Transportation's exemption from the injunction of use of 66 pesticides (Center for Biological Diversity v. Johnson and Nastri). Dated April 9, 2007. Senior Environmental Planner. California Department of Transportation. San Luis Obispo, California.

Project Completion Report for Caltrans projects that may affect California red-legged frogs

Caltrans must ensure that this form is completed or that the requested information is provided in a written report upon completion of the project and restoration activities.

Mail completed form or report to: U.S. Fish and Wildlife Service, Ventura Fish and Wildlife Office, 2493 Portola Road, Suite B, Ventura, California 93003

1. Project title and location:
2. Project Completion Dates A. Construction: B: Restoration:
3. Type of actions that occurred: 4. 5. 6. 7. 8.
9. Habitat type and number of acres affected (e.g., upland, riparian) 10. 11. 12. 13. 14.
15. Linear feet of work in a stream:
16. How the site was restored and a description of the area after completion of the action: 17. 18. 19. 20. 21.
22. If no restoration occurred, the justification for not conducting this work: 23. 24. 25. 26. 27.
28. Which measures were employed to protect California red-legged frogs: 29. 30. 31. 32. 33.
34. The number of California red-legged frogs taken and the form of take: 35. 36. 37. 38. 39.
I. The number of California red-legged frogs removed from work areas to nearby undisturbed habitat and the location of that habitat: II. III. IV. V.
VI. Recommendations of any modifications to future measures to enhance protection of the California red-legged frog while simplifying compliance with the Endangered Species Act: VII. VIII. IX.

The Declining Amphibian Populations Task Force Fieldwork Code of Practice

1. Remove mud, snails, algae, and other debris from nets, traps, boots, vehicle tires, and all other surfaces. Rinse cleaned items with sterilized (e.g., boiled or treated) water before leaving each study site.

2. Scrub boots, nets, traps, and other types of equipment used in the aquatic environment with 70 percent ethanol solution or a bleach solution of one-half to one cup of bleach in one gallon of water and rinse clean with sterilized water between study sites. Avoid cleaning equipment in the immediate vicinity of a pond, wetland, or riparian area.

3. In remote locations, clean all equipment with 70 percent ethanol or a bleach solution, and rinse with sterile water upon return to the lab or a "base camp." Elsewhere, when laundry facilities are available, remove nets from poles and wash (in a protective mesh laundry bag) with bleach on a "delicate" cycle.

4. When working at sites with known or suspected disease problems, or when sampling populations of rare or isolated species, wear disposable vinyl[1] gloves and change them between handling each animal. Dedicate separate sets of nets, boots, traps, and other equipment to each site being visited. Clean and store them separately at the end of each field day.

5. Safely dispose of used cleaning materials and fluids. Do not dispose of cleaning materials and fluids in or near ponds, wetland, and riparian areas; if necessary, return them to the lab for proper disposal. Safely dispose of used disposable gloves in sealed bags.

6. When amphibians are collected, ensure the separation of animals from different sites and take great care to avoid indirect contact (e.g., via handling or reuse of containers) between them or with other captive animals. Do not expose animals to unsterilized vegetation or soils which have been taken from other sites. Always use disinfected and disposable husbandry equipment.

7. If a dead amphibian is found, place it in a sealable plastic bag and refrigerate (do not freeze). If any captured live amphibians appear unhealthy, retain each animal in a separate plastic container that allows air circulation and provides a moist environment from a damp sponge or sphagnum moss. For each collection of live or dead animals, record the date and time collected, location of collection, name of collector, condition of animal upon collection, and any other relevant environmental conditions observed at the time of collection. Immediately contact the Ventura Fish and Wildlife Office at (805) 644-1766 for further instructions.

The Fieldwork Code of Practice has been produced by the Declining Amphibian Populations Task Force with valuable assistance from Begona Arano, Andrew Cunningham, Tom Langton, Jamie Reaser, and Stan Sessions.

For further information on this Code, or on the Declining Amphibian Populations Task Force, contact John Wilkinson, Biology Department, the Open University, Walton Hall, Milton Keynes, MK7 6AA, UK. Email: DAPTF@open.ac.uk. Fax: +44 (0) 1908-65416

[1] Do not use latex gloves. Latex is toxic to amphibians.

M e m o r a n d u m

Flex your power!
Be energy efficient!

To: STEVE WYATT
Design Manager
Central Region Office of Design I, Branch G

Date: November 5, 2012

File: SB-101-45.5/46.3
Gaviota Curve Correction
EA 05-0T630-0

Attn: Paul Valadao
Design Engineer

From: DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
GEOTECHNICAL SERVICES

Subject: Geotechnical Design Report

Introduction

The proposed project is located in Santa Barbara County, along the prominent northward bend in Highway 101 through Gaviota State Park between PM 45.5/46.3 (Attachment 1). An existing two-radius (compound) curve at this location has attributed to run-off the road type collisions. The proposed project broadens the current compound curve to a single, 1,625-foot curve radius to help prevent these collisions. The new curve radius would require moving the existing toe of cut-slope approximately 80-feet to the north-northeast into an east-west trending ridge. Design alternatives outlined in the District Preliminary Geotechnical Report (DPGR), included the use of retaining walls and/or stand-alone cut-slope design. A cut-slope design without the use of retaining walls has been selected as the design alternative. This report summarizes the subsurface data derived from drilling and seismic refraction survey conducted in June-July 2012, and provides recommendations for cut-slope design and anticipated construction provisions based on these results.

Existing Facilities and Proposed Improvements

Route 101 is currently a four lane divided highway with a compound curve, constructed with a 1,800-foot radius from stations 79+17 to 86+69, and a 1,149-foot radius from stations 67+00 to 108+00. The highway is divided by concrete median barrier from about station 79+00 to 98+80. The alignment is bounded to the north by a benched 0.75:1 to 0.5:1 cut-slope with an unpaved four-foot shoulder between the toe of slope and asphalt dike. During site visits made in June and July 2010, the existing shoulder and mid-slope benches were observed to have by minor amounts of debris from dry-ravel and erosion. The maximum vertical height of the existing cut-slope is approximately 90 feet above the highway at station 90+20, coincidental to the intersection of the ridgeline with the highway. The existing three mid-slope benches are spaced at an average 30

vertical feet in height and are 20 feet wide. The cut-slope tapers to an estimated 1.5:1 slope to the south.

The selected cut-slope alternative proposes to realign Route 101 and replace the existing compound horizontal curve with a single 1,625 foot radius curve. The proposed alignment would require excavation of a new cut slope roughly parallel to the existing cut slope and recessed 80-feet to the northeast from the apex of the curve. In addition, an embankment fill section, approximately 150-ft in length, maximum thickness of 10-ft, and a 4:1 slope, is proposed at the north end of the cut-slope between Sta 95+00 and 98+70. The proposed cut slope would reflect similar slope ratios to the existing cut slope, with slope ratios no steeper than 1.5:1 (horizontal:vertical) from stations 80+00 to 90+00 and no steeper than 0.75:1 from stations 90+00 to 95+50. The new proposed northbound alignment will be completed with two 12-foot lanes with 10 to 12-ft shoulders and cambered eastward at about a 2 % grade. In the vicinity of the rock cut slope between Sta 86+00 to 95+00, an unpaved 18-foot wide catchment with a 5 % drop from edge of shoulder to toe of slope. Typical cross sections (Attachment 2) show the realignment of Highway 101 in layout and profile (cross sections X-1 through X-3).

Pertinent Reports and Investigations

The following publications were used to assist in the assessment of site conditions:

1. Dibblee, Jr., T. W., (1988). Geologic Map of the Solvang and Gaviota Quadrangles, Santa Barbara County, California, Division of Mines and Geology.
2. Dibblee, T. W., (1957). Geology of the Central Santa Ynez Mountains, Santa Barbara County, California, CDMG Bulletin 186.
3. Finegan, M., (2004). Preliminary Geotechnical Report, Gaviota Culvert, 05-0K330K
4. Mualchin, L., (2007). *California Seismic Hazard Map*, Caltrans.
5. Goodman, R. E. (1980). *Introduction to Rock Mechanics,* John Wiley and Sons, 478pp.

Physical Setting

Climate

The climate of the project area is mediteranean. The site is subject to mild rainy winters, and sunny summers. Annual precipitation in the Gaviota area is 17 to 21 inches. Temperatures below freezing are rare, and summertime high temperatures rise with increasing distance from the coast. Sundowner conditions, characterized by strong hot wind, can be particularly strong in Gaviota; topographically influenced by the steep, narrow canyon incised by Gaviota Creek.

Topography and Drainage

Gaviota exists on a relatively narrow inclined coastal plain varying locally between 1 to 2 miles wide, characterized by broad rolling hills dissected by local drainages which originate at the crest of the coastal Santa Ynez Range and flow southward to the Pacific. The Gaviota Creek watershed is the third largest coastal watershed in southern Santa Barbara County, extending beyond the front range through a narrow canyon marked by steep faces of sandstone dipping to the south. Upstream of the canyon the stream divides into four branches: 1) main stem Gaviota Creek, 2) West Fork Gaviota Creek, 3) Las Canovas Creek, and 4) Las Cruces Creek covering over 12,877 acres. The drainage system rises from sea level to 2,801 feet elevation. The most southern main-stem of the drainage system diverges from the 101 corridor near the proposed realignment into a relatively large coastal lagoon at the edge of the Pacific Ocean.

Regional Geology and Seismicity

The proposed realignment is located within the northwestern portion of the Transverse Ranges Geomorphic Province characterized by a narrow belt of east-west trending mountain ranges composed of steeply faulted and folded marine and terrestrial sedimentary rocks (Attachment 3). The structure and relief of this region is attributed to tectonic compression along the Big Bend in the San Andreas Fault northeast of Santa Barbara which generate uniquely east-west oriented ranges from clockwise rotation of several tectonic blocks.

The Santa Ynez Fault is the seismically controlling fault of the project area. West of Lake Cachuma the Santa Ynez fault branches into several west- and northwest- trending splay faults. The Pacifico and Santa Ynez River sections of the Santa Ynez Fault system are the two main branches to the north, both are left lateral strike slip and dip 70 and 90 degrees to the south respectively (Attachment 3). The Santa Ynez section, which structurally dips 70 degrees to the south of the fault, branches to the southeast, crossing Highway 101 at the summit of Nojoqui Grade approximately 2 miles north of the site. Maximum Credible Moment Magnitude (MCMM), nearest distance to site, and Peak Ground Acceleration (PGA) are summarized in Table 1.

The Los Alamos-Baseline Fault is about 16 miles long and extends from the northern boundaries of Lake Cachuma to the town of Los Alamos, following the northwest trend of Highways 154 and 101. It is a reverse fault dipping 30 degrees to the southwest.

The Lions Head Fault is a splay of the Santa Ynez Fault system, bounding the Santa Maria Basin to the south, and dipping 75 degrees to the southwest. This fault begins south of Los Alamos and trends northwest through the northern half of the Vandenberg Air force Base, terminating at the coast. A regional fault map, overlain by potential ground acceleration contours (Mualchin, 2007) is presented as Attachment 4.

Table 1.0 – Seismic Data

Fault Name	Maximum Credible Moment Magnitude	Approximate Distance (mi)	Peak Ground Acceleration (g)
Santa Ynez	7.9	1.2	0.66
Santa Ynez River	7.1	8.9	0.30
Pacifico	7.1	3.1	0.53
Lions Head	6.6	15.2	0.18
Los Alamos-Baseline	6.9	13.9	0.24

Soil Survey Mapping

Three soil types lie within the Gaviota Curve Correction area: 1) Camarillo Fine Sandy Loam (along the alluvial terraces of Gaviota Creek to the west, 2) Orthents-forming along the steep creek embankments below the current highway alignment, and 3) eroded Ayar Clay- forming over the Monterey Formation shale and sandstone where the excavation will occur. The Ayar Clay, is classified as a type D hydrologic Soil, characterized by very slow infiltration rate, with high run-off potential in saturated conditions (Attachment 5). Although a permanent high water table is also associated with this hydrologic group, the lack of springs along the cut-slope would suggest otherwise. Poorly cemented silty SAND was observed in outcrop several feet below the surface within the terrace deposits which is expected to be more resistant to erosion than the loose top soils.

Exploration

Drilling and Sampling

A single mud rotary boring was advanced near the crest of the existing cut slope, approximately 38-ft northeast of the Caltrans ROW fence, in July 2012 (Attachment 6). Soil and rock was classified under the guidelines of USCS, and archived in core boxes.

Table 1. Subsurface Exploration Summary

Boring	*Completion Date*	*Equipment*	*Hammer Type*	*Hammer Efficiency (%)*	*Approximate Ground Elevation (ft)*	*Depth (ft)*
RC-12-001	7-12-2012	CME 750	Auto	81	200.4	90.0

Geologic Mapping

Geologic mapping was conducted on a local scale to record structural features and local changes in rock composition and quality. Site geology was indicated by formation symbols, namely Tm, Tr, and Qoa which are defined in the Site Geology section. The existing cut-slope benches provided ideal exposures of lithologic changes and structure, such as bedding and discontinuities. Structural surveys were made during two site visits to measure and record orientation (dip from horizontal/dip direction),spacing, continuity, roughness and weathering of bedding and discontinuities. Locations of structural data were estimated by stations measured from a known bench mark and/or GPS. Structural data was used to verify slope stability for proposed cut slope orientation using kinematic analysis. A tension crack/scarp was identified along the south end of the cut slope and mapped with GPS as a blue line, dashed where uncertain. This appeared to be a minor slump along the edge of over-steepened Qoa. The approximate contact between Tm and Qoa is shown as a dashed black line (Attachment 7).

Geophysical Studies

Seismic refraction surveys were conducted July 17-19, 2012 to profile engineering properties of subsurface soil and rock along the proposed new alignment. The results of this survey are summarized in the attached report (Appendix A), submitted in August 2012 by the Caltrans Geophysics group of Geotechnical Services. The raw data of this investigation is archived with Geotechnical Services. The primary purpose of this study is to establish relative difficulty in excavation (rippability) of the proposed new highway alignment. Levels of excavation difficulty are standardized with published Caltrans data for a Caterpillar D9G series bulldozer with a single tooth, and summarized in the attached report.

A total of four seismic lines were surveyed on the dates referenced above; three (SL-1 through SL-3) along the existing cut-slope benches and crest of cut-slope and one (SL-4) perpendicular to the other three seismic lines. The layout of these lines are shown in Attachments 6 and 8. Additionally, SL-4 was positioned through geotechnical boring RC-12-001 for correlative purposes. Three seismic cross sections (A-A', B-B', and C-C') were produced perpendicular to SL-1 through SL-3, which show extrapolated seismic velocity layers between intersections of each seismic line(Attachment 8). It is inferred from seismic refraction that Older Terrace

Deposits overlie Monterey siltstone to approximately 7-ft, where a dense, Poorly Graded SAND (SP) was encountered in the boring. The SAND recorded in the LOTB between 7-15-ft below ground surface is unconsolidated and interpreted as Older Terrace Deposits.

Geotechnical Testing

In Situ Testing

A Standard Penetration Test (SPT) was conducted at 5-foot intervals in boring RC-12-001 until bedrock was encountered (15-ft below surface). The blow count N-values of the SPT were corrected for hammer efficiency of the CME 750 (2012) and are reflected in the relative soil densities in the boring record (Attachment 9).

Geotechnical Conditions

Site Geology

Lithology

The site is locally underlain by Miocene Rincon (Tr) and Monterey (Tml) shale (Attachment 2). The Rincon shale is described as a poorly bedded grey claystone. The Monterey shale is a soft, punky, and fissile to platy semi-siliceous shale containing thin interbedded calcareous strata. Bedding dips between 40 and 50 degrees southward (Dibblee,1988). Geologic mapping shows older undivided terrace deposits (Qoa), characterized by weakly consolidated stream terrace and alluvial fan deposits of SILT, SAND, and GRAVEL that unconformably and extensively overlie the Monterey shale to the south. Locally, these deposits are up to 20-ft thick and contain random deposits of GRAVEL and COBBLE in the upper 2-ft, silty SAND and Poorly Graded SAND. The presence of this unit along the southern portion of the existing curve is evident by contrasting erosion and lower slope angles.

Structure

Site structure is dominantly controlled by bedding which dips between approximately 35-50 degrees southward. At least four conjugate joint sets are present, oriented at steep angles to bedding. The current cut-slope is obliquely oriented on average 60 degrees west (average azimuth=240,) of bedding (average azimuth=180), with an approximate 0.75:1 slope in steeper sections where rock is exposed, and 1.5:1 to the south, where Older Terrace Deposits unconformably overlie the Monterey Formation. Bedding is projected to dip as steep or steeper than the existing slopes on the southern extent of the curve alignment. Representative structural data of each set are shown at GPS-location on Attachment 7.

Natural Slope Stability

The existing cut-slopes along the current Gaviota curve alignment are stable due to favorable structure, which is dominated by southward dipping bedding. The majority of shale and sandstone beds are from slightly to intensely fractured at high angles to bedding, yielding potential for localized instability. Minor amounts of debris have been displaced onto the existing benches over the 60-year duration of the cut slope. Minor rock fall/sliding may occur during the winter season, when saturated conditions occur. Maintenance records, show one storm event, where removal of a 1.5-ft diameter rock from the northbound lanes was required in the past 15 years. No springs were observed during late spring and summer-site visits.

Soil and Groundwater Conditions

Soils were logged in RC-12-001 to approximately 15-feet below ground surface, underlain by Monterey Formation shale, sandstone and siltstone. Dry and moist loose SILT with GRAVEL was encountered between 0-2 feet. Medium dense Silty SAND and Poorly Graded SAND was observed from 2 to 15 feet below ground surface. These soils are interpreted as Older Terrace deposits (Qoa) as mapped in the Solvang and Gaviota 7.5' Quadrangles by Dibblee (1988). No ground water was detected in the open hole in July 2012. Oxidation on fracture surfaces (observed in RC-12-001) from top of bedrock (15-ft below ground surface at EL=185-ft) to approximately 50-ft bgs (EL=150-ft) suggests that ephemeral ground water conditions may exist. Evidence for springs is nonexistent along the existing cut slope face, however, temporary seepage may occur along the new cut slope following the rainy season

Surface Water

Surface water appears to mostly percolate into the loose overlying terrace deposits locally, facilitated by natural grass and brush coverage. The existing cut slope occurs at the nose of ridge with approximately 2:1 slopes along the westward plunging crest line and 1.5:1 slopes along the northern and southern flanks. Freshly exposed soils and friable rock during construction, are anticipated to generate variable surface erosion, particularly in the overlying loose sand of Qoa. No natural drainages occur within the project area.

Erosion

Erosion along the existing cut slope geometry is negligible based on field observation and maintenance records. Erosion is anticipated following completion of the new cut slope in the form of ravel and sheet flow of the loose silty SAND of the overlying Qoa deposits. Erosion is expected to diminish as the new slope geometry equilibrates from removal of stresses associated with overburden material.

Geotechnical Analysis and Design

The following sections provide a summary of the recommendations for geotechnical and structural design as determined from the geotechnical investigation and analysis results.

Cuts and Excavations

Cut slopes within the overlying Older Terrace Deposits (Qoa), are recommended not to exceed 1.5:1 due to potential for erosion and shallow slump failure. SLOPE-W was used to model global slope stability in Qoa deposits using correlative soil strength parameters from SPTs in boring RC-12-001. The results of this analysis are summarized under the Stability section below. Slopes south of Sta 89+50 should be graded at 1.5:1 or flatter where these overlying deposits are observed. It is recommended that slopes occurring in the Monterey Formation may be excavated at angles up to 0.75:1 and that the mean orientation of slope face north of Sta 89+50, be oriented south-westerly (azimuth = 205 to 240). In slope angle transitions between 1.5:1 to 0.75:1 (from south to north), it is recommended that significant southerly cut-slope exposures be excavated at or shallower than the mean dip of bedding (<40 deg or <1.2:1). Stability mitigation of south-facing slopes at 1:1 or steeper, especially in the transition from 1.5:1 slopes (to the south) to 0.75:1 slopes (to the north), may require flattening to the natural "dip slope" of the bedding.

Catchment at grade should be designed to capture minor rock fall from the cut slope face within the Monterey Formation and fine grained loose material from the overlying Qoa deposits during and following storm events. The catchment should be graded no flatter than the 5% grade shown in typical cross sections to prevent potential for rocks to roll on to the highway.

Stability

Slope stability of the overlying Terrace deposits (soil) was analyzed in SLOPE-W with a simplified scaled block model. Three horizontal SAND layers from loose (N =5, phi= 30) to medium dense (N=34, phi=36), were modeled. A slope geometry of 1.5:1 and 1:1 were analyzed under fixed strength parameters estimated from Standard Penetration Tests at RC-12-001. Slopes at 1:1 showed potential for deeper circular displacements which support observation of slumping below an existing tension crack shown on the structure map. Slopes at 1.5:1 are anticipated to generate surface erosion only.

Slope stability of the Monterey shale was analyzed kinematically with assumed rock strength parameters from studies in similar material (Goodman, 1980). All structural data was statistically and kinematically analyzed using the stereo plotting program, DIPS 6, by Rocscience, Inc. Structural data, namely bedding and joints are represented three dimensional as poles (lines orthogonally intersecting planes) for graphical clarity of kinematic analysis and statistical pole density contouring, on an equal angle projection. Pole density contouring allowed for easy detection of dominant structural orientations in a scattered data set. Three kinematic (evaluation of types of displacement independent of influence by external forces such as water and seismic) analyses were performed using dip/dip direction of each structure measured along the cut slope benches: 1) wedge, 2)

planar, and 3) topple (Attachment 10). A conservative friction cone of φ=30-32 degrees was used in each analysis based on laboratory testing of similar rocks.

Potential for planar sliding is negligible (no planar structures fall within the critical "day light" envelope highlighted in red-cross hatch on the stereo plot) assuming a mean cut slope orientation of dip/dip dir = 50/230. If landform grading-cut slopes within the Monterey Formation, are shifted 25 degrees southward from the mean cut slope orientation above, planar sliding may occur where slope angles exceed the mean dip of bedding at about 1.2:1. Wedge analysis showed approximately 13% of all possible intersecting structural planes to generate sliding on one or two surfaces. The high density of fractures and jointing in the Monterey sandstone and shale is anticipated to generate small scale (0.5-2.0-foot block diameter) wedge-type slip-outs during and after excavation based on average joint spacing observed along the existing cut slope.

Potential for direct toppling type failures are insignificant based on the total number of critical structural intersections.

Rippability

The Rippability of rock is related to rock composition and discontinuity density. Seismic refraction uses a controlled energy source, and array of geo-phones (seismic receivers), and seismograph (for data processing). The Caltrans geophysics survey described under the Geophysics Section, bases rippability on seismic velocity correlations published in California Department of Transportation, Report No. FHWA-CA-TL-78-23 and the single ripper-Caterpillar D9G series. Their data, summarized in Table 1 below, shows three seismic velocity layers for each of the four seismic lines. The seismic data averages material densities and does not detect discontinuities such as bedding and joints. The attached Seismic Refraction Survey Report (APPENDIX A) identifies the third layer as "difficult ripping" (DR), or "not rippable" (NR). Based on the undetected density of discontinuities, averaging of variable composition (contrasting rock densities), and modern excavation equipment, this third layer is anticipated to be rippable. Undetected harder sandstone and/or silicified shale beds may be encountered and require alternative methods of excavation such as an adapted hoe ram.

Table 1: Seismic Refraction Results

Seismic Line	Layer	Average Thickness m (ft)	Average Velocity m/s (ft/s)	Line length m (ft)	Inferred Material	Rippability
SL-1	1	2.8 (9)	299 (981)	175 (574)	Unconsolidated Older Terrace Deposits	ER
SL-1	2	8.3 (27)	542 (1,778)	175 (574)	Monterey Siltstone (fresh-slightly weathered	ER
SL-1	3	N/A	1110/1620 (3,642/5,315)	175 (574)	Monterey sandstone, unsaturated	DR
SL-2	1	2.5 (8)	360 (1,181)	125 (410)	Unconsolidated Older Terrace Deposits	ER
SL-2	2	9 (30)	781 (2,562)	125 (410)	Monterey Siltstone (fresh-slightly weathered	ER
SL-2	3	N/A	1814 (5,951)	125 (410)	Monterey Fm.	DR
SL-3	1	1.5 (5)	360 (1,181)	125 (410)	Unconsolidated colluvium	ER
SL-3	2	8.5 (28)	969 (3,179)	125 (410)	Monterey Siltstone (fresh-slightly weathered	ER
SL-3	3	N/A	2309 (7,575)	125 (410)	Saturated Monterey Fm (?)	NR
SL-4	1	2 (7)	398 (1,306)	48 (157)	Unconsolidated Older Terrace Deposits	ER
SL-4	2	8 (26)	707 (2,320)	48 (157)	Monterey Siltstone (fresh-slightly weathered	ER
SL-4	3	N/A	1569 (5,148)	48 (157)	Monterey Fm.	DR

ER= easily ripped, MD= moderate difficulty, DR= difficult ripping, NR= not rippable

Earthwork Factors

An empirical relationship is established between seismic velocity and grading factors of various rock and soil compositions based on earthwork projects throughout California. Earthwork factors for Gaviota are estimated from a seismic study correlative to similar lithology, documented in FHWA- CA-TL-78-23. Table 2 below, was prepared for the sedimentary units at this location according to seismic velocity layers described in Table 1.

Table 2: Earthwork Factors

Seismic Line	Layer	Average Thickness m (ft)	Average Velocity m/s (ft/s)	Inferred Material	Earthwork Factors
SL-1	1	2.8 (9)	299 (981)	Unconsolidated Older Terrace Deposits	0.88-0.90
SL-1	2	8.3 (27)	542 (1,778)	Monterey Siltstone (fresh-slightly weathered	0.99-1.0
SL-1	3	N/A	1110/1620 (3,642/5,315)	Monterey sandstone, unsaturated	1.05-1.07/ 1.10-1.12
SL-2	1	2.5 (8)	360 (1,181)	Unconsolidated Older Terrace Deposits	0.89-0.91
SL-2	2	9 (30)	781 (2,562)	Monterey Siltstone (fresh-slightly weathered	1.02-1.04
SL-2	3	N/A	1814 (5,951)	Monterey Fm.	1.11-1.13
SL-3	1	1.5 (5)	360 (1,181)	Unconsolidated colluvium	0.89-0.91
SL-3	2	8.5 (28)	969 (3,179)	Monterey Siltstone (fresh-slightly weathered	1.05-1.07

Seismic Line	Layer	Average Thickness m (ft)	Average Velocity m/s (ft/s)	Inferred Material	Earthwork Factors
SL-3	3	N/A	2309 (7,575)	Saturated Monterey Fm (?)	1.14-1.16
SL-4	1	2 (7)	398 (1,306)	Unconsolidated Older Terrace Deposits	0.93-0.94
SL-4	2	8 (26)	707 (2,320)	Monterey Siltstone (fresh-slightly weathered	1.01-1.03
SL-4	3	N/A	1569 (5,148)	Monterey Fm.	1.10-1.12

The grading factors are based on experience with similar sedimentary rock where the embankments were compacted to 93 to 95 % Relative Compaction.

Five cross sections (A-A' through F-F') constructed perpendicular to the seismic lines SL-1 through SL-3, incorporating estimated depths of seismic refractors (change in material density) and corresponding earthwork factors (Attachment 8). Longitudinal profiles of this data are provided in the Geophysics Report (Appendix A). Material rippability is again anticipated to be variable running north-south.

Construction Considerations

Construction Advisories

Excavation difficulty in the Monterey Formation rocks is expected to be variable along the north-south alignment because of lithological and/or structural changes. The contractor should be prepared to excavate very hard sections of sandstone inter-bedded with moderately hard to soft (weathered), and intensely fractured shale. Overlying, loose terrace deposits will be erosive once disturbed. Slopes within these overlying deposits should be kept at 1.5:1 or flatter and mitigated for temporary and permanent erosion control per Caltrans 2010 Standard Specifications, Section 21.

Differing Site Conditions

Subsurface conditions may vary from those described in this report due to the anisotropic nature of the Monterey Formation and the limitations of the investigation. The depth and distribution of soils and orientation of rock structure (such as bedding) may change. Geotechnical Design personnel should be contacted immediately upon discovery of conditions noted to be different from those described in this report.

Recommendations and Specifications

Refer to the preceding sections for detailed recommendations regarding construction techniques and specifications. The following list summarizes the recommendations provided in this report:

- Cut slopes in overlying Older Terrace Deposits (mostly loose to medium dense silty SAND and Poorly Graded SAND) should be excavated at slopes of 1.5:1 or flatter. Temporary and permanent erosion mitigation is recommended is all areas where this

material is disturbed. All erosion control should comply with Caltrans 2010 Standard Specifications, Section 21.

- Cut slopes in rock are recommended to not exceed 0.75:1 slopes. Transitions from flatter 1.5:1 slopes to the south, into 0.75:1 slopes to the north, should avoid excavation of south-facing slopes (azimuth = 155-205 deg.) in rock. Where south-facing slopes are necessary; slopes of 1.2:1 or flatter are recommended. Landscaping with native grasses and or shrubs on all exposed soil slopes is recommended to increase resistance to slope erosion due to high susceptibility to erosion of overlying terrace soils.
- Notify Geotechnical Staff if unexpected groundwater or other geotechnical conditions not addressed in this report are encountered during construction. A member of the Geotechnical Staff will recommend mitigation after observation and analysis.

If you have any questions or comments, please contact Mike Jurasius (805) 549-3729, John Duffy (805) 549-3663, or Mike Finegan (805) 549-3194.

PROFESSIONAL GEOLOGIST
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CERTIFIED ENGINEERING GEOLOGIST
3/31/13
STATE OF CALIFORNIA

MIKE JURASIUS, CEG
Engineering Geologist
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Branch D

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2/28/14
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JOHN D DUFFY, CEG
Senior Engineering Geologist
Geotechnical Design – North
Branch D

Supervised by: Michael S. Finegan
Chief, Geotechnical Design North
Branch D

c: Roy Bibbens / GDN Records
GS File Room
Job File / Branch D Records
District Project Manager: David Beard
Project Coordination Engineer: Andrew Tan
District Environmental Planning: Matt Fowler
District Materials Engineer: Doug Lambert
Geotechnical Archive: http://10.160.173.158/

LIST OF ATTACHMENTS

APPENDICES

INDEX OF PLANS

SHEET No. | DESCRIPTION

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SB	101	45.6/46.4		

STATE OF CALIFORNIA

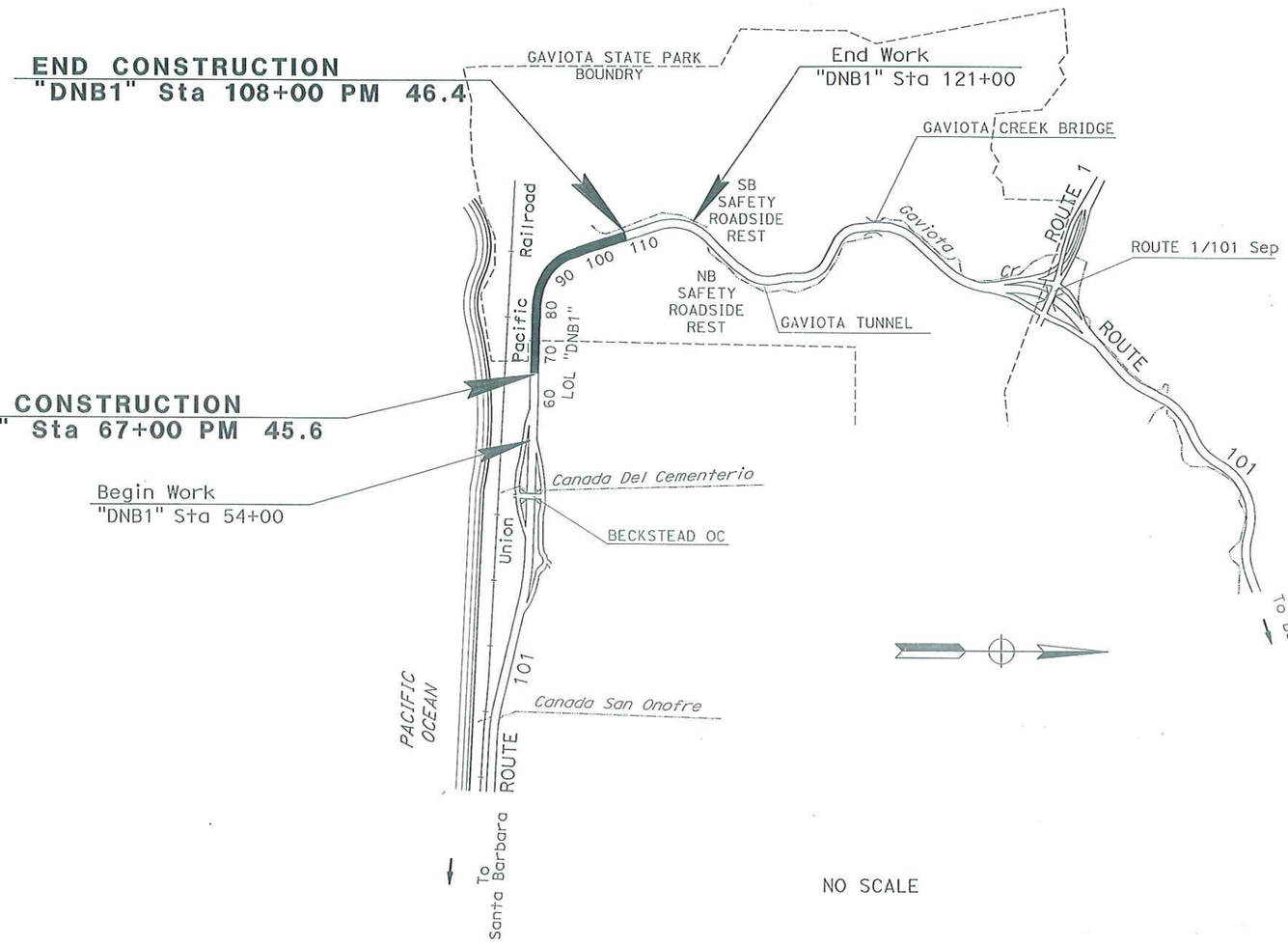
DEPARTMENT OF TRANSPORTATION

PROJECT PLANS FOR CONSTRUCTION ON

STATE HIGHWAY

IN SANTA BARBARA COUNTY
FROM 0.7 MILES NORTH OF BECKSTEAD OVERCROSSING
TO 0.9 MILES SOUTH OF GAVIOTA TUNNEL

TO BE SUPPLEMENTED BY STANDARD PLANS DATED MAY 2010



NO SCALE

DESIGN ENGINEER	STEVEN M. WYATT
PROJECT MANAGER	DAVID BEARD

THE CONTRACTOR SHALL POSSESS THE CLASS (OR CLASSES) OF LICENSE AS SPECIFIED IN THE "NOTICE TO BIDDERS."

ATTACHMENT 1

PROJECT ENGINEER DATE
REGISTERED CIVIL ENGINEER

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. CIVIL — STATE OF CALIFORNIA

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

CONTRACT No.	05-0T6304
PROJECT ID	0500020029

LAST REVISION

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SB	101	45.6/46.4		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER P.F.VALADAO No. 63987 Exp. 9-30-XX CIVIL STATE OF CALIFORNIA

NOTES:

1. DIMENSIONS OF THE PAVEMENT STRUCTURES (STRUCTURAL SECTIONS) ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.
2. SUPERELEVATION AS SHOWN OR AS DIRECTED BY THE ENGINEER.

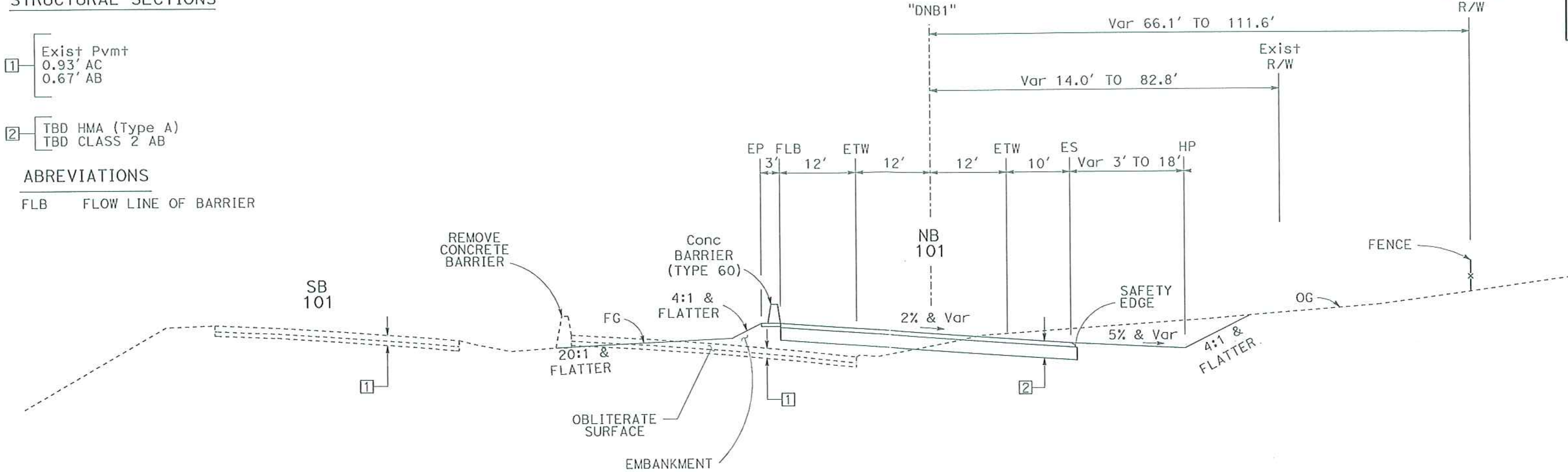
STRUCTURAL SECTIONS

[1] Exist Pvmt
0.93' AC
0.67' AB

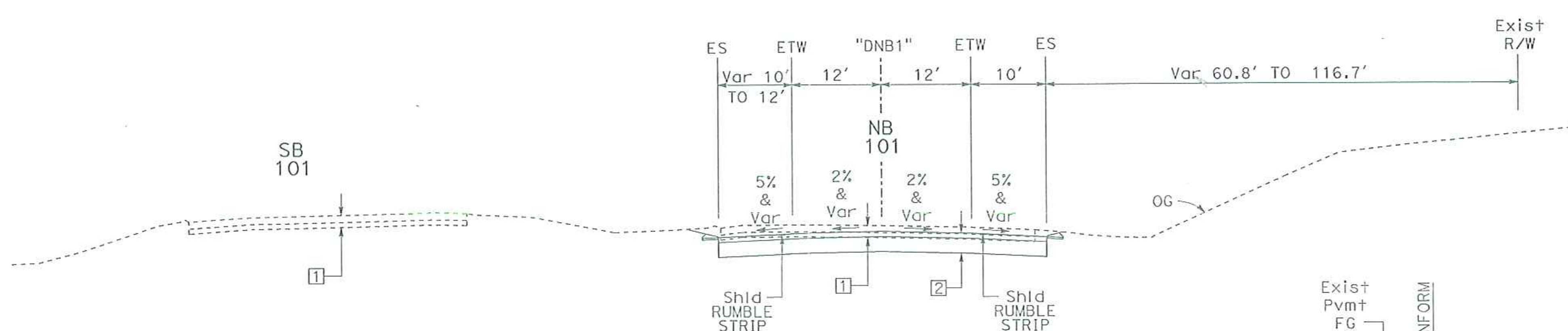
[2] TBD HMA (Type A)
TBD CLASS 2 AB

ABREVIATIONS

FLB FLOW LINE OF BARRIER

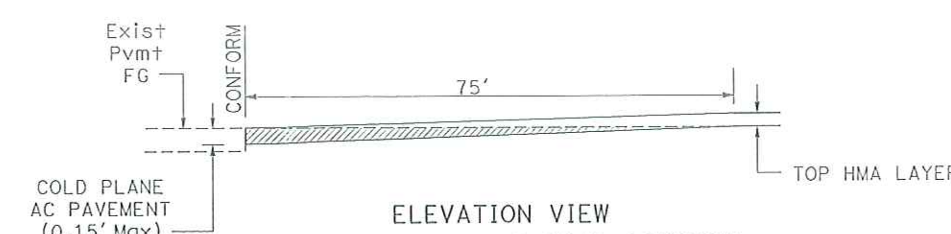


"DNB1" Sta 78+30.0 TO 86+00.0



"DNB1" Sta 69+50.0 TO 78+30.0

ROUTE 101
NORTHBOUND



ELEVATION VIEW
LONGITUDINAL AC PAVING CONFORM

"DNB1" Sta 68+75.0 TO 69+50.0
"DNB1" Sta 98+85.0 TO 99+60.0

ATTACHMENT 2

TYPICAL CROSS SECTIONS

NO SCALE

X-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
DESIGN
FUNCTIONAL SUPERVISOR: STEVEN M. WYATT
CALCULATED-DESIGNED BY: PAUL F. VALADAO
CHECKED BY: MICHAEL A. O'NEAL
REVISED BY
DATE REVISED

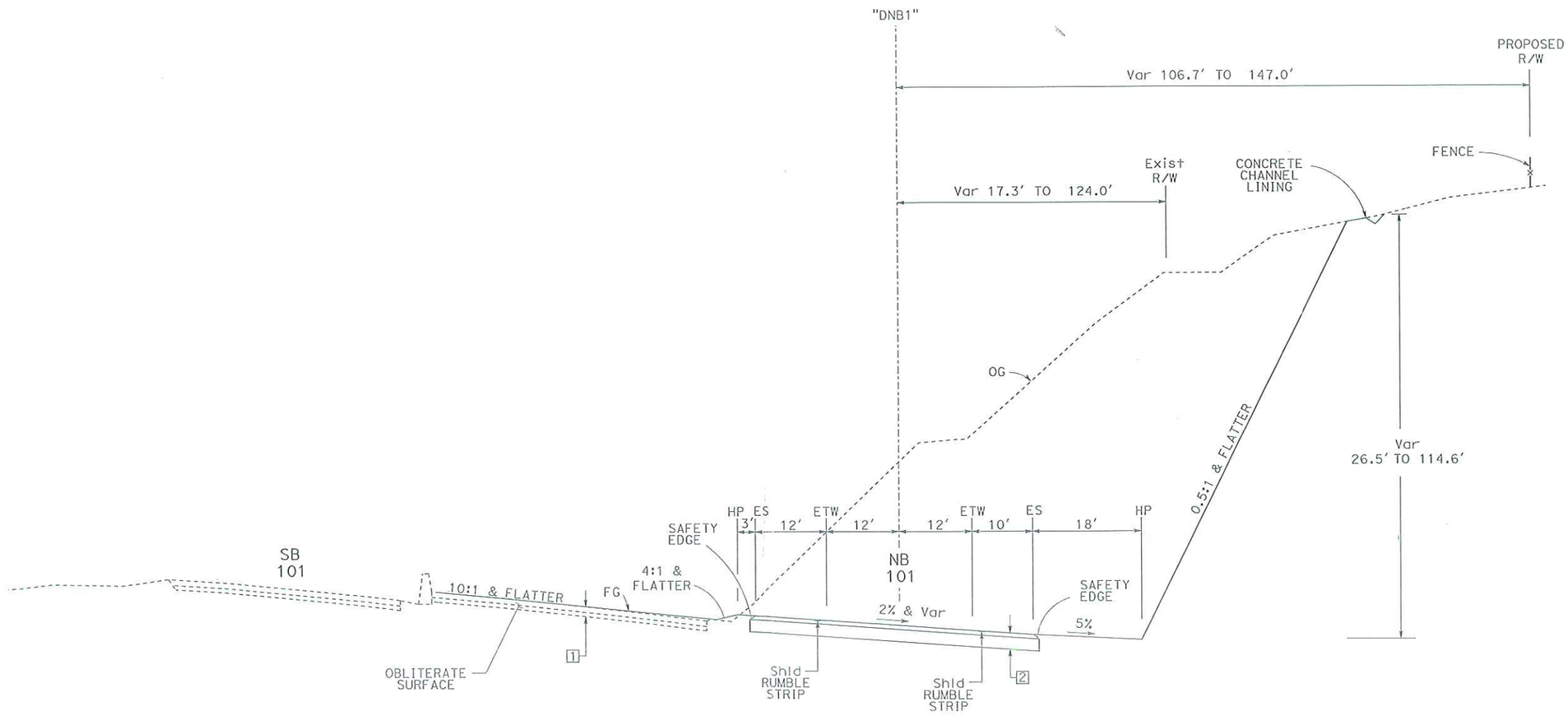
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SB	101	45.6/46.4		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
P.F.VALADAO
No. 63987
Exp. 9-30-XX
CIVIL
STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



"DNB1" Sta 86+00.0 TO 95+00.0

ROUTE 101

NORTHBOUND

ATTACHMENT 2

TYPICAL CROSS SECTIONS

NO SCALE

X-2

REVISED BY	DATE REVISED

CALCULATED-DESIGNED BY: PAUL F. VALADAO
CHECKED BY: MICHAEL A. O'NEAL
FUNCTIONAL SUPERVISOR: STEVEN M. WYATT

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN

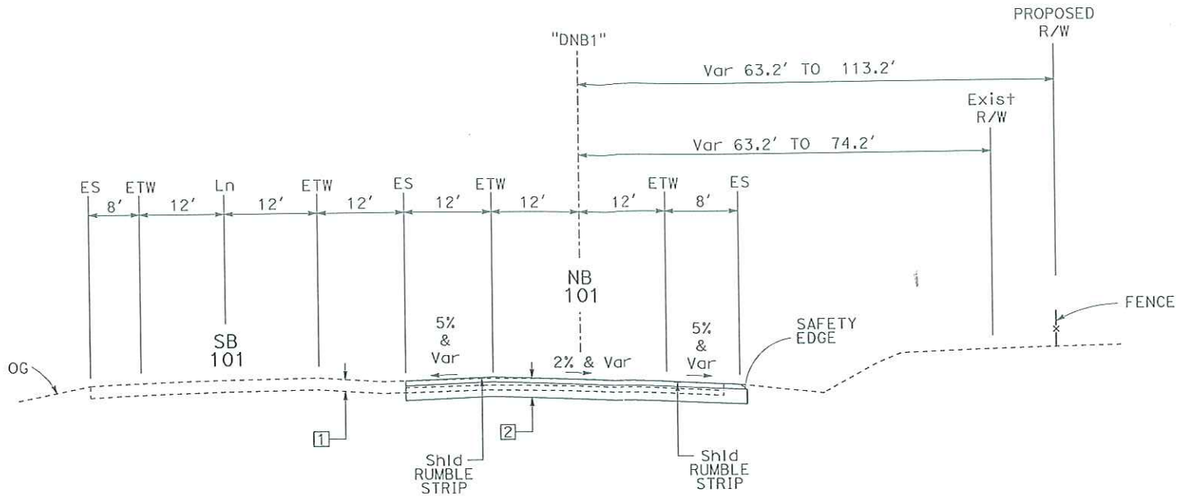
LAST REVISION | DATE PLOTTED

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SB	101	45.6/46.4		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
P.F.VALADAO
No. 63987
Exp. 9-30-XX
CIVIL
STATE OF CALIFORNIA



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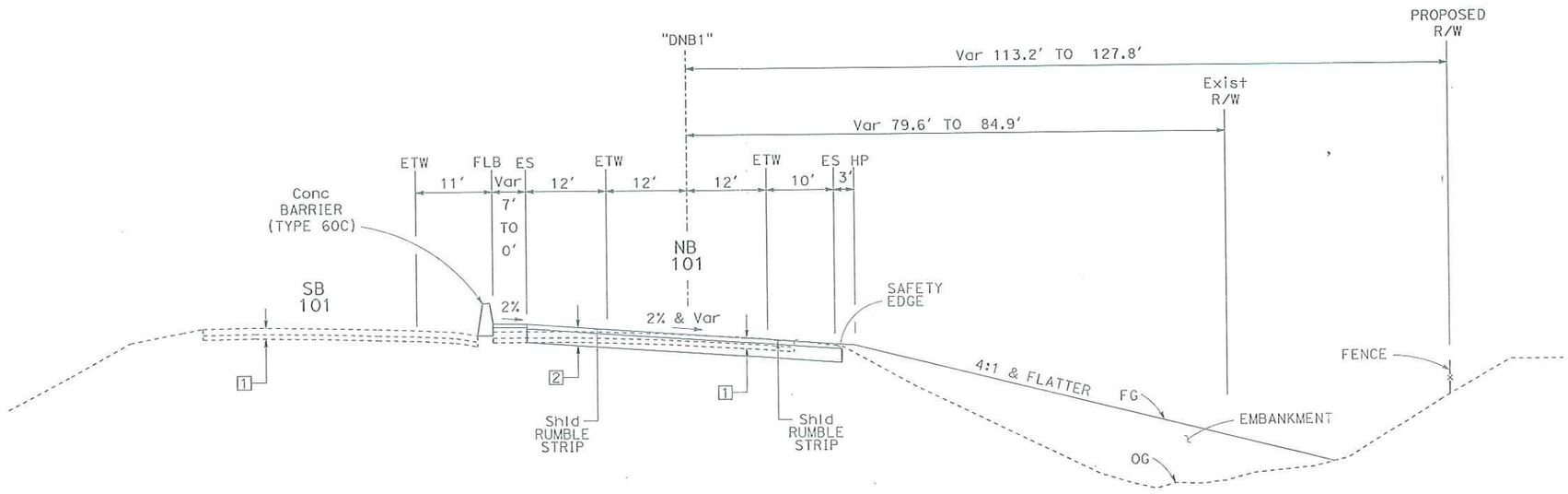


"DNB1" Sta 95+00.0 TO 98+70.0

ROUTE 101
NORTHBOUND

ATTACHMENT 2

TYPICAL CROSS SECTIONS
X-3

NO SCALE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN

FUNCTIONAL SUPERVISOR: STEVEN M. WYATT

CALCULATED-DESIGNED BY: PAUL F. VALADAO

CHECKED BY: MICHAEL A. O'NEAL

REVISED BY | DATE REVISED

LAST REVISION | DATE PLOTTED

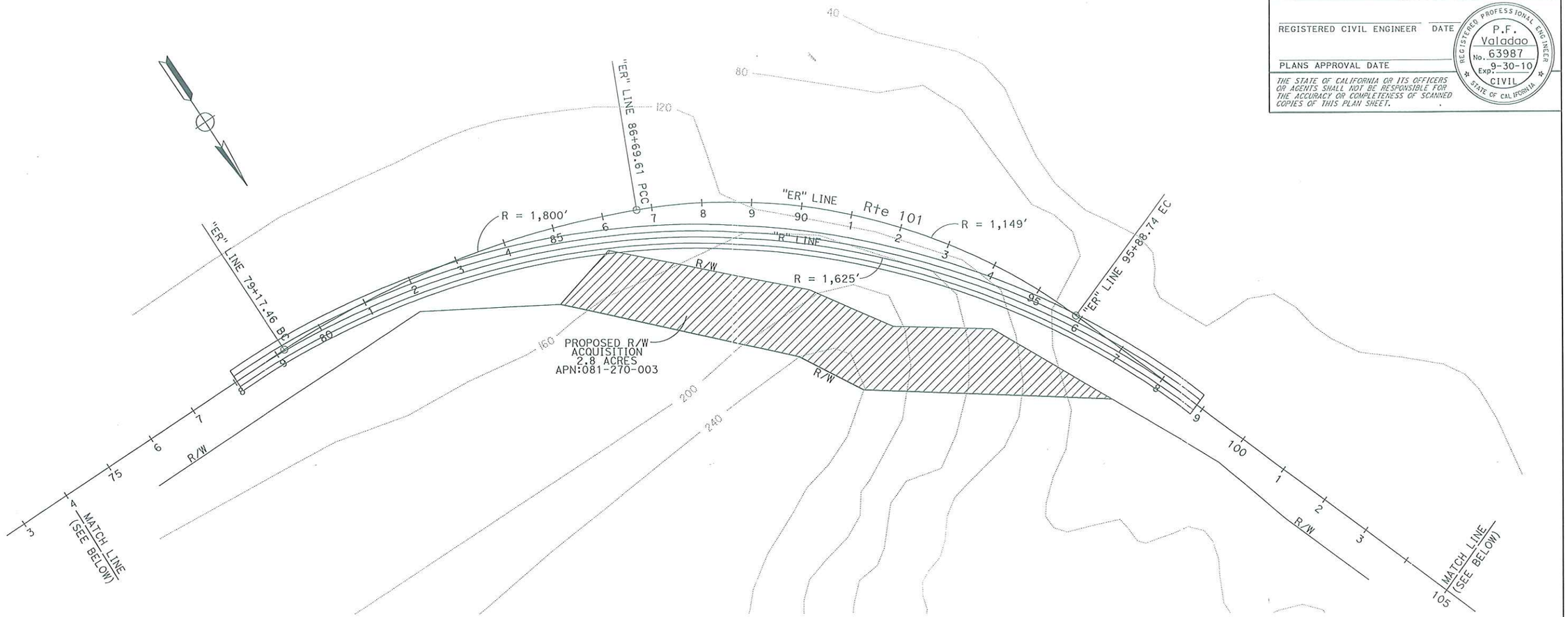
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SB	101	45.5/46.3		

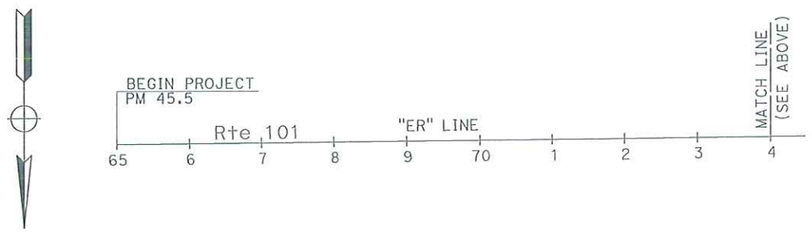
REGISTERED CIVIL ENGINEER DATE

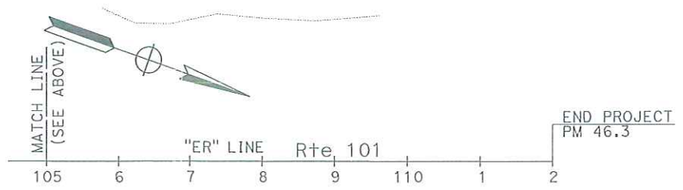
PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER
P.F. Valadao
No. 63987
Exp. 9-30-10
CIVIL
STATE OF CALIFORNIA



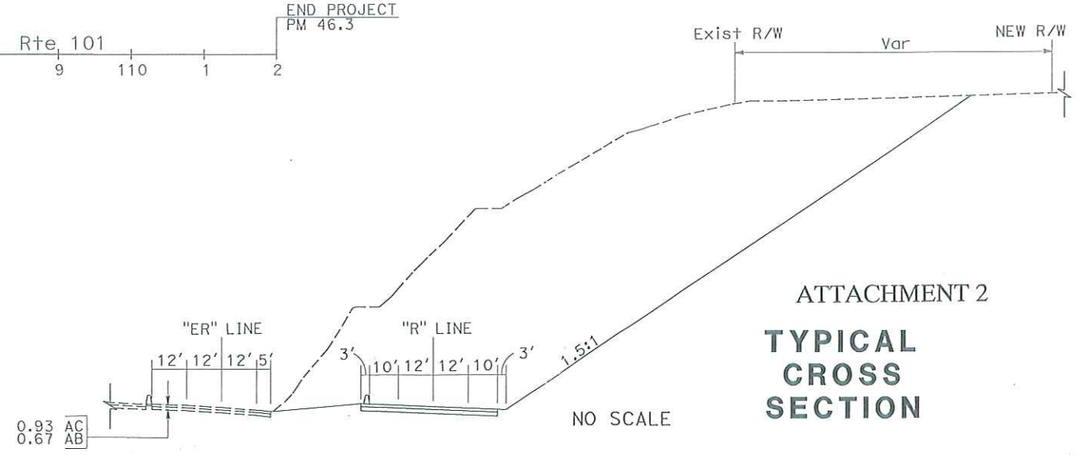




SCALE: 1" = 200'

LAYOUT

ATTACHMENT B



NO SCALE

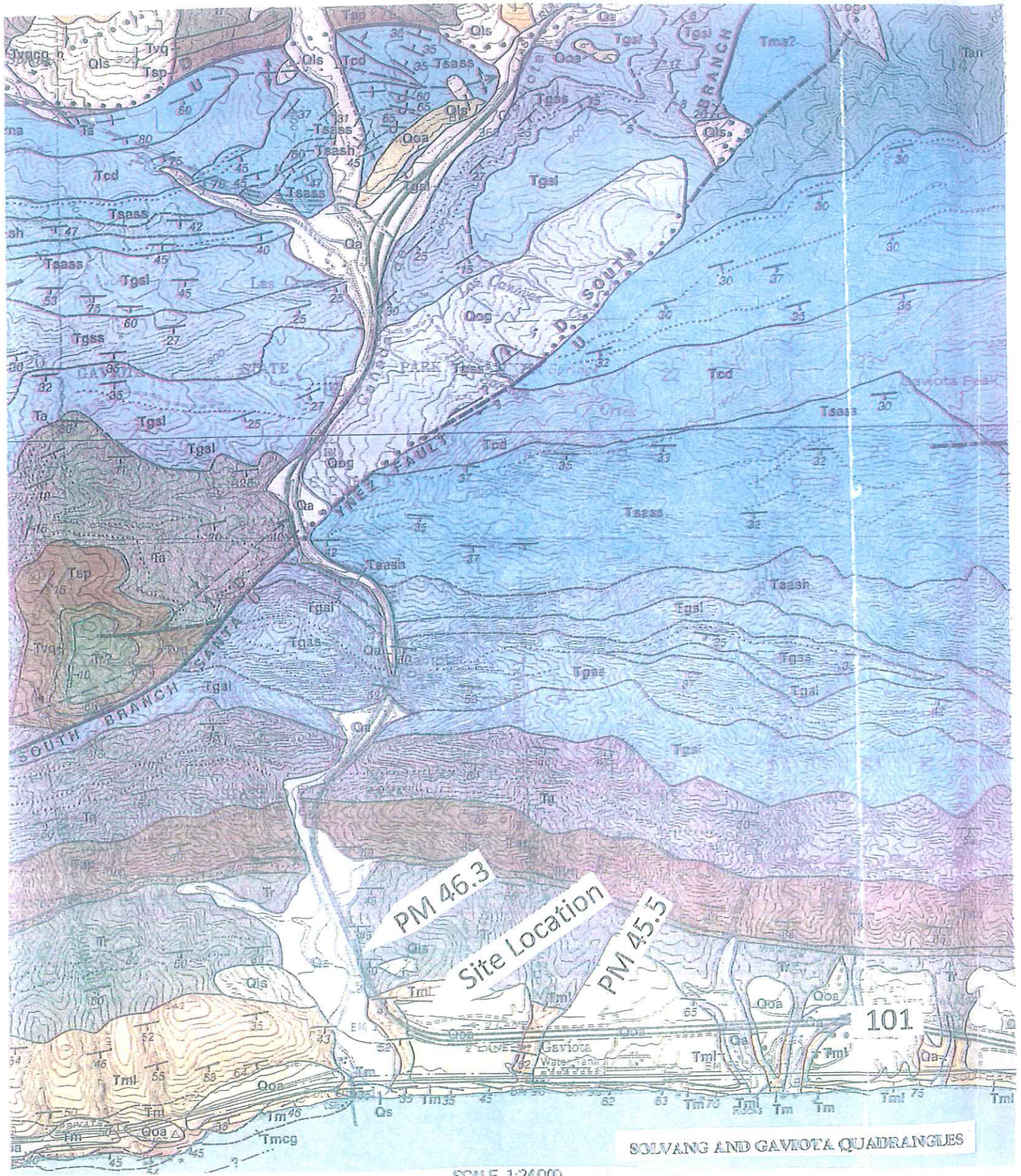
ATTACHMENT 2

TYPICAL CROSS SECTION

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CALCULATED-DESIGNED BY	P. VALADAO	REVISED BY
Caltrans® DESIGN	CHECKED BY	M. O'NEAL	DATE REVISED
FUNCTIONAL SUPERVISOR	S. WYATT		

LAST REVISION 00-00-00 DATE PLOTTED => 03-FEB-2012 TIME PLOTTED => 11:06

BORDER LAST REVISED 4/11/2008 | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | USERNAME => s136707 DGN FILE => 05-0T630_Prelim_Exhibit.dgn | CU 00000 | EA 000000



SCALE 1:24000

1 MILE

7000 FEET

1 KILOMETER

Gaviota Curve Correction
Regional Geology
05-SB-101-45.5/46.3

LEGEND

☆ UNITS PRESENT ONLY NORTH OF SANTA YNEZ FAULT
✧ UNITS PRESENT ONLY SOUTH OF SANTA YNEZ FAULT

Qs / Qg / Qa — Qls

SURFICIAL SEDIMENTS

Qs *beach sand deposits*
Qg *stream channel deposits of gravel, sand and silt*
Qa *valley and floodplain deposits of silt, sand and gravel*
Qls *landslide debris*

Qoa — Qoa$_3$ / Qoa$_2$ / Qoa$_1$ — Qog

OLDER DISSECTED SURFICIAL SEDIMENTS

remnants of weakly consolidated stream terrace and alluvial fan deposits of silt, sand and gravel; local unconformities at base

Qoa *undivided former terrace remnants*
Qog *cobble-boulder fan gravel and fanglomerate deposits composed largely of sandstone detritus*
☆ Qoa$_3$ *lowest, youngest terrace remnants*
☆ Qoa$_2$ *intermediate terrace remnants*
☆ Qoa$_1$ *highest, oldest terrace remnants*

Tr

RINCON SHALE

marine; early Miocene age
Tr *poorly bedded gray clay shale or claystone; Saucesian and upper Zemorrian Stages*

Tvq — Tvqcg

VAQUEROS SANDSTONE

shallow marine transgressive; early Miocene age
Tvq *north of Santa Ynez fault: greenish-tan sandstone and interbedded greenish siltstone, with local calcareous lenses; south of Santa Ynez fault: light gray calcareous sandstone*
Tvqcg *greenish-brown sandstone and pebble conglomerate composed mostly of Franciscan detritus*

Tsp — Tspcg

SESPE FORMATION

unconformity; predominantly Oligocene age
Tsp *gray to tan sandstone and green to red siltstone and claystone; basal part intertongues westward with Alegria Formation south of Santa Ynez fault*
☆ Tspcg *greenish-gray to reddish conglomerate composed mostly of Franciscan and ultramafic (peridotite) detritus; unconformity at base*

Ta

✧ ALEGRIA FORMATION

shallow marine regressive; Oligocene age
Ta *tan, arkosic sandstone and greenish-gray siltstone, locally fossiliferous; intertongues eastward into lowest part of Sespe Formation; lower Zemorrian and Refugian Stage*

Tgsl — Tgss

✧ GAVIOTA FORMATION

shallow marine regressive; early Oligocene age
Tgss *hard, thick bedded tan arkosic sandstone, locally fossiliferous, and minor gray siltstone; Refugian Stage*
Tgsl *gray concretionary siltstone and claystone*

Tg-sa

✧ GAVIOTA — SACATE FORMATIONS

Tg-sa *Gaviota or Sacate Formations, undifferentiated*

Tsass — Tsash

SACATE FORMATION

marine; late Eocene age
dark gray micaceous clay shale and siltstone interbedded with hard, light gray to tan arkosic sandstone; Zemorrian Stage

SYMBOLS

not all symbols present on each map

FORMATION CONTACT — *dashed where inferred or indefinite* — MEMBER CONTACT

CONTACT BETWEEN SURFICIAL SEDIMENTS — *located approximately in places*

U / D — 70 — FAULT

dashed where indefinite or inferred, dotted where concealed, queried where existence doubtful. Parallel arrows indicate inferred relative lateral movement. Relative vertical movement shown by U/D (U = upthrown side D = downthrown side). Short arrow indicates dip of fault plane.

ANTICLINE — SYNCLINE

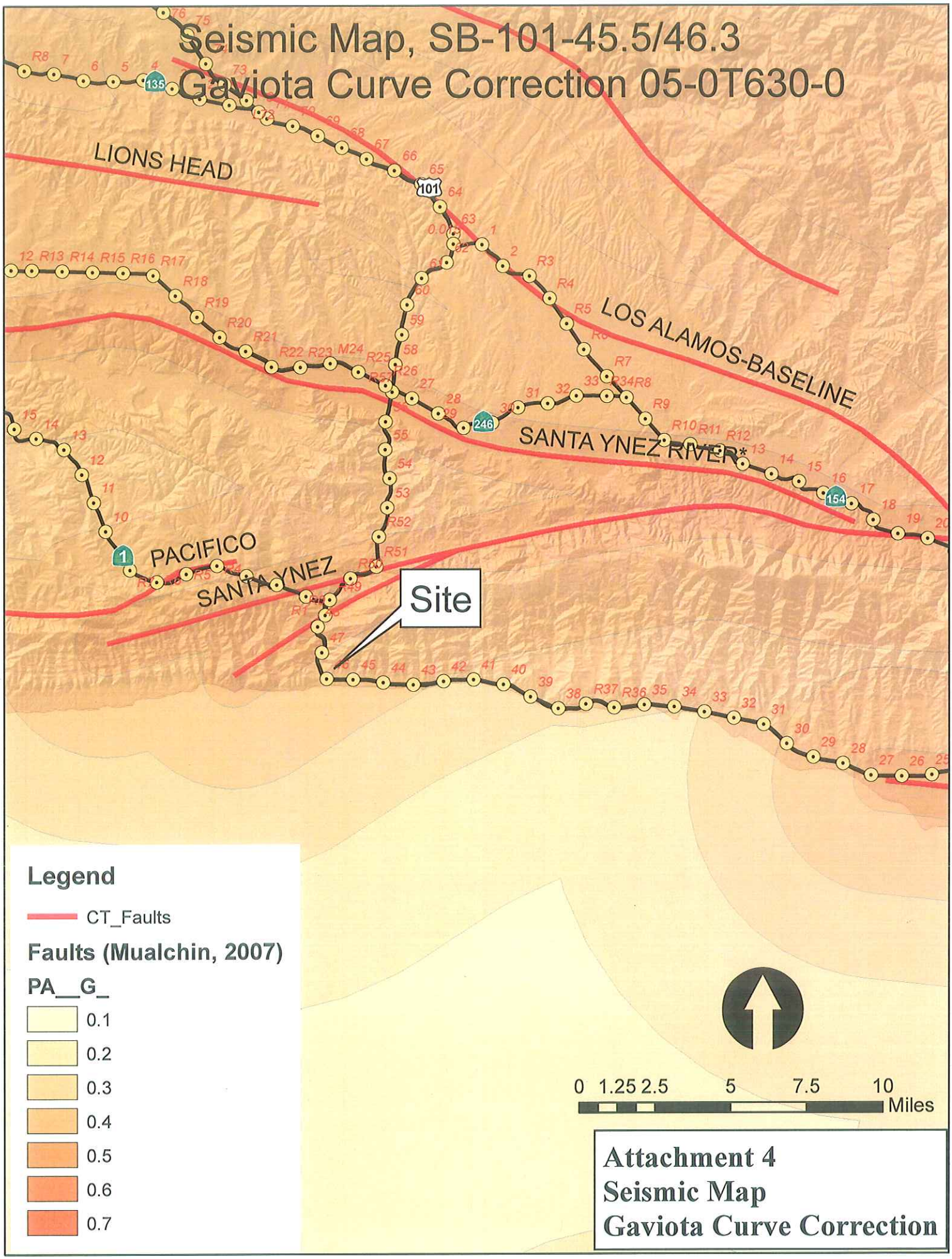
arrow on axis indicates direction of plunge, dotted where concealed

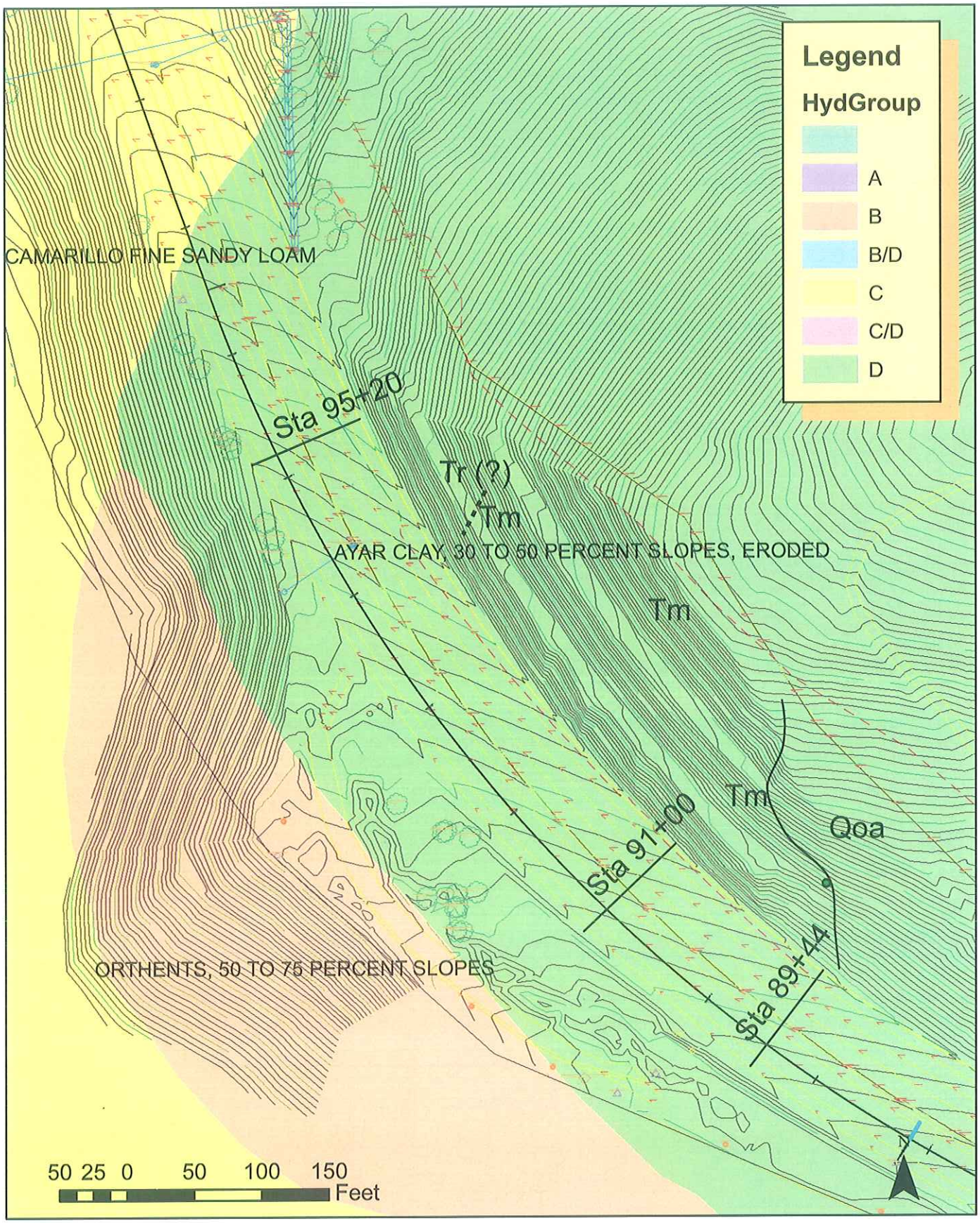
25 — 20 — 25 — 25

ATTACHMENT 3

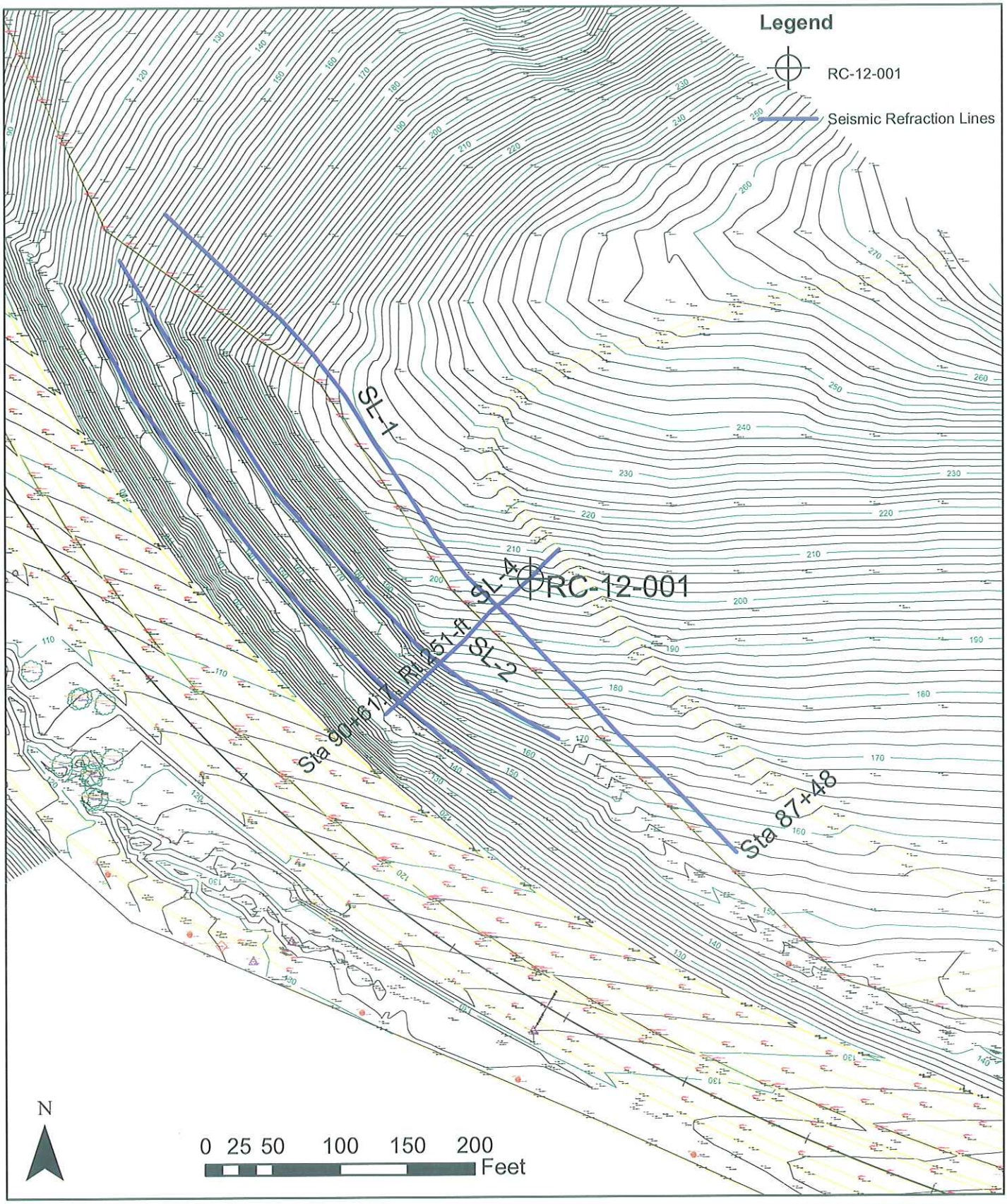
N

Geologic Map
05-0T630-0

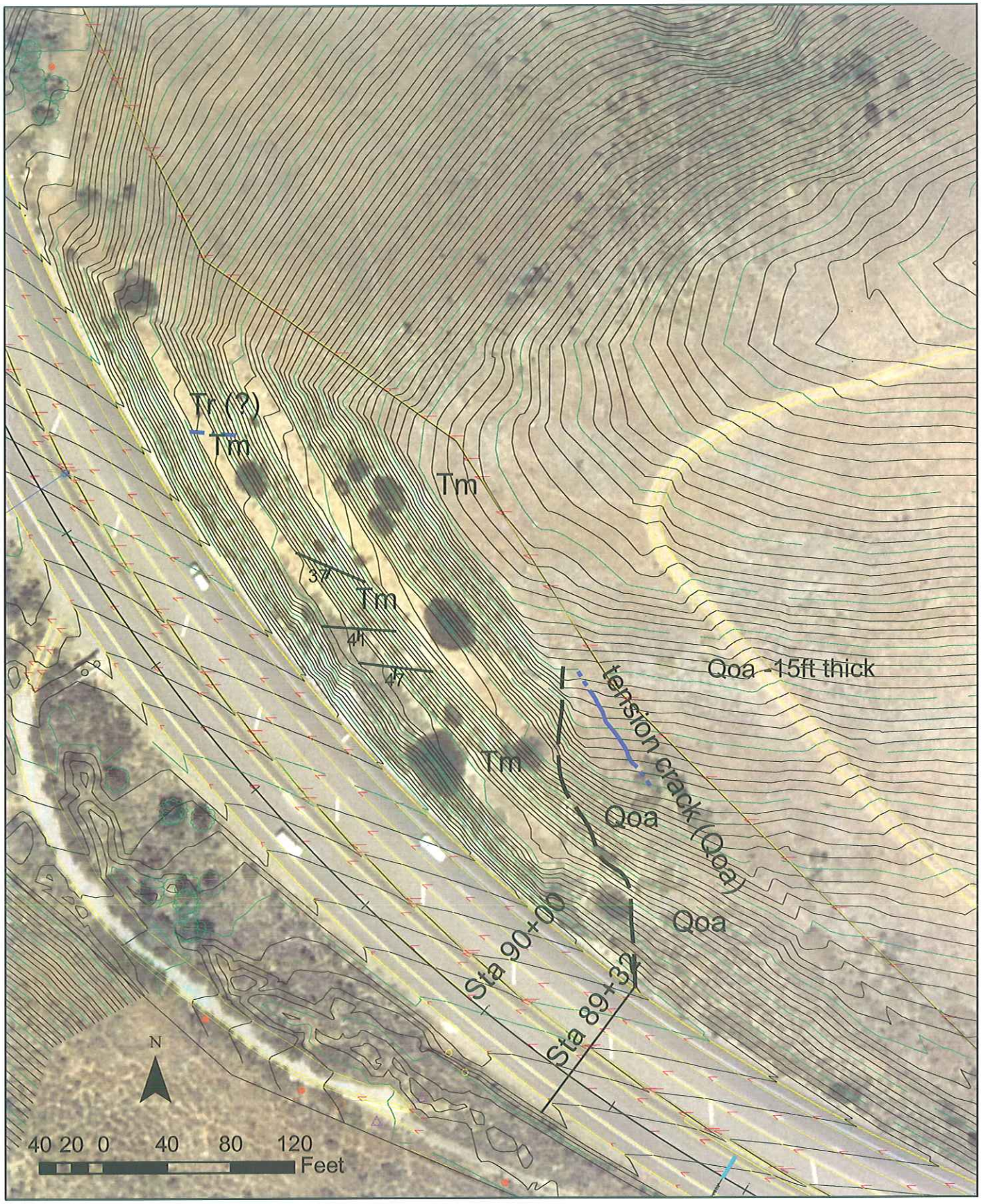

Seismic Map, SB-101-45.5/46.3
Gaviota Curve Correction 05-0T630-0
LIONS HEAD
LOS ALAMOS-BASELINE
SANTA YNEZ RIVER*
PACIFICO
SANTA YNEZ
Site
Legend
CT_Faults
Faults (Mualchin, 2007)
PA__G_
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0 1.25 2.5 5 7.5 10
Miles
Attachment 4
Seismic Map
Gaviota Curve Correction



ATTACHMENT 5
Site Soils Survey Map
Gaviota Curve Correction
05-SB-101-45.5



ATTACHMENT 6
Boring Location Map
Gaviota Curve Correction
05-SB-101-45.5



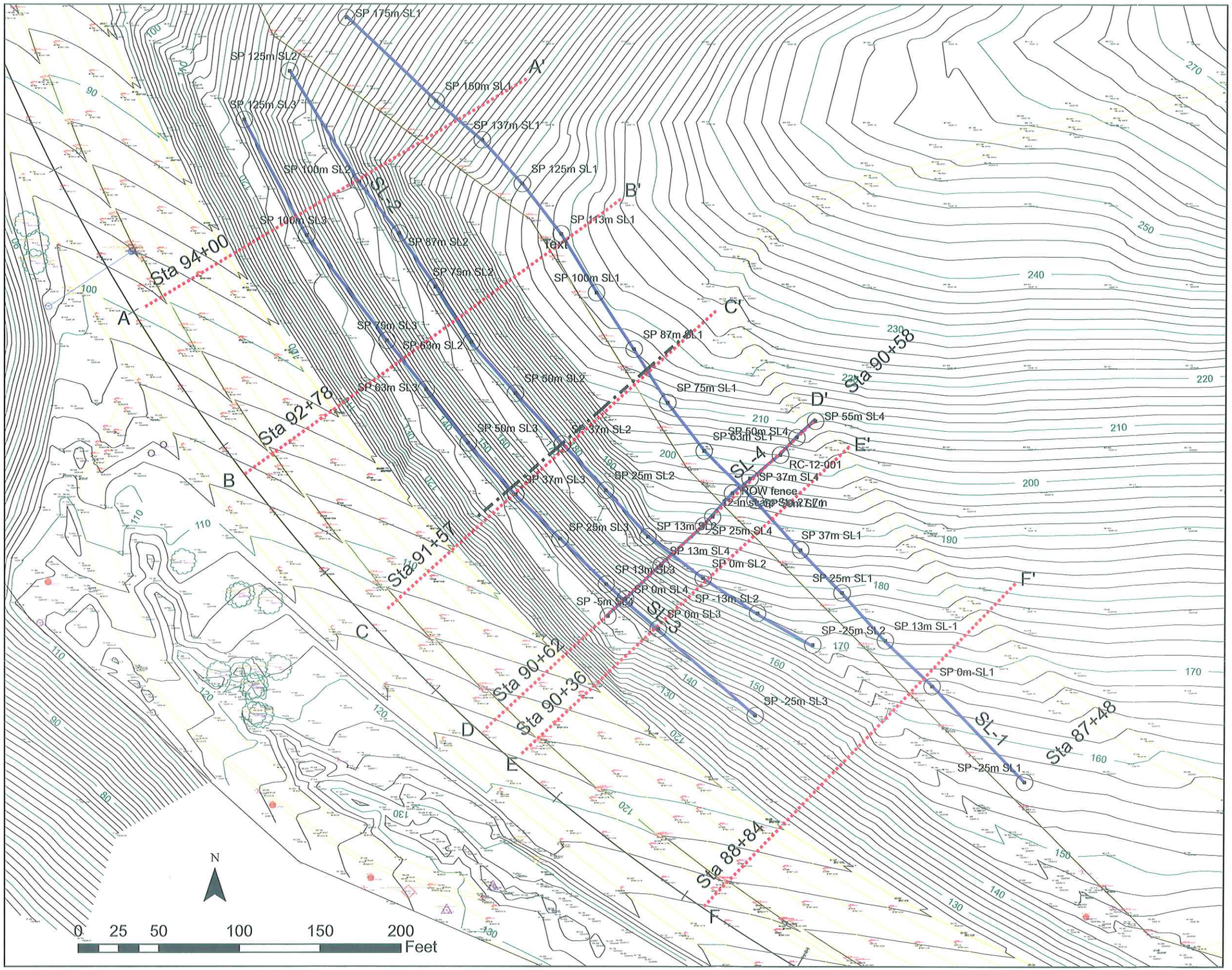
ATTACHMENT 7
Site Geology and Structure
Gaviota Curve Correction
05-SB-101-45.5

ATTACHMENT 8

Seismic Refraction Cross Sections

GAVIOTA CURVE CORRECTION

05-SB-101-45.5

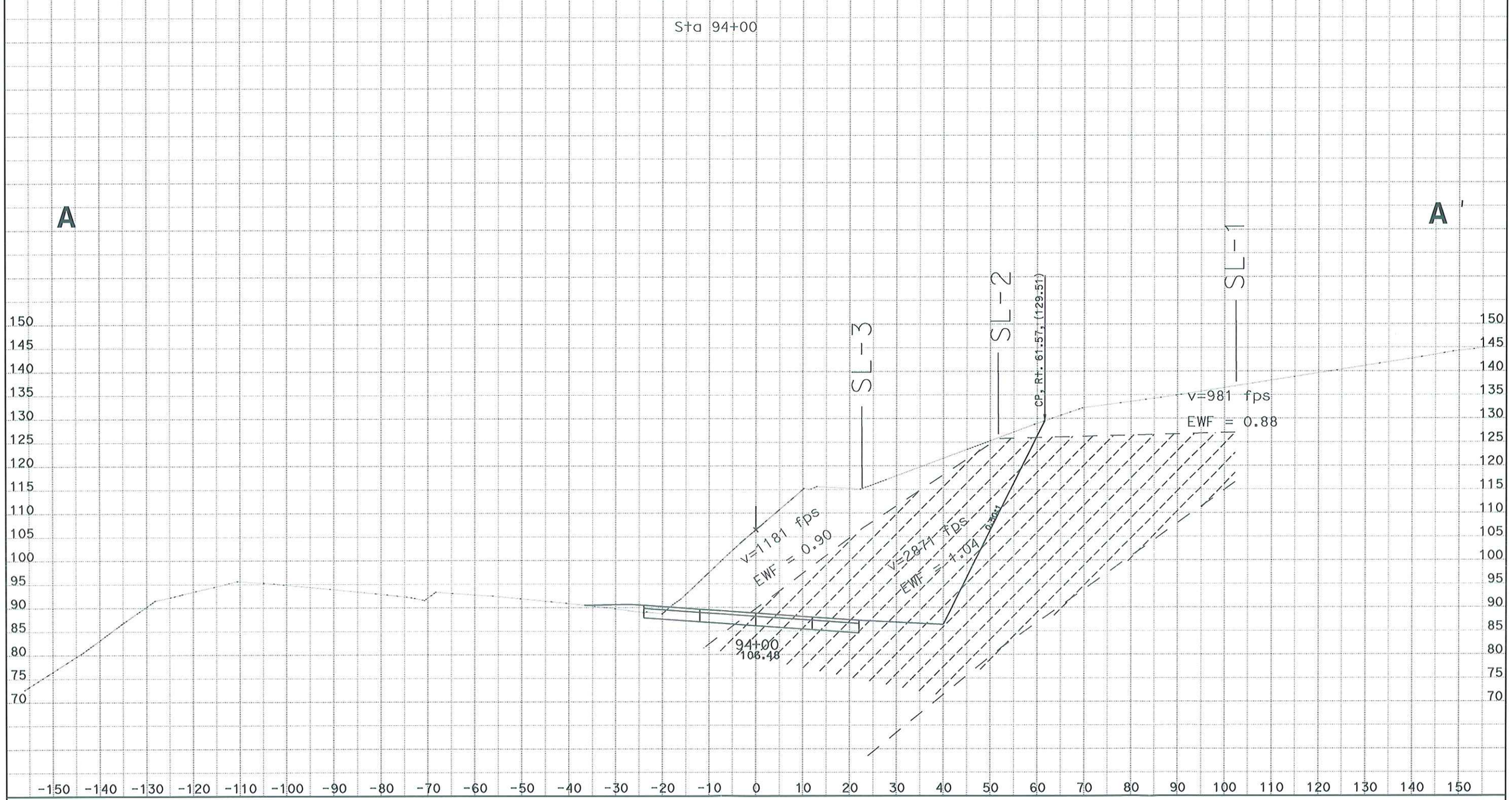


ATTACHMENT 8
Seismic Refraction Lines
Gaviota Curve Correction
05-SB-101-45.5

DESIGN STUDY ONLY

Seismic Refraction Cross Section

Sta 94+00



DATE: 6/22/2012

KC Project: 5120038 File: D:\Caice_Projects\5120038\dnb_design.ear

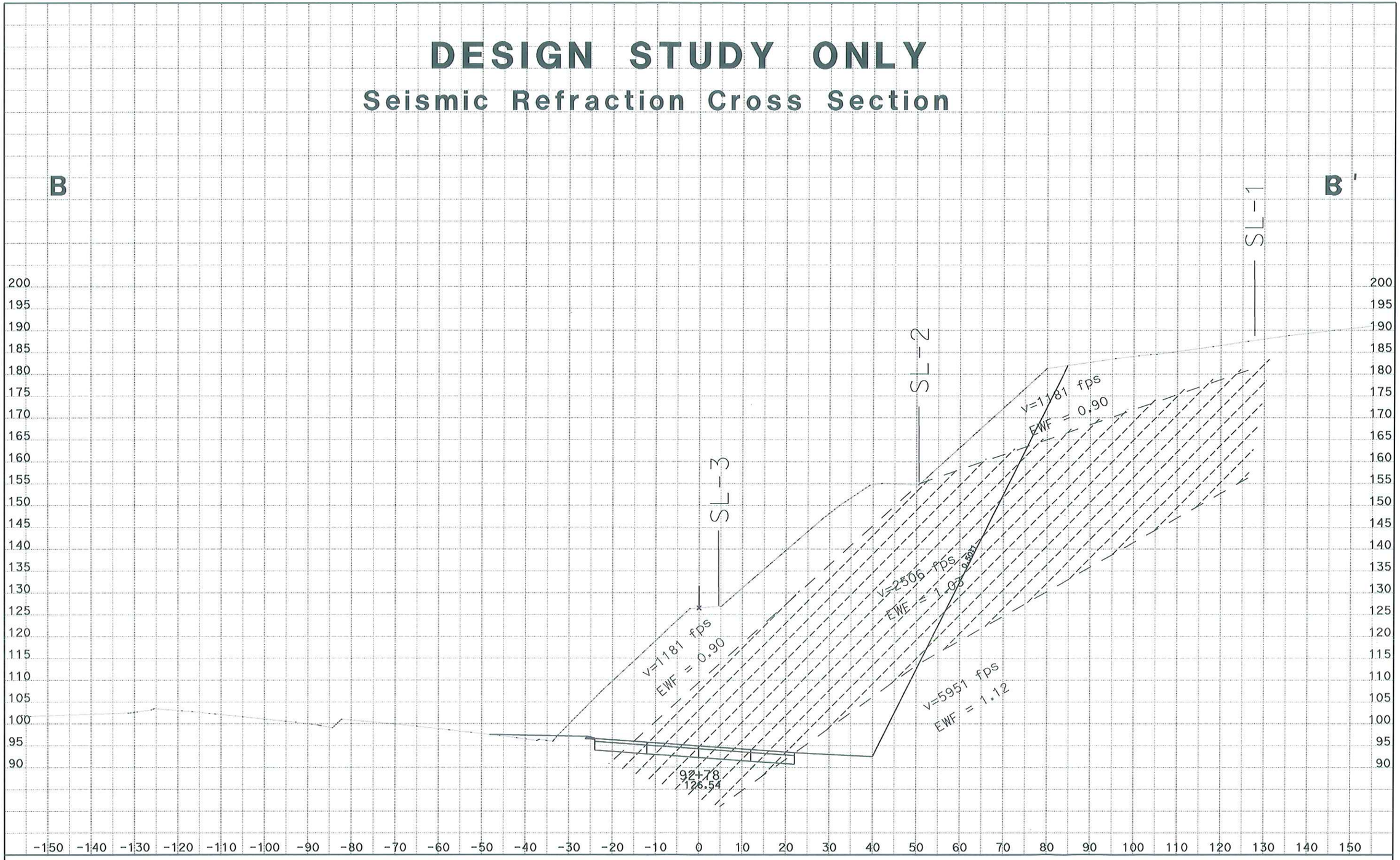
SCALE: 1" = 10' Horiz.
1" = 10' Vert.

All Dimensions are US Survey Feet

DNB1
CROSS SECTIONS

DESIGN STUDY ONLY

Seismic Refraction Cross Section



DATE: 6/22/2012

KC Project: 5120038 File: D:\Caice_Projects\5120038\dnb_design.ear

SCALE: 1" = 10' Horiz.
1" = 10' Vert.

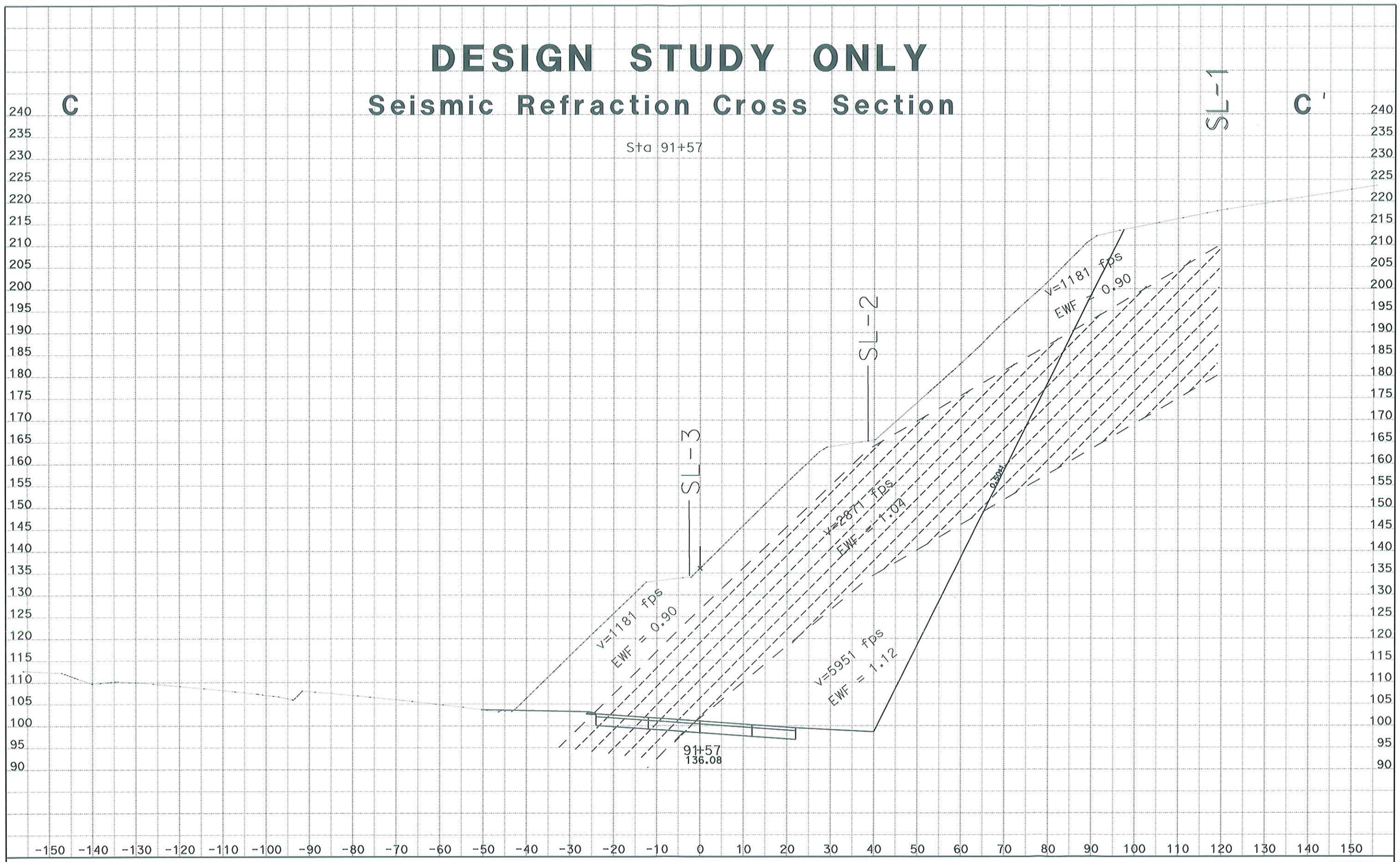
All Dimensions are US Survey Feet

DNB1
CROSS SECTIONS

DESIGN STUDY ONLY

Seismic Refraction Cross Section

Sta 91+57



DATE: 6/22/2012

KC Project: 5120038 File: D:\Caice_Projects\5120038\dnb_design.ear

SCALE: 1" = 10' Horiz.
1" = 10' Vert.

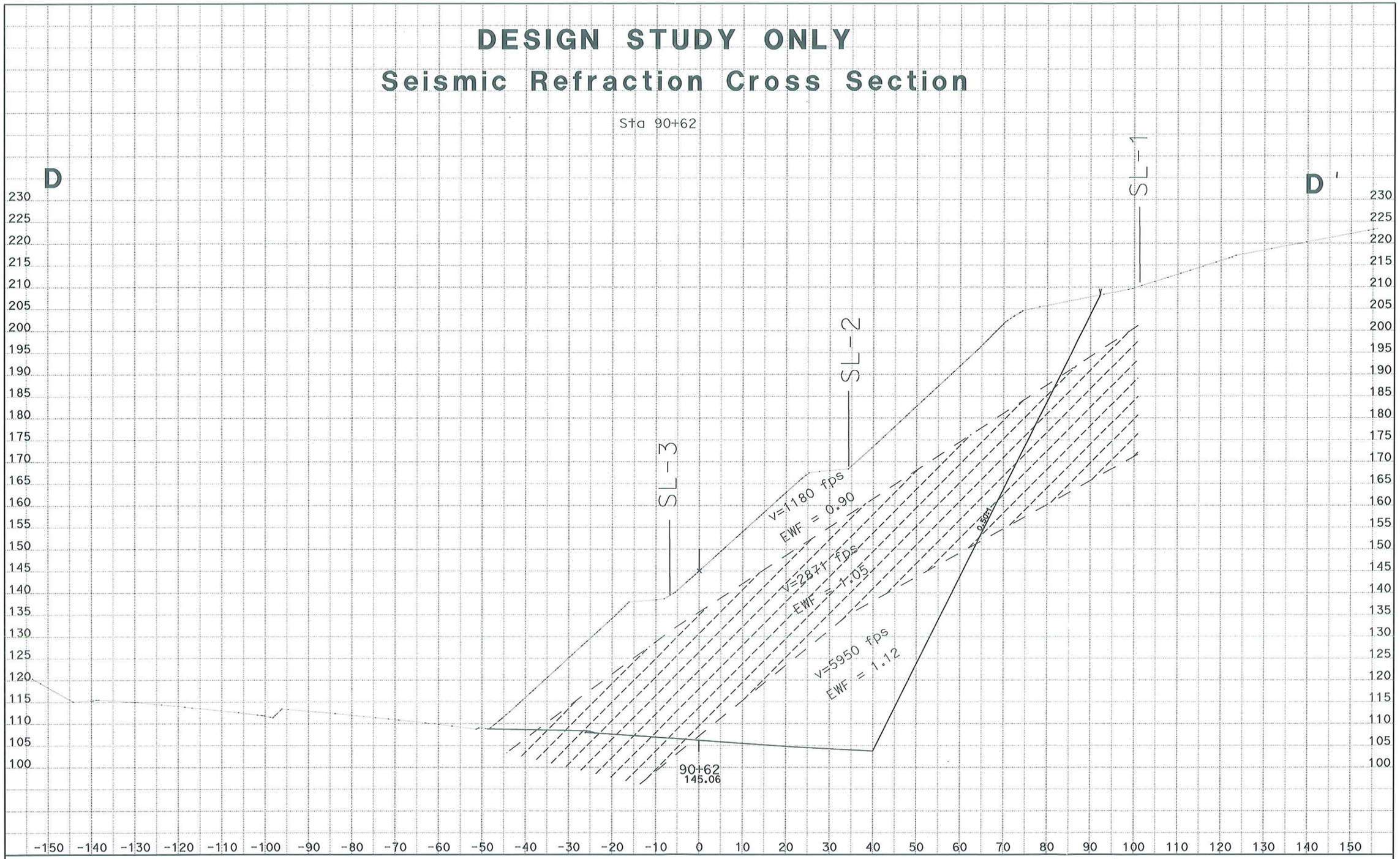
All Dimensions are US Survey Feet

DNB1
CROSS SECTIONS

DESIGN STUDY ONLY

Seismic Refraction Cross Section

Sta 90+62



DATE: 6/22/2012

KC Project: 5120038 File: D:\Caice_Projects\5120038\dnb_design.ear

SCALE: 1" = 10' Horiz.
1" = 10' Vert.

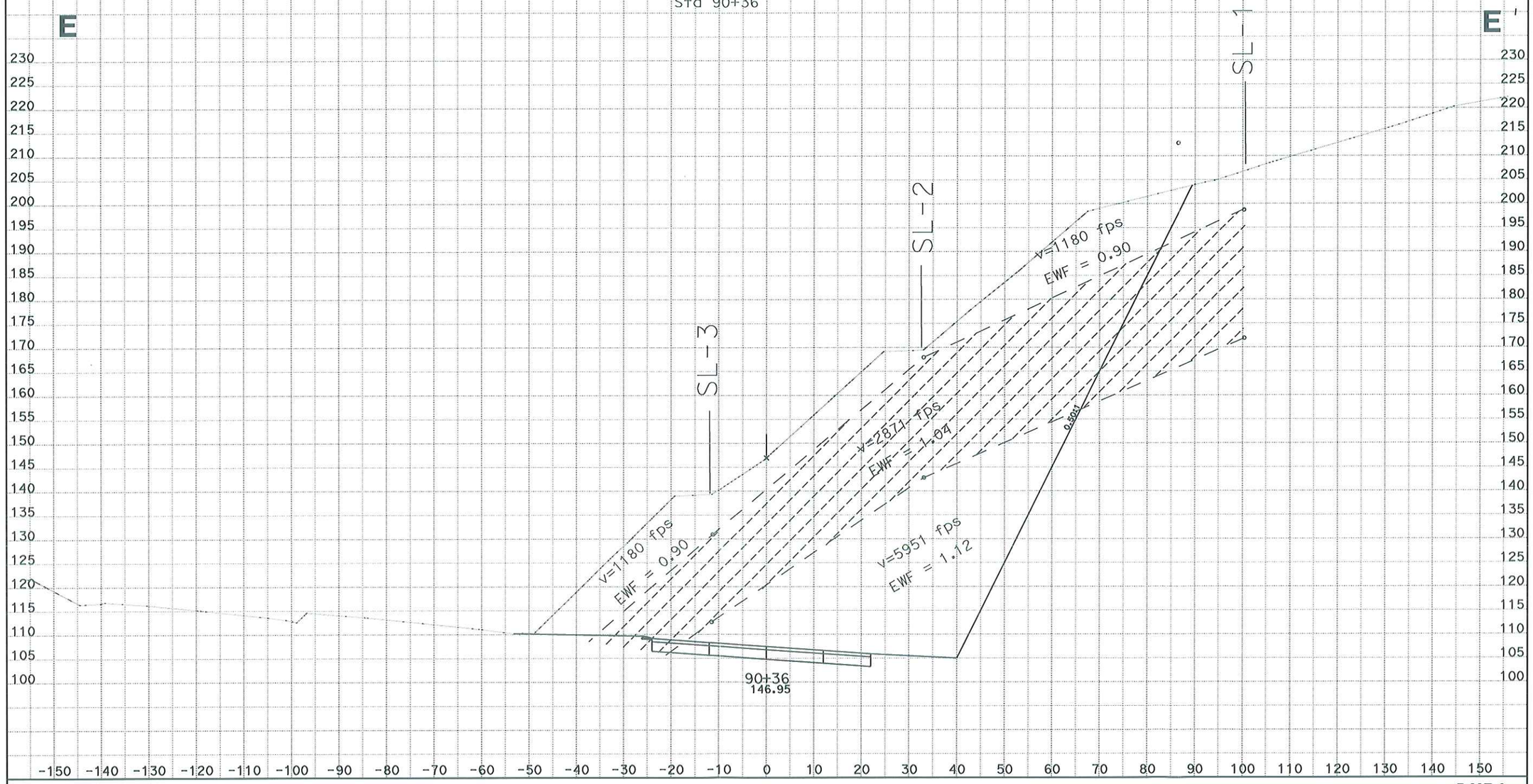
All Dimensions are US Survey Feet

DNB1
CROSS SECTIONS

DESIGN STUDY ONLY

Seismic Refraction Cross Section

Sta 90+36



DATE: 6/22/2012
KC Project: 5120038 File: D:\Caice_Projects\5120038\dnb_design.ear

SCALE: 1" = 10' Horiz.
1" = 10' Vert.

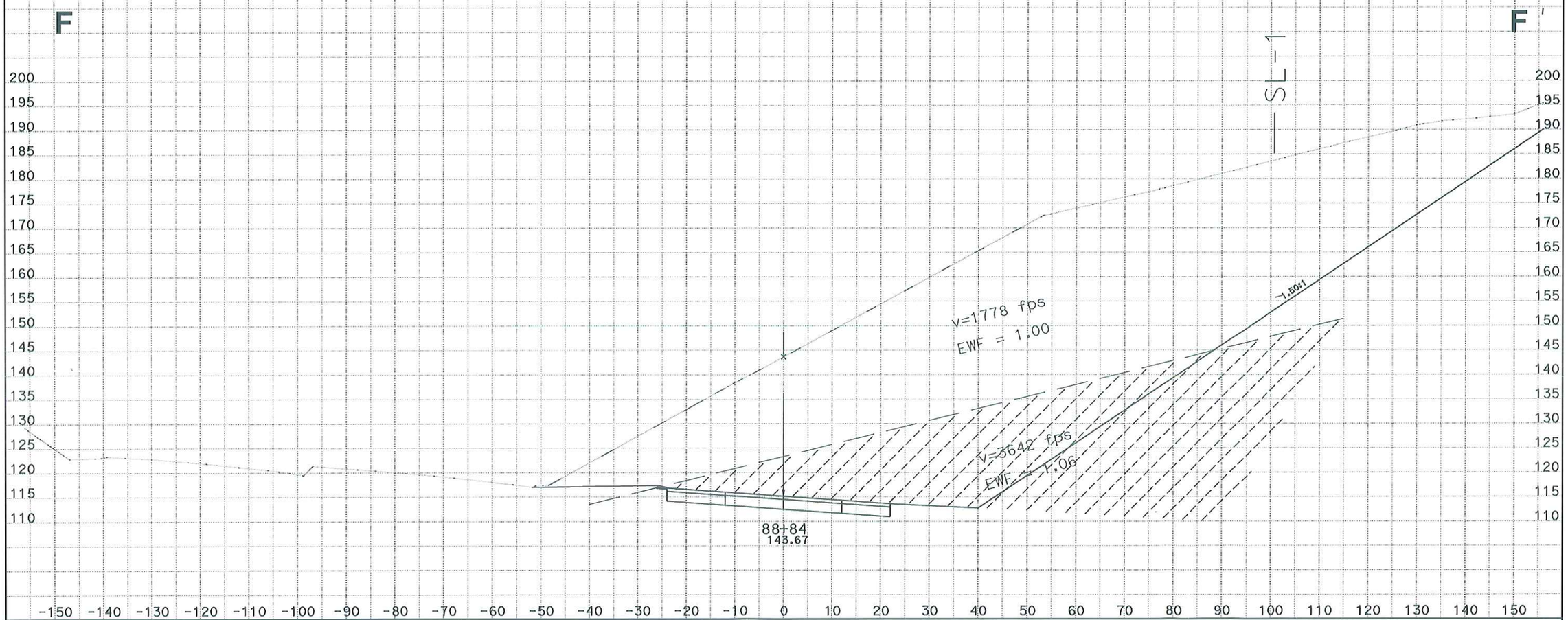
All Dimensions are US Survey Feet

DNB1
CROSS SECTIONS
SHEET 231 OF 376

DESIGN STUDY ONLY

Seismic Refraction Cross Section

Sta 88 =84



DATE: 6/22/2012

KC Project: 5120038 File: D:\Caice_Projects\5120038\dnb_design.ear

SCALE: 1" = 10' Horiz.
1" = 10' Vert.

All Dimensions are US Survey Feet

DNB1
CROSS SECTIONS
SHEET 201 OF 376

ATTACHMENT 9

LOG OF TEST BORING (LOTB)

GAVIOTA CURVE CORRECTION

05-SB-101-45.5

LOGGED BY	BEGIN DATE	COMPLETION DATE	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID
M Jurasius	6-12-12	6-13-12	2002556.8 ft / 5890919.3 ft	RC-12-001
DRILLING CONTRACTOR			BOREHOLE LOCATION (Offset, Station, Line)	SURFACE ELEVATION
Caltrans			297.0' Rt Sta 90+52	200.0 ft
DRILLING METHOD			DRILL RIG	BOREHOLE DIAMETER
Rotary Wire-Line			CME 750	4.5 in
SAMPLER TYPE(S) AND SIZE(S) (ID)			SPT HAMMER TYPE	HAMMER EFFICIENCY, ERi
SPT (1.4")				81%
BOREHOLE BACKFILL AND COMPLETION			GROUNDWATER READINGS DURING DRILLING: NA; AFTER DRILLING (DATE): dry	TOTAL DEPTH OF BORING: 97.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	0		SILT with GRAVEL (ML/ML); loose; dark brown; moist; little SAND; fine and coarse GRAVEL; Trace organics; (Older Terrace Deposits).												
198.00	2		SILTY SAND (SM/SM); medium dense; dark brown; moist; fine SAND; some nonplastic fines; trace fine, angular GRAVEL; (Older Terrace Deposits).												
196.00	4														
194.00	6														
	7		Poorly graded SAND (SP/SP); dense; yellowish brown; moist; trace nonplastic fines; (Older Terrace Deposits).		1	3 6 5	11	100							
192.00	8														
190.00	10														
188.00	12				2	11 13 21	34	100							
186.00	14														
	15		SEDIMENTARY ROCK (FINE SANDSTONE AND SHALE); fine grained; thickly bedded; white; from slightly to intensely weathered; from hard to soft; intensely fractured; (Monterey).		1			40	0						
184.00	16														
	17				2			96	25						
182.00	18														
180.00	20														
178.00	22				3			86	22						
176.00	24														
	25														

(continued)

5 BR - STANDARD GAVIOTACURVE.GPJ DRAFT CALTRANS LIBRARY OCT 2011.GLB 10/19/12

Department of Transportation
Division of Engineering Services
Geotechnical Services
Office of Geotechnical Design - North

REPORT TITLE				HOLE ID
BORING RECORD				RC-12-001
DIST.	COUNTY	ROUTE	POSTMILE	PROJECT ID
05	SB	101	D45.5/46.3	0500020029
PROJECT OR BRIDGE NAME: Gaviota Curve Correction				
BRIDGE NUMBER	PREPARED BY: M. Jurasius		DATE: 9-27-12	SHEET: 1 of 4

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	25		SEDIMENTARY ROCK (Fine Sandstone and shale) *(continued)*.		3			86	22						
174.00	26														
	27				4			68	83						
172.00	28														
	29														
170.00	30														
	31														
168.00	32				5			60	95						
	33														
166.00	34														
	35														
164.00	36														
	37				6			90	0						
162.00	38														
	39		Iron oxide stain on fracture, smooth.												
160.00	40														
	41														
158.00	42		3-6 in frature spacing.		7			100	0						
	43														
156.00	44														
	45														
154.00	46														
	47				8			97	37						
152.00	48														
	49														
150.00	50														
	51														
148.00	52				9			95	23						
	53														
146.00	54														
	55														

(continued)

Department of Transportation
Division of Engineering Services
Geotechnical Services
Office of Geotechnical Design - North

REPORT TITLE **BORING RECORD**				HOLE ID **RC-12-001**
DIST. **05**	COUNTY **SB**	ROUTE **101**	POSTMILE **D45.5/46.3**	PROJECT ID **0500020029**
PROJECT OR BRIDGE NAME **Gaviota Curve Correction**				
BRIDGE NUMBER	PREPARED BY **M. Jurasius**		DATE **9-27-12**	SHEET **2 of 4**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	55				9			95	23						
144.00	56		1-3 in thick decomposed sections at 1-ft spacing.												
	57				10			100	23						
142.00	58														
	59														
140.00	60														
	61														
138.00	62				11			90	22						
	63		Dark brown silty sandstone to 72-ft.												
136.00	64														
	65														
134.00	66														
	67				12			72	15						
132.00	68														
	69														
130.00	70														
	71														
128.00	72		Very intensely fractured; 2-4 in thick fractured intervals.		13			83	26						
	73														
126.00	74														
	75														
124.00	76														
	77				14			97	27						
122.00	78														
	79														
120.00	80		Intensely fractured.												
	81														
118.00	82				15			91	36						
	83														
116.00	84														
	85														

(continued)

Department of Transportation
Division of Engineering Services
Geotechnical Services
Office of Geotechnical Design - North

REPORT TITLE: **BORING RECORD**

HOLE ID: **RC-12-001**

DIST.	COUNTY	ROUTE	POSTMILE	PROJECT ID
05	SB	101	D45.5/46.3	0500020029

PROJECT OR BRIDGE NAME: **Gaviota Curve Correction**

BRIDGE NUMBER	PREPARED BY	DATE	SHEET
	M. Jurasius	9-27-12	3 of 4

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	85				15			91	36						
114.00	86														
	87				16			100	20						
112.00	88														
	89														
110.00	90														
	91														
108.00	92		Very intensely fractured; 2-6 in intervals of decomposed rock (Fat CLAY).		17			83	0						
	93														
106.00	94														
	95														
104.00	96														
	97		Bottom of borehole at 97.0 ft bgs												
102.00	98		Hole left open for GW monitoring												
	99		This Boring Record was developed in accordance with the Caltrans Soil & Rock Logging, Classification, and Presentation Manual (2010) except as noted on the Soil or Rock Legend or below.												
100.00	100														
	101														
98.00	102														
	103														
96.00	104														
	105														
94.00	106														
	107														
92.00	108														
	109														
90.00	110														
	111														
88.00	112														
	113														
86.00	114														
	115														

5 BR - STANDARD GAVIOTACURVE.GPJ DRAFT CALTRANS LIBRARY OCT 2011.GLB 10/19/12

Department of Transportation
Division of Engineering Services
Geotechnical Services
Office of Geotechnical Design - North

REPORT TITLE				HOLE ID
BORING RECORD				**RC-12-001**
DIST. **05**	COUNTY **SB**	ROUTE **101**	POSTMILE **D45.5/46.3**	PROJECT ID **0500020029**
PROJECT OR BRIDGE NAME **Gaviota Curve Correction**				
BRIDGE NUMBER	PREPARED BY **M. Jurasius**		DATE **9-27-12**	SHEET **4 of 4**

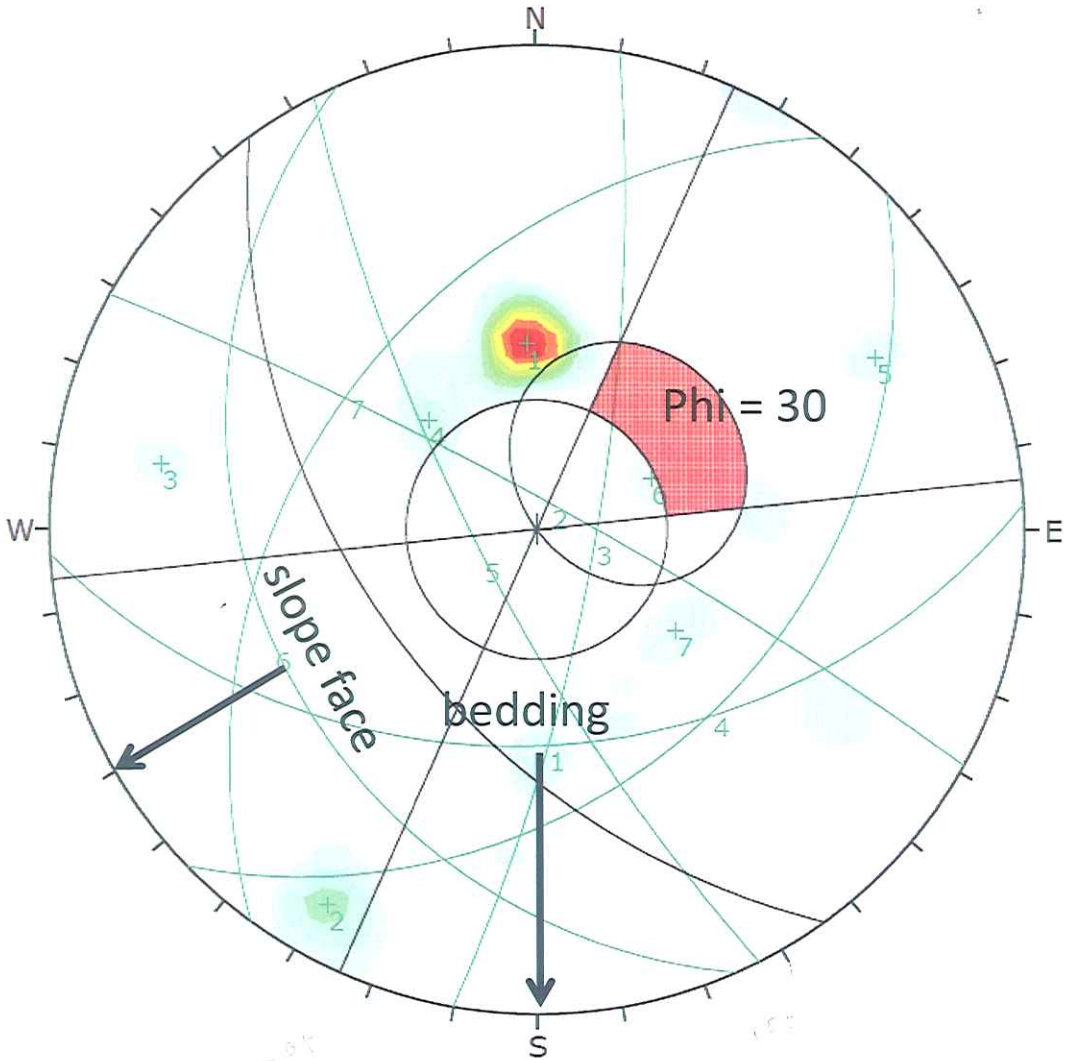
ATTACHMENT 10

ROCK SLOPE KINEMATIC ANALYSIS

GAVIOTA CURVE CORRECTION

05-SB-101-45.5

Gaviota Curve Correction- Planar Kinematic Analysis
SB-101-45.5



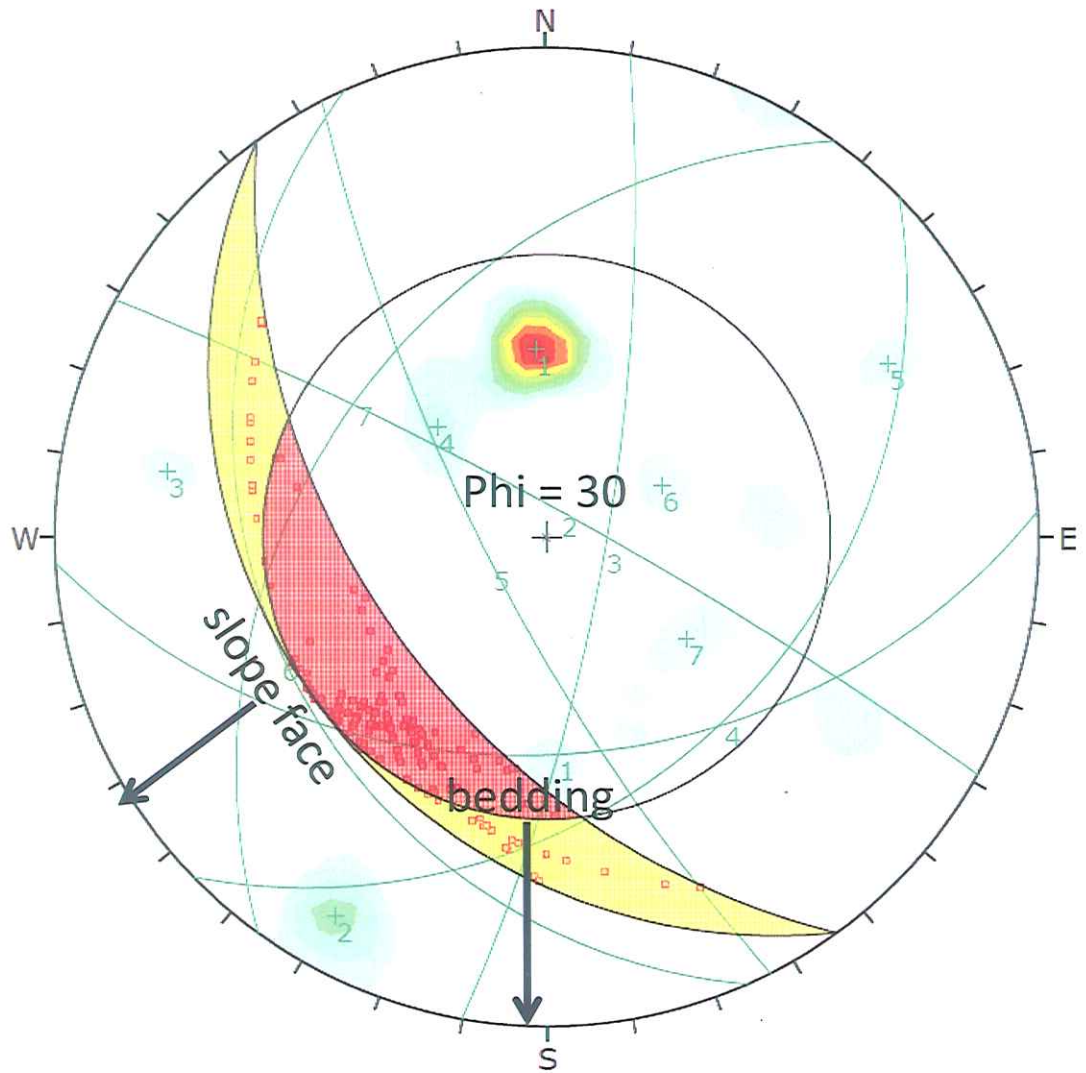
Color	Density Concentrations
	0.00% - 1.60%
	1.60% - 3.20%
	3.20% - 4.80%
	4.80% - 6.40%
	6.40% - 8.00%
	8.00% - 9.60%
	9.60% - 11.20%
	11.20% - 12.80%
	12.80% - 14.40%
	14.40% - 16.00%

Maximum Density	15.52%
Contour Data	Pole Vectors
Contour Distribution	Fisher
Counting Circle Size	1.0%

Kinematic Analysis	Planar Sliding		
Slope Dip	50		
Slope Dip Direction	234		
Friction Angle	30°		
Lateral Limits	30°		
	Critical	Total	%
Planar Sliding (All)	3	50	6.00%

Plot Mode	Pole Vectors
Vector Count	50 (49 Entries)
Hemisphere	Lower
Projection	Equal Angle

Gaviota Curve Correction – Wedge Kinematic Analysis
SB-101-45.5



Symbol	Feature
▫	Critical Intersection

Color	Density Concentrations
	0.00% - 1.60%
	1.60% - 3.20%
	3.20% - 4.80%
	4.80% - 6.40%
	6.40% - 8.00%
	8.00% - 9.60%
	9.60% - 11.20%
	11.20% - 12.80%
	12.80% - 14.40%
	14.40% - 16.00%

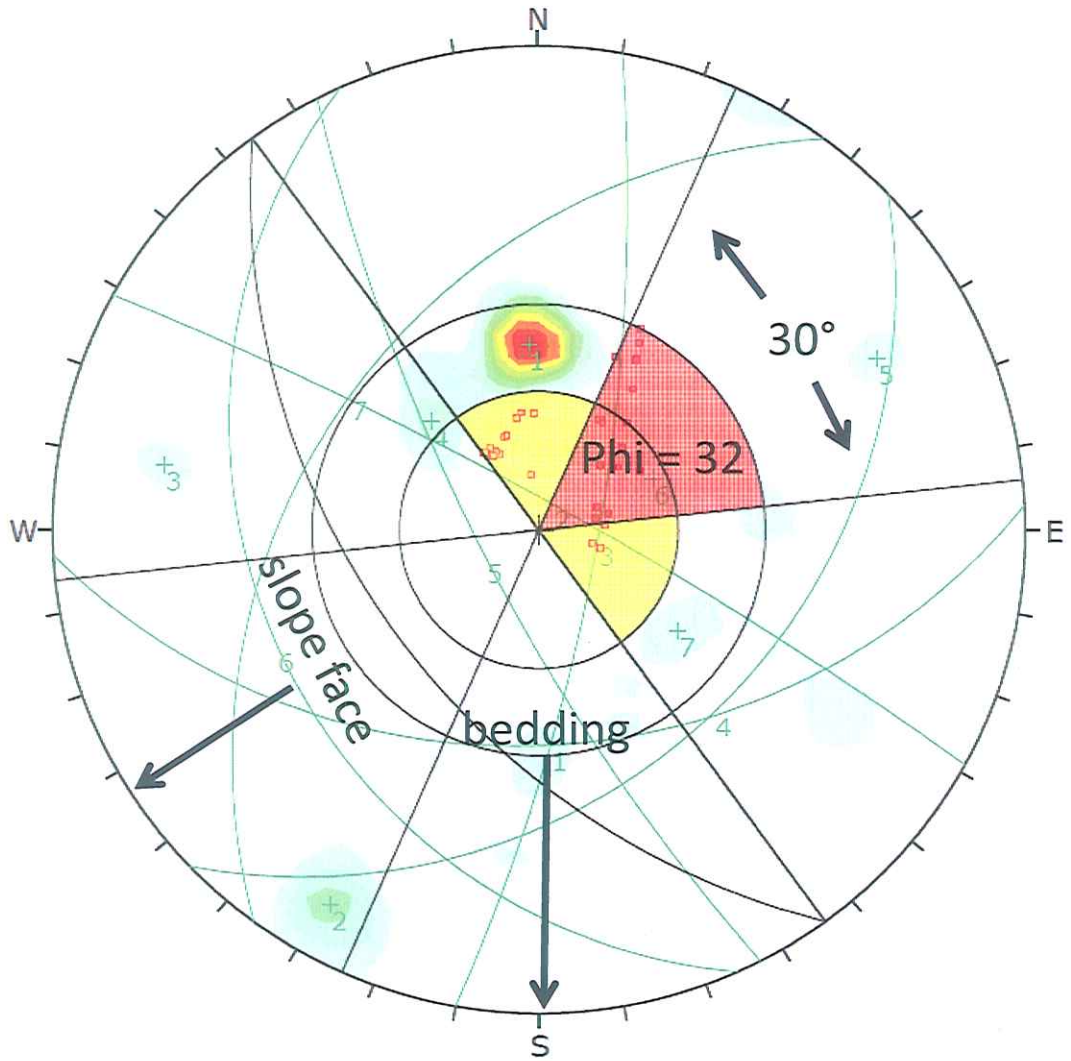
Maximum Density	15.52%
Contour Data	Pole Vectors
Contour Distribution	Fisher
Counting Circle Size	1.0%

Kinematic Analysis	Wedge Sliding
Slope Dip	50
Slope Dip Direction	234
Friction Angle	30°

	Critical	Total	%
Wedge Sliding (Both Planes)	120	1224	9.80%
Wedge Sliding (One Plane)	41	1224	3.35%

Plot Mode	Pole Vectors
Vector Count	50 (49 Entries)
Intersection Mode	Grid Data Planes
Intersections Count	1224
Hemisphere	Lower
Projection	Equal Angle

Gaviota Curve Correction- Direct Topple Kinematic Analysis
SB-101-45.5



Symbol	Feature
▫	Critical Intersection

Color	Density Concentrations
	0.00% - 1.60%
	1.60% - 3.20%
	3.20% - 4.80%
	4.80% - 6.40%
	6.40% - 8.00%
	8.00% - 9.60%
	9.60% - 11.20%
	11.20% - 12.80%
	12.80% - 14.40%
	14.40% - 16.00%
Maximum Density	15.52%
Contour Data	Pole Vectors
Contour Distribution	Fisher
Counting Circle Size	1.0%

Kinematic Analysis	Direct Toppling		
Slope Dip	50		
Slope Dip Direction	234		
Friction Angle	32°		
Lateral Limits	30°		
	Critical	Total	%
Direct Toppling (Intersection)	18	1224	1.47%
Oblique Toppling (Intersection)	23	1224	1.88%
Base Plane (All)	5	50	10.00%

Plot Mode	Pole Vectors
Vector Count	50 (49 Entries)
Intersection Mode	Grid Data Planes
Intersections Count	1224
Hemisphere	Lower
Projection	Equal Angle

APPENDIX A: Seismic Refraction Survey Report

State of California

Business, Transportation and Housing Agency

Memorandum

Flex your power!
Be energy efficient!

To: **Mike Finegan**
Geotechnical Design South
Division of Engineering Services

Date: August 15, 2012

File: 05-SB-101-PM45.5
Project 05-0002-0029

Attention: Michael Jurasius

From: **DEPARTMENT OF TRANSPORTATION**
DIVISION OF ENGINEERING SERVICES
GEOTECHNICAL SERVICES-MS#5

Subject: Seismic Refraction Survey, Gaviota Curve Correction

Introduction

This memo documents the results of a refraction seismic survey to assist in the design of roadway improvements involving rock cuts for Highway 101 in Santa Barbara County. The project involves excavation of the existing cut for re-alignment of the highway. The survey was employed to assist in assessing the engineering characteristics of the material comprising the existing cut. Measurements were acquired from a total of 4 seismic lines. Seismic line locations are shown on Plate 1. Seismic velocities were measured to determine rippability values and refractor depths.

Results and Discussion

The results of our findings are summarized in Table 1. Elevations presented in this report utilized boring RC-12-001 (elevation 200.39 feet) as the benchmark for this survey.

Table 1

Line	Layer	Average thickness (m)	Average Velocity (m/s)	Line Length (m)	Inferred Material	Rippability
1	1	2.8	299	175	Unconsolidated colluviums and older terrace deposits	ER
1	2	8.3	542		Siltstone, fresh to slightly weathered Monterey Formation	ER
1	3	N/A	1110/1620		Sandstone, unsaturated Monterey Formation	DR
2	1	2.5	360	125	Unconsolidated colluvium and older terrace deposits	ER
2	2	9	781		Siltstone, fresh to slightly weathered Monterey Formation	ER
2	3	N/A	1814		Monterey Formation	DR

3	1	1.5	360	125	Unconsolidated colluvium	ER
3	2	8.5	969		Siltstone, fresh to slightly weathered Monterey Formation	ER
3	3	N/A	2309		Saturated Monterey Formation?	NR
4	1	2	398	48	Unconsolidated colluvium and older terrace deposits	ER
4	2	8	707		Siltstone, fresh to slightly weathered Monterey Formation	ER
4	3	N/A	1569		Monterey Formation	DR

ER = Easily Ripped, MD = Moderately Difficult, DR = Difficult Ripping, NR = Not Rippable,

Line 1

Plate 2 shows the processed seismic model for Seismic Line 1. Three velocity units were identified. Layer 1 has varying thickness but averages roughly 3 meters (9.8 ft). This unit is described in the Log of Test Borings (LOTB) from RC-12-001 as older terrace deposits. Its measured seismic velocity is 288 m/s (944 ft/s).

The second velocity unit ranges in thickness from 3.0 m (9.8 ft) to 8.3 m (27.0 ft). Its measured seismic velocity is 543 m/s (1781 ft/s). The LOTB describes this material as fresh to slightly weathered Monterey Formation. The associated low seismic velocity implies relatively weak rock, indicating poor induration (for massive formation) or an appreciable degree of fracturing.

The third velocity unit identified in Line 1 has a lateral velocity change from 1111 m/s (3645 ft/s) to 1620 m/s (5315 ft/s) at about 97 meters (318.2 ft) along the line. From our observations of the existing cut, the lateral velocity change appears related to a change in the degree of induration, increasing toward the south. We noted that the northern portion of the cut exhibited more erosion and appeared less competent in outcrop than in the southern section. At the refractor elevation, the LOTB did not indicate a lithologic boundary but did note an increase in iron staining below that elevation, suggesting some degree of partial saturation within this interval, at least intermittently. Therefore, we interpret the third velocity unit as unsaturated, weathered Monterey Formation.

Line 2

Seismic Line 2 was located on an engineered bench about 50 feet below Line 1 (Plate 3). It was about 125 meters (410 ft) long. This seismic line identified three velocity units. The first velocity unit is interpreted as colluvium and terrace deposits and ranges from immeasurably thin to 3.6 m (11.8 ft) thick. Its measured seismic velocity is 360 m/s (1181 ft/s). The second velocity unit is interpreted as fresh to slightly weathered Monterey Formation and is about 11 meters (36.0 ft) thick. Its measured seismic velocity is 781 m/s (2365 ft/s). The third velocity unit is interpreted as weathered Monterey Formation and has a seismic velocity of 1814 m/s (5951 ft/s). This unit may be saturated.

Line 3

Seismic Line 3 was below Line 2, on a lower bench about 10 meters (32 ft) above the existing roadway (Plate 4). This line also identified three velocity units. The upper velocity unit (360 m/s, 1079 ft/s) is interpreted as colluvium and is about 8.0 feet thick. The next

velocity unit is fresh to slightly weathered Monterey Formation with a measured velocity of 969 m/s (3211 ft/s). The third velocity unit is below the depth of boring RC-12-001, so its lithology is unknown. Its measured seismic velocity of 2309 m/s (7575 ft/s) is consistent with weathered and or jointed sandstones and shales. This unit may also be water saturated.

Line 4

In an attempt to tie LOTB information with seismic data, Seismic Line 4 ran normal to the other three seismic lines and through the location of boring RC-12-001. Line 4 began just above the existing roadway and trended upslope through boring RC-12-001 at 46 m (151 ft) along the seismic line. Line length was 48 m (157.5 ft). Seismic Line 4 did not image as deep as Line 3 because the close proximity of the traveled way prohibited establishment of the offset shots required for deeper investigation.

Results for Line 4 are presented in Plate 5. Line 4 indicates about 2.8 m (9.3 ft) of colluvium and terrace deposits with a seismic velocity of 398 m/s (1305 ft/s). The second velocity unit is about 9 m (29.5 ft) thick and represents fresh to slightly weathered siltstone of the Monterey Formation. Its measured seismic velocity is 707 m/s (2320 ft/s). The third velocity unit identified in Line 4 measures 1569 m/s (5148 ft/s) and is interpreted as Monterey Formation. Elevations of the ties with Lines 1 and 2 correlate well with Line 4 (the active portion of Line 3 terminates about 140 feet northwest of Line 4, so no significant correlations can be made with Line 3).

Ripping ability is based on unpublished Caltrans data for a Caterpillar D9G series bulldozer with a single-tooth ripper. These values are as follows:

Velocity (m/s)	(ft/sec)	Rippability
<1050	<3444	Easily Ripped
1050-1500	3444-4921	Moderately Difficult
1500-2000	4921-6562	Difficult Ripping
>2000	>6562	Not Rippable

Different excavation equipment may experience different results. Penetrating efficacy of the ripping tooth is often more important in predicting ripping success than seismic velocity alone. Undetected blocks or lenses of high-velocity material may also be present within rippable zones, requiring blasting or other means of mechanical breakage for excavation.

Data Acquisition and Processing

Seismic refraction data were recorded using an EG&G Smartseis 24-channel seismograph with 14 MHz geophones. The profiles varied in length. The energy sources employed were a hammer and striker plate and a downhole seisgun percussion source. Refraction data from each shot were stored in the seismograph's memory. Both profile geometry and refraction data were backed-up to paper and floppy disk upon completion of the survey.

Profiles in this report are presented in terms of velocity units. A velocity unit is a three-dimensional unit, which due to its elastic properties and density, propagates seismic waves at a characteristic velocity or within a characteristic velocity range. Velocities denoted in this report and in the seismic refraction sections are expressed in meters per second. At least one velocity is

present within a geological rock unit. In addition, each zone of weathering or fracturing within that geological unit can constitute its own velocity unit. Conversely, when two rock units such as water saturated gravel and moderately weathered rock propagate seismic waves at the same velocity and are adjacent to each other, both units would be part of the same velocity unit. Lastly, discontinuous velocities might result from variation in the degree of alteration in the form of physical and chemical weathering and should be considered in the interpretation of the data.

Thank you for the opportunity to work on this project. If you have any questions or need additional assistance, please contact me at (916) 227-1307 or Mr. Bill Owen at (916) 227-0227.

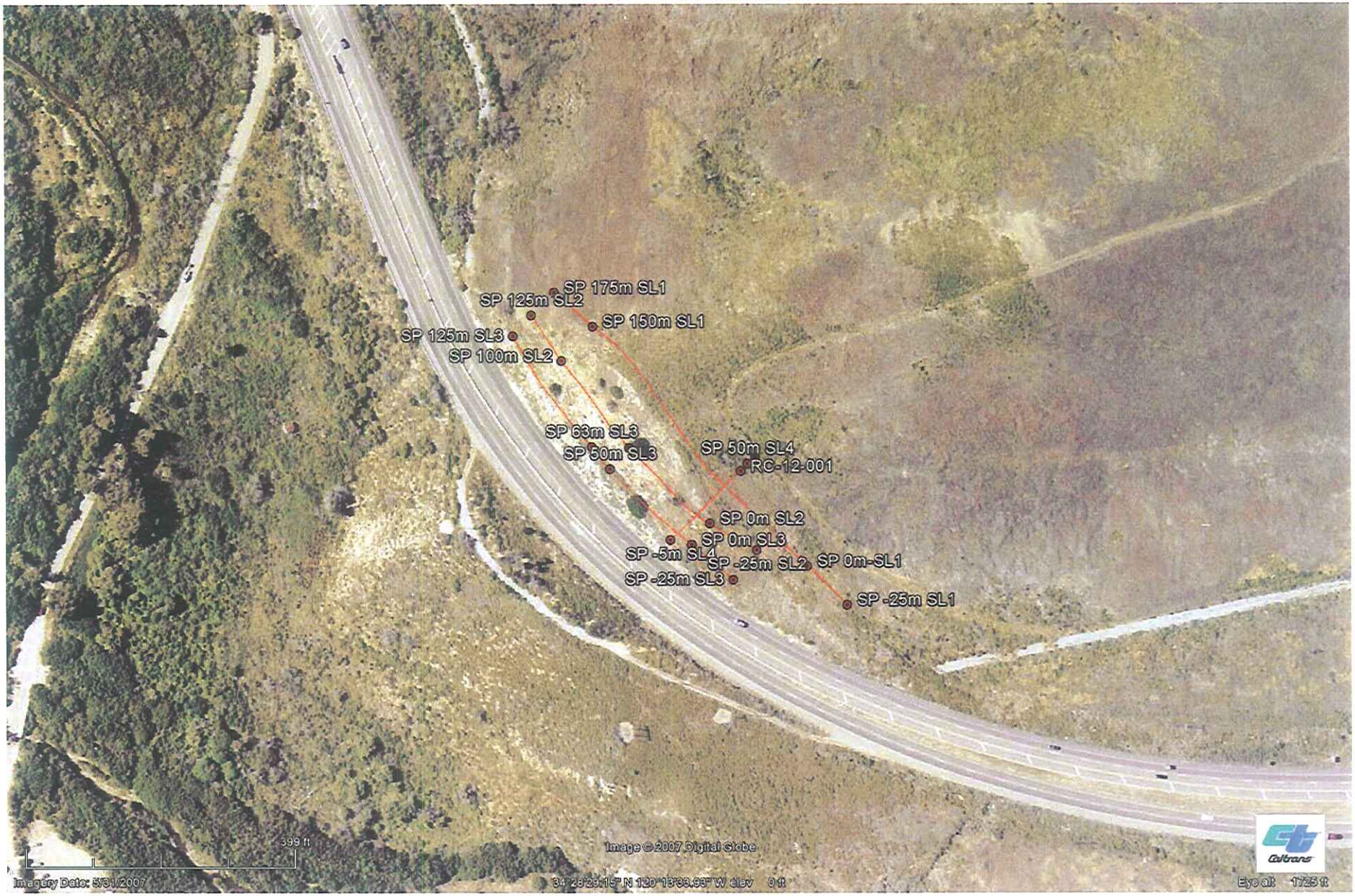
Report by:

Dennison Leeds
Engineering Geologist
Geophysics and Geology Branch

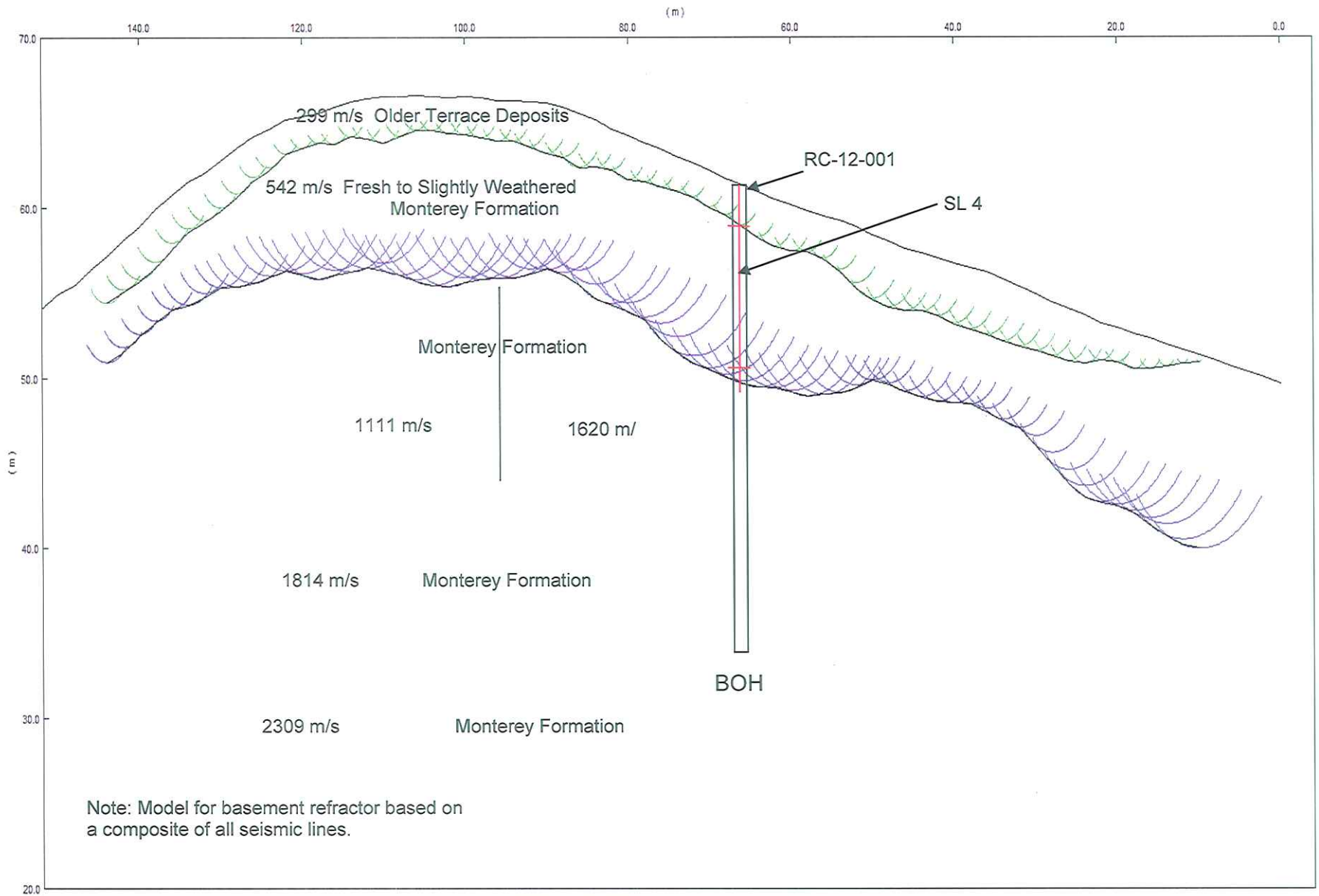
Reviewed By:

William Owen, PGP 1031
Chief, Geophysics and Geology Branch

DL/WO
Project File: 05_SB_101_45.5_2012_SEI

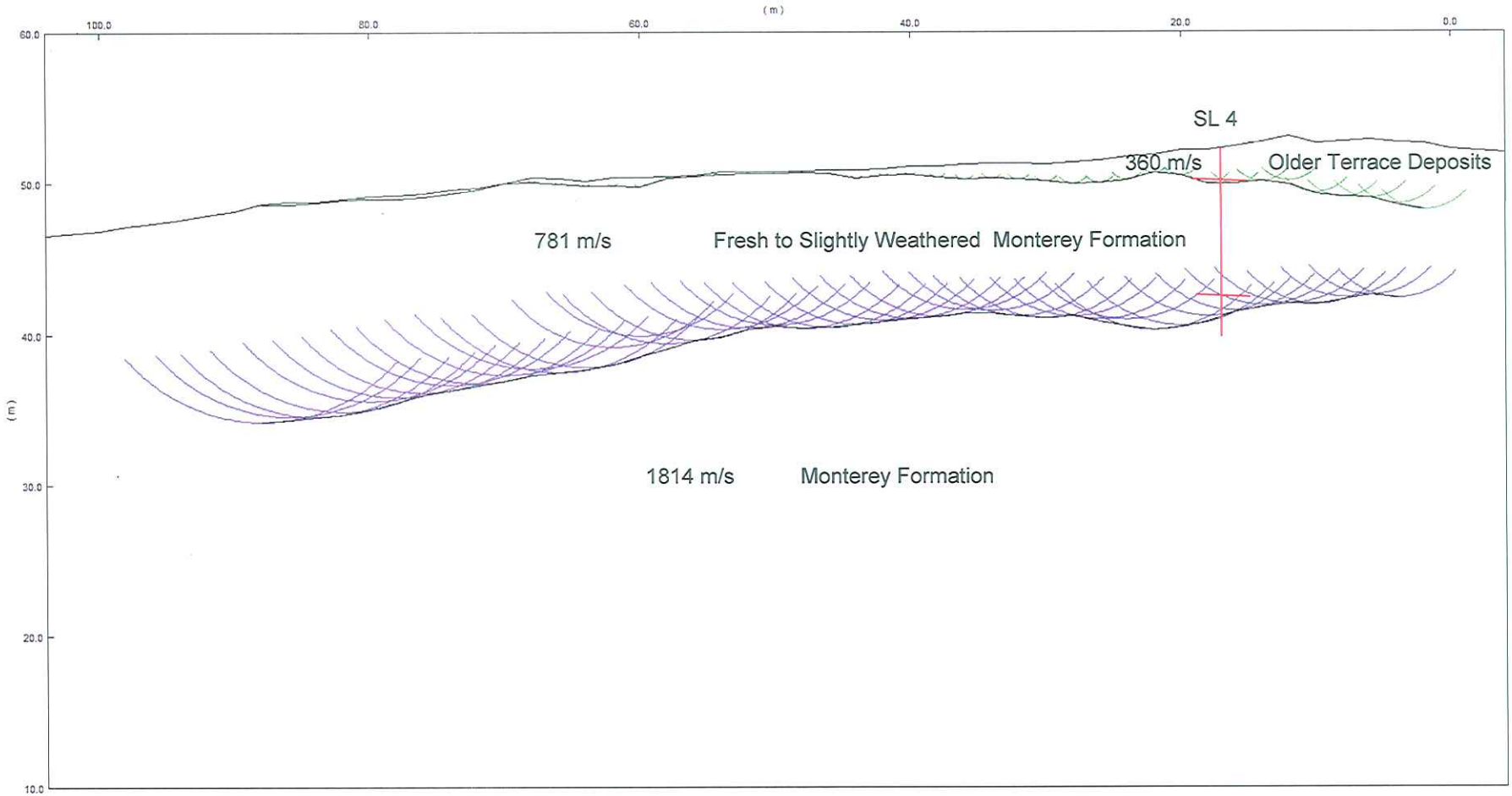


Caltrans	Division of Engineering Services Geotechnical Services Office of Geotechnical Design - North	EA 05-0T630	Site Map Showing Locations of Seismic Lines	Plate 1
		ID 05-000200029	05-SB-101-PM45.5	



Caltrans	Division of Engineering Services Geotechnical Services Geophysics and Geology Branch	EA 05-0T630 ID 05-000200029	Seismic Line 1 05-SB-101-PM45.5	Plate 2

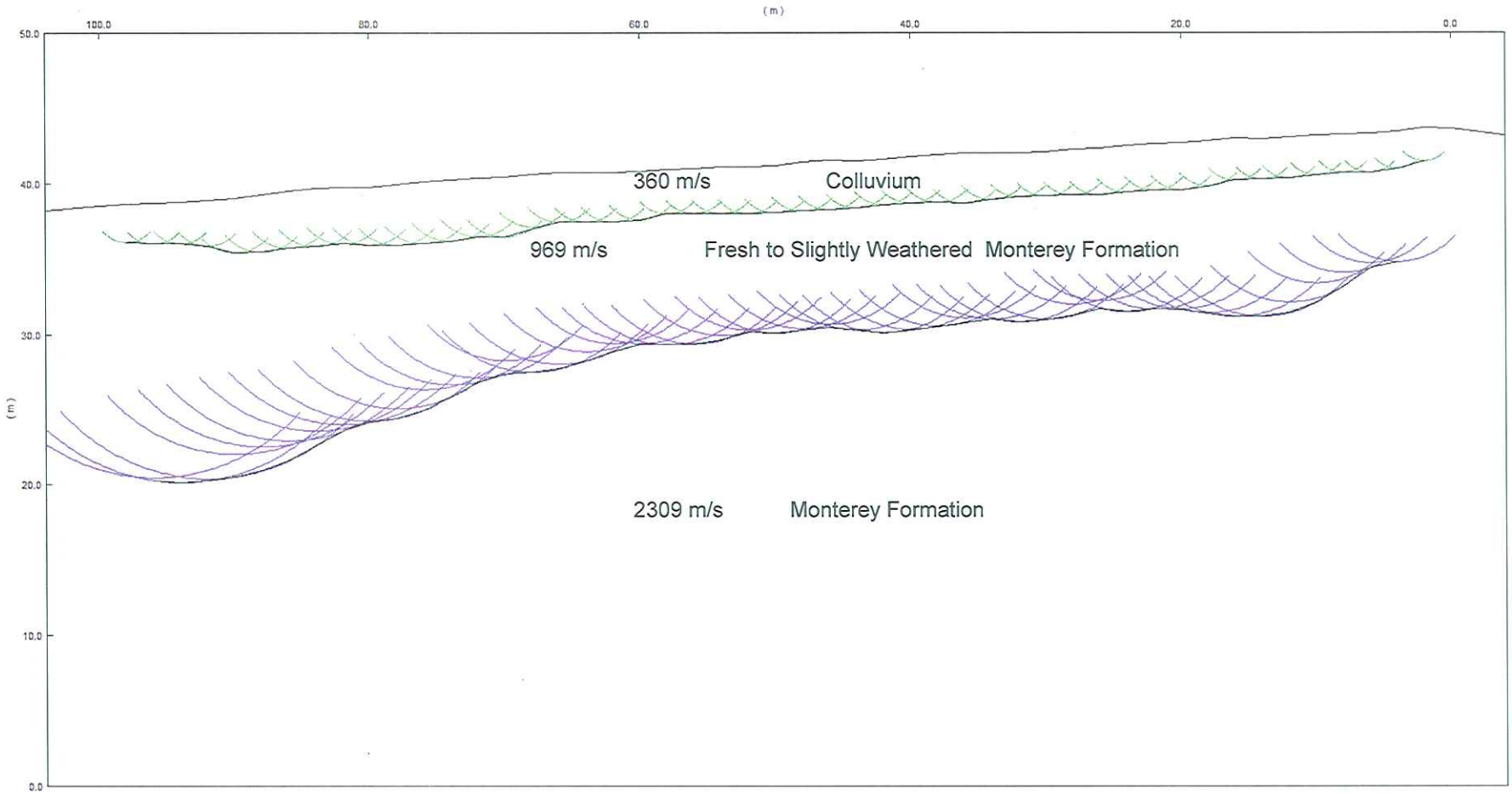
NW SE



Caltrans	Division of Engineering Services Geotechnical Services Office of Geotechnical Design - North	EA 05-0T630 ID 05-000200029	Seismic Line 2 05-SB-101-PM45.5	Plate 3

NW

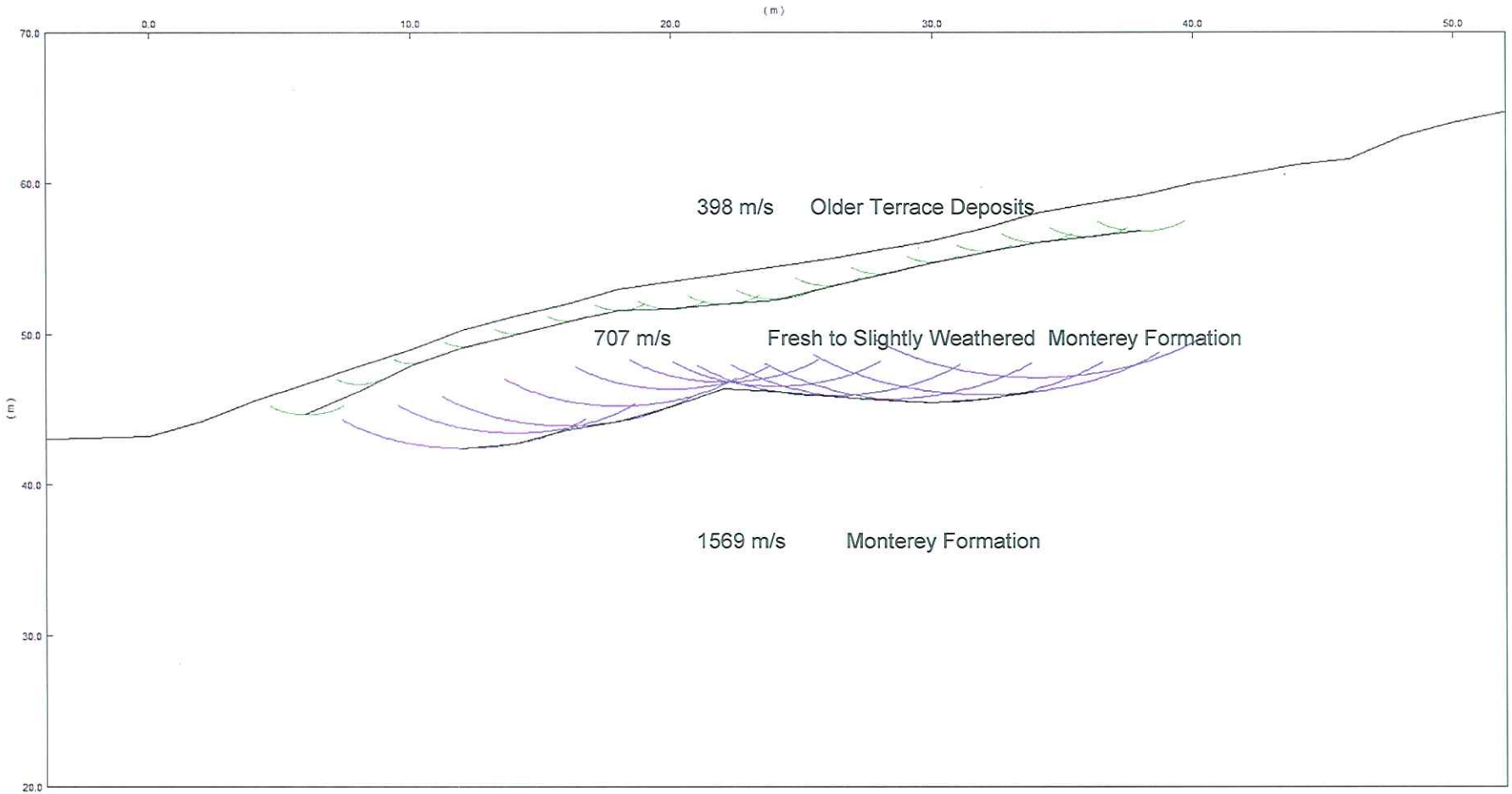
SE



Caltrans Division of Engineering Services Geotechnical Services Office of Geotechnical Design - North	EA 05-0T630 ID 05-000200029	Seismic Line 3 05-SB-101-PM45.5	Plate 4

SW

NE



Caltrans	Division of Engineering Services Geotechnical Services Office of Geotechnical Design - North	EA 05-0T630	Seismic Line 4	Plate 5
		ID 05-000200029	05-SB-101-PM45.5	

December 7, 2015

Paul Valadao, P.E.
Caltrans District 5 Design
50 Higuera Street
San Luis Obispo, CA 93401

Dear Mr. Valadao:

Granite Construction received your request to potentially supply nonpotable water to the awarded contractor on the Caltrans Gaviota Curve Realignment Project (Contract No. 05-0T6304).

We note that the current drought in California has brought about new groundwater management legislation, which may create new future groundwater regulations during the life of your project. This regulatory uncertainty may limit or prevent our ability to provide ground water to your project. Unless otherwise limited by groundwater regulations, Granite Construction is willing to provide water to this project subject to the production limits outlined below.

The Granite Construction Gardner Facility produces nonpotable water from four wells, of which two are currently operational, for use in construction projects and mining related activities. Each of the two operational wells produces approximately 28,000 gallons a day at a rate of generally 20 gallons per minute (GPM) with limited storage capacity:

- The Gardner Facility distributes nonpotable water Monday through Friday upon appointment.
- Any request over 1,000 gallons requires at least one (1) day notice by calling (805) 693-1086 to verify there is sufficient water in storage.
- Provided the 20 GPM per well production rate, substantial time would be necessary prior to reloading water trucks.

The approximate price for nonpotable water would be $.01 cents per gallon. If you need additional information or have any questions, please contact me at (805) 964-9951.

Sincerely,

Bruce McGowan
Central California Regional VP
Granite Construction

Santa Barbara Branch
P.O. Box 6744
Santa Barbara, CA 93160-6744
805/964-9951
FAX: 805/964-7661

January 30, 2015

Paul Valadao, P.E.
Caltrans District 5 Design
50 Higuera Street
San Luis Obispo, CA 93401

Dear Mr. Valadao:

Tajiguas Landfill received your request to potentially supply nonpotable water to the awarded contractor on the Caltrans Gaviota Curve Realignment Project (Contract No. 05-0T6304).

The Tajiguas Landfill produces nonpotable water from wells for use in construction projects and landfill related activities. The wells produce approximately 28,000 gallons a day at a rate of generally 20 gallons per minute (GPM) with limited storage capacity:

- Tajiguas Landfill distributes nonpotable water Monday through Friday from 8 A.M. to 3 PM. upon appointment.
- Any request over 1,000 gallons requires at least one (1) day notice by calling (805) 696-1170 to verify there is sufficient water in storage.
- Provided the 20 GPM production rate, substantial time would be necessary prior to reloading water trucks.
- Nonpotable water will not be sold to outside parties during the summer of 2016 due to scheduled internal construction activities at Tajiguas Landfill.
-The availability of nonpotible water for sell to outside parties is never guaranteed.

The approximate price for nonpotable water would be $3 per 100 cubic feet. If you need additional information or have any questions, please contact me at (805) 681-5626.

Sincerely,

Travis Spier
Operations Manager
Tajiguas Landfill
County of Santa Barbara Public Works

QuadGuard® CZ System

PORTABLE NON-GATING REDIRECTIVE CRASH CUSHION FOR WORK ZONES

OVERVIEW

The innovative QuadGuard CZ System has been improved with the addition of modular plate bases to reduce anchorage and speed installation. The QuadGuard CZ System meets all of today's strict crash cushion performance criteria. The QuadGuard CZ System provides the same lifesaving efficiency and features of the permanent QuadGuard System, in a compact, portable system that is easier than ever to install.

During head-on impacts, the QuadGuard Systems telescope rearward and crush the cartridges to absorb the energy of impact. When impacted from the side at angles up to 20°, the QuadGuard Systems safely redirect the errant vehicle back toward its original travel path without allowing gating.

FEATURES AND BENEFITS

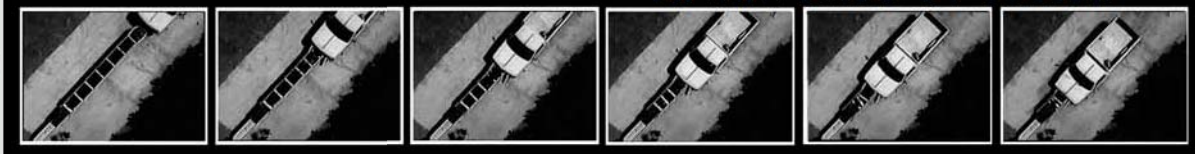
- NCHRP 350 TL-3 performance requires only 30 anchors
- Compact, modular design can accommodate speeds from 70 km/h (45 mph) to 115 km/h (71 mph)
- 80% reusability after most design impacts
- Lifting points allow easy repositioning as a complete unit
- Easy to access anchor holes allow for fast installation
- Available in 610, 762 & 910 mm (24, 30 & 36 in.) widths to protect a wide array of hazards

Modular plate base reduces anchorage and speeds installation

Built-in lifting points allow the system to be moved as a complete unit

ENERGY ABSORPTION SYSTEMS, INC.

SAVING LIVES BY DESIGN



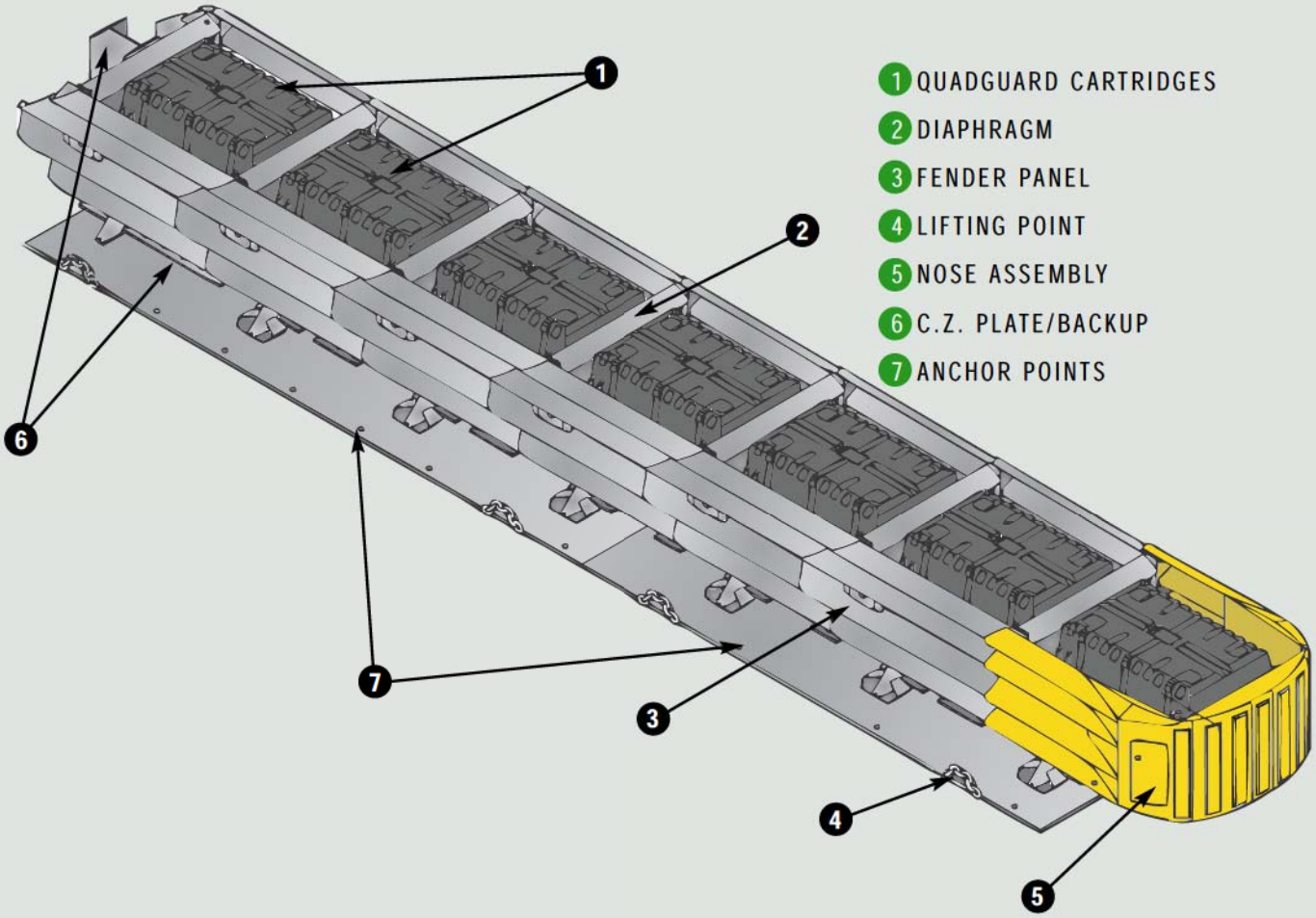
WWW.ENERGYABSORPTION.COM

QUICK & EASY INSTALLATION & REMOVAL

- Only 30 anchor bolts needed for TL-3 six bay unit
- Easy access to anchor holes
- Entire system can be moved as a single unit using lifting points

SPECIFICATIONS

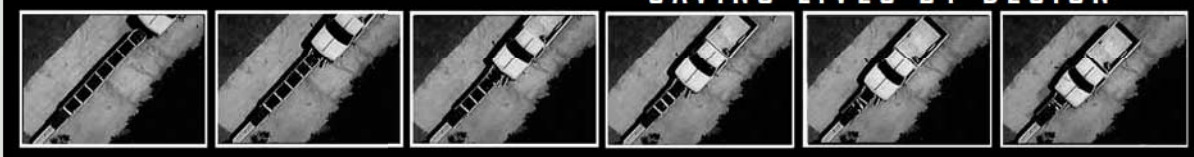
Minimum Width at Backup	610.0 mm	(2')
Maximum Width at Backup	915 mm	(3')
Weight (typical 6-bay unit)	1594.0 kg	(3512 lb.)
Length (typical 6-bay unit)	6.4 m	(21')



1. QUADGUARD CARTRIDGES
2. DIAPHRAGM
3. FENDER PANEL
4. LIFTING POINT
5. NOSE ASSEMBLY
6. C.Z. PLATE/BACKUP
7. ANCHOR POINTS

Quixote Transportation Safety

SAVING LIVES BY DESIGN



WWW.QUIXTRANS.COM

ENERGY ABSORPTION SYSTEMS, INC.

35 East Wacker Drive • Chicago, IL 60601
Tel: (312) 467-6750 • Fax: (312) 467-9625
www.energyabsorption.com

Distributed By:

General specifications for the QuadGuard System are subject to change without notice to reflect improvements and upgrades. Additional information is available in the Product Manual for this system. Contact Energy Absorption Systems for details.

ADIEM™

Advanced Dynamic Impact Extension Module

The Advanced Dynamic Impact Extension Module (ADIEM™) is a cost effective energy-absorbing system that utilizes lightweight, crushable concrete modules. Enhanced coatings and optional covers provide additional protection from the elements.

Features

- No site-specific foundation pad needed.
  Can be placed on existing surfaces such as concrete, asphalt or compacted soil/base material.
- Composed of three component groups; reinforced concrete base, engineered lightweight concrete modules, and anchor brackets.
- Re-directive capability.
  (Beginning Length of Need at 15' (4.6 m) from nose.)
- NCHRP Report 350 Test Level 3 compliant.

Installation and Repair Advantages

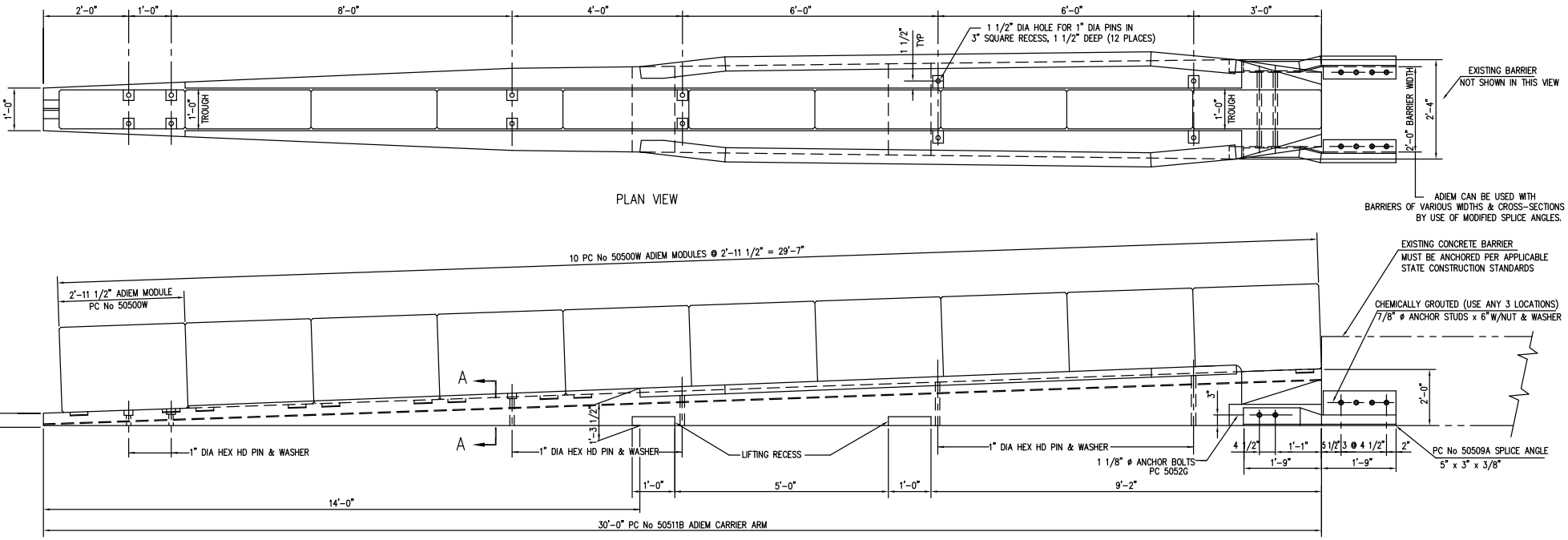
- Pinned anchorage allows unit to be moved and relocated quickly.
- All ten lightweight modules are common in design and composition, requiring no sequence priority when attaching or replacing damaged modules.
- Impact damage to the product is typically confined to the modules making repair a simple process.
- Contains no torque-sensitive bolts.
- No concrete to pour.

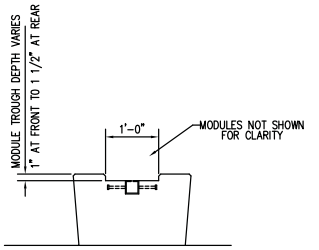
Specifications

- System Length: 30'- 0" (9.2 m) Base
- System Width: 32" (313 mm) at Widest Point
- System Height: 28" (712 mm) at Nose, 48" (1.2 m) at Hazard
- Base Weight: 11,500 lbs. (5216 kg)

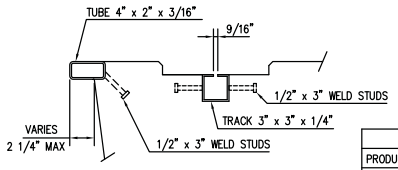
1-800-527-6050
www.highwayguardrail.com

1-888-323-6374
www.energyabsorption.com

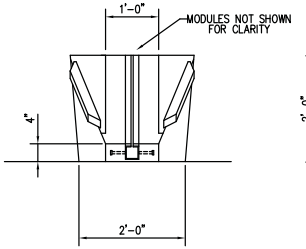




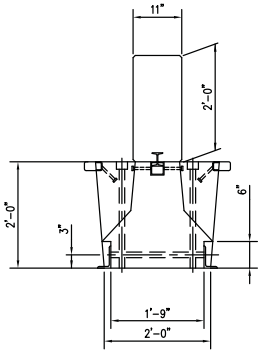
SECTION A-A



TRACK & BUMPER DETAIL



FRONT ELEVATION VIEW



REAR ELEVATION VIEW

BILL OF MATERIAL

PRODUCT CODE	QTY	DESCRIPTION	REMARKS
50500W	10	MODULES x 2'-11 1/2"	
50511B	1	BASE x 30'-0"	
50508A	1	SPLICE ANGLE x 3'-6" RT	
50509A	1	SPLICE ANGLE x 3'-6" LT	
6549W	1	GARNA-THANE COATING (1 GAL)	
5052G	2	1 1/8" ø x 25" HEX HD BOLT	
4963G	4	1 1/8" WASHER	
3976G	2	1 1/8" HEX NUT	
4616G	6	7/8"ø STUD x 6" (FULL THD)	
3725G	6	7/8" WASHER	
3735G	6	7/8" HEX NUT	
☆ 5206B	1	ADHESIVE HY150 CARTRIDGE	
3900G	12	1" WASHER	

	SCH			ANCHOR PIN SCHEDULE PER SURFACE (SEE NOTES 1-5)		
				PCC	ACP	BASE
5665G	SEE SCH	1" ø HEX HD PIN x 48"	SEE NOTES 1-5			4
5642G		1" ø HEX HD PIN x 42"			4	
5650G		1" ø HEX HD PIN x 36"		4		4
5641G		1" ø HEX HD PIN x 30"			4	4
5646G		1" ø HEX HD PIN x 24"		4	4	
5643G		1" ø HEX HD PIN x 18"		4		

ADIEM INSTALLATION INSTRUCTIONS

1. The ADIEM base is to be placed on a smooth surface (the same horizontal plane as the concrete barrier) and parallel to the mainline or ramp traveled lane(s).
2. Install anchor rods for ADIEM base by driving in soil or soft asphalt or driving in pre-drilled holes for hard asphalt or concrete (no epoxy required). The base should not be moved after the holes are drilled. The holes should be drilled using, at a minimum, a 35# hammer and minimum 36 inch long drill bit. (A 50# hammer is recommended.)
3. Attach connection brackets to base with two (2) 1 1/8" X 25" hex head bolts provided. Then field drill holes in the existing barrier and attach connection brackets to it with chemically grouted hardware provided.
4. Oil the ADIEM base track. Slide the modules onto the base. Be careful not to damage edges of the modules while sliding onto the base.
5. If the modules are scuffed or nicked, apply GARNA-THANE coating to the affected area.
6. Recommended tools and equipment:
   - 35/50# air hammer/drill
   - 1 3/8" ø x 36" rock drill
   - 1 1/4" ø x 12" rock drill
   - Sledge hammer
   - Oil
   - Wrenches

OPTIONAL ANCHOR ITEMS	
PRODUCT CODE	DESCRIPTION
5205B	ADHESIVE DISPENSER
5207B	MIXER HIT HY150 (NOZZLE)
5208B	FILLER HIT HY150 (FILLER TUBE)
5209B	BIT TE-C+ 11/16-18 (11/16" ø BIT)

☆ EACH CARTRIDGE INCLUDES 1 EACH : MIXER HY 150 CARTDIDGE(NOZZLE)
: FILLER HIT HY 150 (FILLER TUBE)

NOTES:
1) ANCHOR PINS ARE 1" DIA HEX HD, POINTED, GALV RODS (A307)
2) PORTLAND CEMENT CONCRETE (PCC)
3) ASPHALTIC CONCRETE (ACP)
4) BASE AND/OR COMPACTED SOIL (BASE)
5) ADIEM INSTALLATION NOT RECOMMENDED ON LOOSE SOIL.

ALTERNATE ADIEM INSTALLATION INSTRUCTIONS

1. At a holding site, the modules are slid into the ADIEM base after oiling the base track. Be careful not to damage the edges of the modules while sliding them onto the base.
2. If the modules are scuffed or nicked, apply GARNA-THANE coating to the affected area.
3. The unit is then delivered to the job site. The unit is to be placed on a smooth surface (the same horizontal slope as the concrete barrier) and parallel to the mailine or ramp traveled lane (s).
4. The front module should be removed so the remaining modules can be shifted for easy access for drilling the anchor rod holes.
5. Install anchor rods for ADIEM base by driving in soil or soft asphalt or driving in predrilled holes for hard asphalt or concrete (no epoxy required). The base should not be moved after the holes are drilled. The holes should be drilled using, at a minimum, a 35# hammer and a minimum 36 inch long drilling bit. (A 50# hammer is recommended.)
6. Attach connection brackets to base with two (2) 1 1/8" X 25" hex head bolts provided. Then field drill holes in the existing barrier and attach connection brackets to it with chemically grouted hardware provided.

REV.	CHK'D	BY	DATE	REMARKS
6	B.T.	L.H.	12/10/03	REPLACED GROUT WITH HILTI, UPDATED DWG
5		L.H.	03/12/03	DELETED NOTE #7, REVISED NOTE #3
4	D.D.	L.H.	12/17/99	REVISED COATING, CHANGED TITLE BLOCK
3		BT	3-14-97	DELETED PC 5484, ADDED PC 5052, CHG QTY PC 3976
2		BT	2-14-97	GENERAL UPDATES

ADIEM 30'

ERECTION DETAILS

DRAWN	B.TAKACH
CHECKED	D.D.
APPROVED	
DATE	3/19/96
ENG. FILE #	SS349-01E
SHT.No.	E1 OF 1
DRAWING NO.	SS 349
REV.	6

TRINITY INDUSTRIES, INC.
HIGHWAY SAFETY PRODUCTS
2525 STEMMONS FREEWAY, DALLAS, TX 75207

ABSORB 350® | NON-REDIRECTIVE CRASH CUSHION - SACRIFICIAL

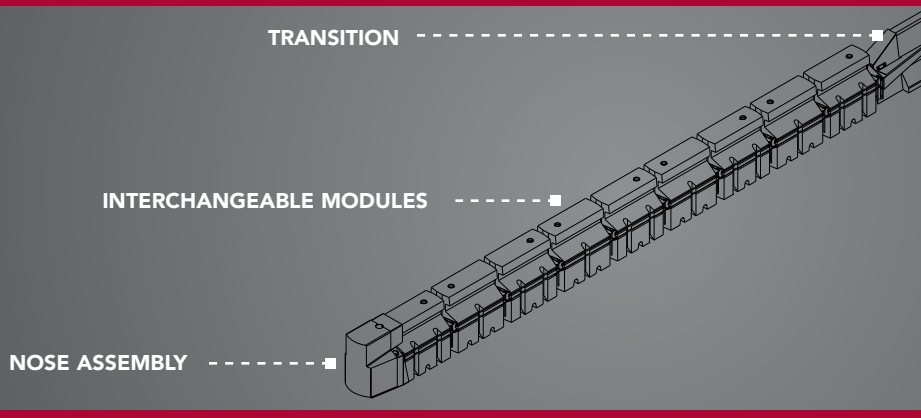
- ANCHORLESS INSTALLATION - NO FOUNDATION REQUIRED
- COST EFFECTIVE PROTECTION FROM CONCRETE BARRIER ENDS
- WORLDWIDE PROVEN PERFORMANCE
- NCHRP 350 ACCEPTED

BARRIER SYSTEMS®
BY LINDSAY

ABSORB 350® | NON-REDIRECTIVE CRASH CUSHION - SACRIFICIAL

PHYSICAL SPECIFICATIONS

Classification	NR-S	
TL-3 Length	32′	9.7 m
Width	24″	610 mm
Height	32″	813 mm
Module Weight Empty	110 lb.	50 kg
Test Level	NCHRP 350	TL 1/2/3



NARROW ANCHORLESS WATER FILLED CRASH CUSHION

No ground anchoring, the largest selection of transitions and modular technology allow the ABSORB 350 System to be used in multiple speed conditions. The ABSORB 350 System is ideal for contractors due to the ease of maintenance after an impact and quick deployment. At 24″ (610 mm) wide, it is ideally suited for narrow areas where road and workspace is limited. The ABSORB 350 System is easy to restore after an impact because the System uses uniform modular components. The use of standardized modular components also helps to reduce inventory costs.

FREQUENTLY ASKED QUESTIONS

Can the nose be angled off the barrier to better face traffic?
Yes, as long as all of the ABSORB 350 modules remain pinned and connected. For larger angles, it is recommended that the last barrier section be moved to face traffic.

Can the ABSORB 350 System be moved while filled with water?
Yes, the System is rigid enough to be repositioned filled with water by sliding the optional wheel / jack assembly under each element.

What transitions are available?
Dozens of transition options are available, including attachments to; Standard NJ / J / K / F, Wide / X-Wide NJ, I-Lock, Smooth Face, JJ Hook, QMB, ArmorGuard®, Orion®, BarrierGuard® and ZoneGuard®.

Can the ABSORB 350 System be used during cold weather?
Since ABSORB 350 modules have no internal steel parts, the use of any approved anti icing chemical is acceptable.

FEATURES

- Rapid deployment and retrieval
- No ground anchoring required
- Low initial price
- Narrow footprint
- Can be deployed on almost any road surface
- Meets NCHRP 350 TL-1, TL-2, TL-3 test criteria
- Easily transitioned to multiple widths and shapes of barriers
- Nose and transition are reusable after most design impacts
- Approved for use in permanent and work zone locations

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Lindsay Transportation Solutions Sales and Services, Inc.
180 River Road • Rio Vista, CA 94571 • +1 707.374.6800 U.S. Toll Free: 888.800.3691 • www.barrriersystemsinc.com
General details for the ABSORB 350 System are subject to change without notice to reflect improvements and upgrades.
Additional information is available from Lindsay Transportation Solutions Sales and Services, Inc.
PT # ABS04-03252013

ACZ-350™

PORTABLE
TL-2 & TL-3
END
TREATMENT

OVERVIEW

The ACZ-350 System combines ease of use and NCHRP 350, gating, non-redirective TL-2 and TL-3 crash cushion performance for work zone protection. This partially reuseable crash cushion can be easily transported, and installed with No Roadway Anchors.

SUPERIOR IMPACT PERFORMANCE

The unique design of the ACZ-350 systems protects errant drivers from impacting concrete barrier ends, and also contains the errant vehicle from vaulting into the workzone.

FEATURES AND BENEFITS

- No Vaulting
- Safely contains errant vehicle
- Accommodates impacts up to 2,000 kg, (4,500 lbs) traveling at speeds up to 100 km/h (62 mph)
- Simple and Fast Installation
- Protects Permanent or Temporary, Steel or Concrete Barrier
- Ideal for Work Zones
- No Foundation or Anchoring

EASY CLEAN-UP
NARROW PROFILE
MINIMUM INTRUSION
LOW COST/ AFFORDABLE
QUICK/EASY TO MOVE

NON-REDIRECTIVE, GATING CRASH CUSHION SYSTEM

All Crash Cushions defined as Non-redirective and Gating require a clear zone. Clear Zones are areas behind the crash cushion that NO workers, machinery, obstructions or other debris could interfere with an errant vehicle. This area should also remain relatively flat. If there are any questions or concerns, please contact your local Energy Absorption Systems, Inc. representative.






ENERGY ABSORPTION SYSTEMS, INC.

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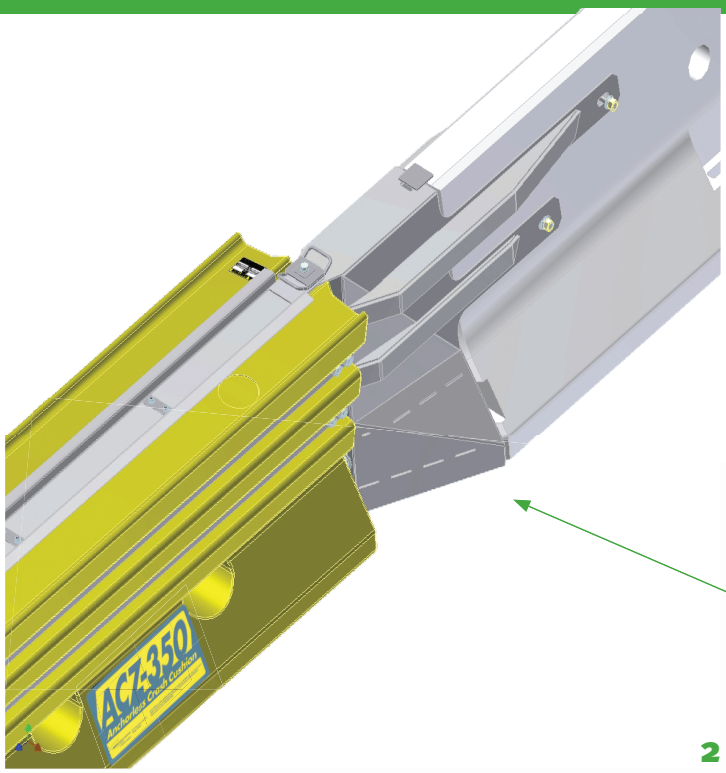
ACZ-350™

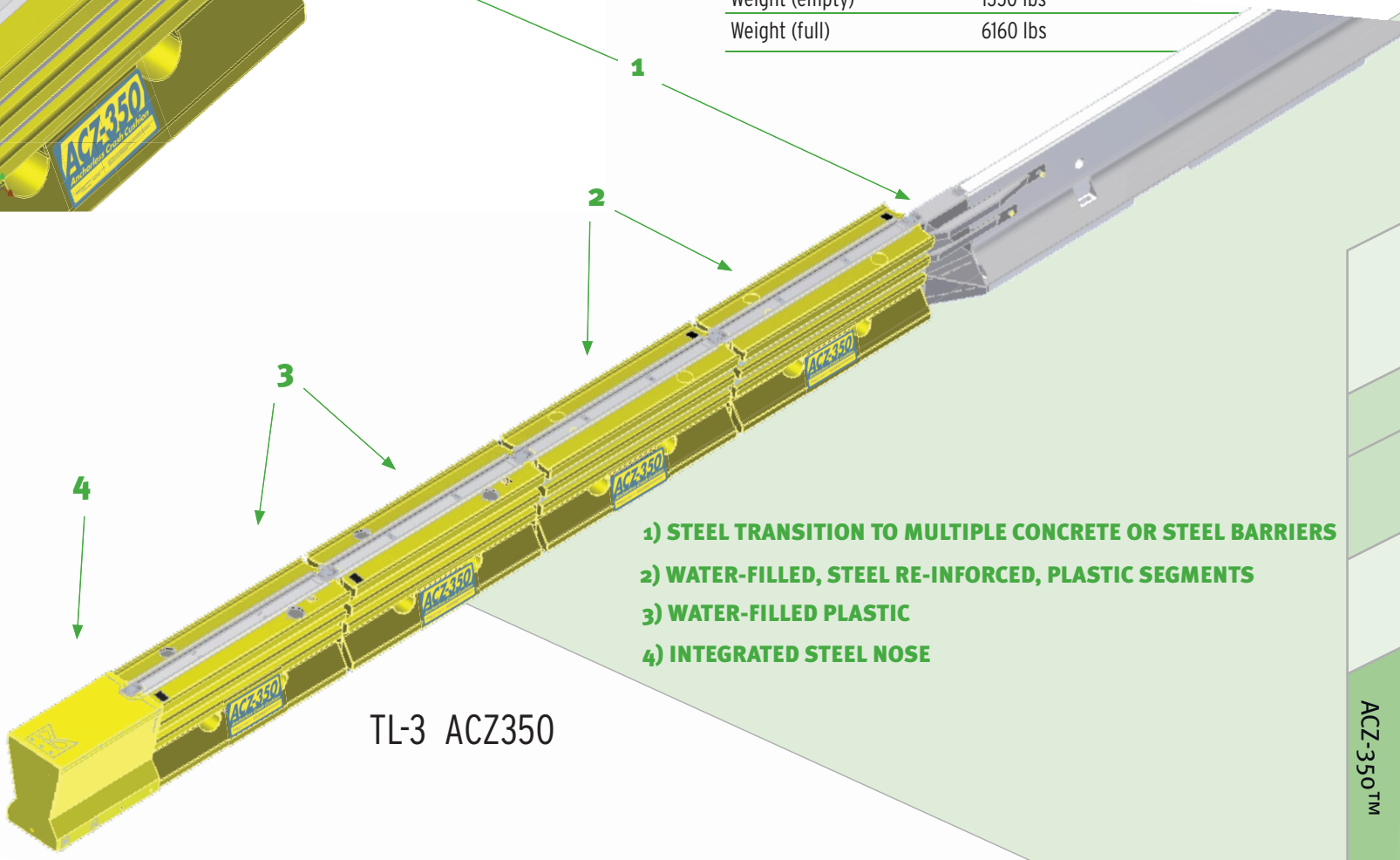


EASY DEPLOYMENT AND REMOVAL

The ACZ-350 System can be easily unloaded and positioned without cranes or heavy equipment. Deployment involves three simple steps:

1. Unload
2. Position and pin barrier sections.
3. Fill Segments with water

SPECIFICATIONS	TL-3
Length	31'-7" (9.6 m)
Width	1'-10" (.6m)
Height	2' 9" (.8m)
Weight (empty)	1350 lbs
Weight (full)	6160 lbs



TL-3 ACZ350

1) STEEL TRANSITION TO MULTIPLE CONCRETE OR STEEL BARRIERS

2) WATER-FILLED, STEEL RE-INFORCED, PLASTIC SEGMENTS

3) WATER-FILLED PLASTIC

4) INTEGRATED STEEL NOSE

ACZ-350™

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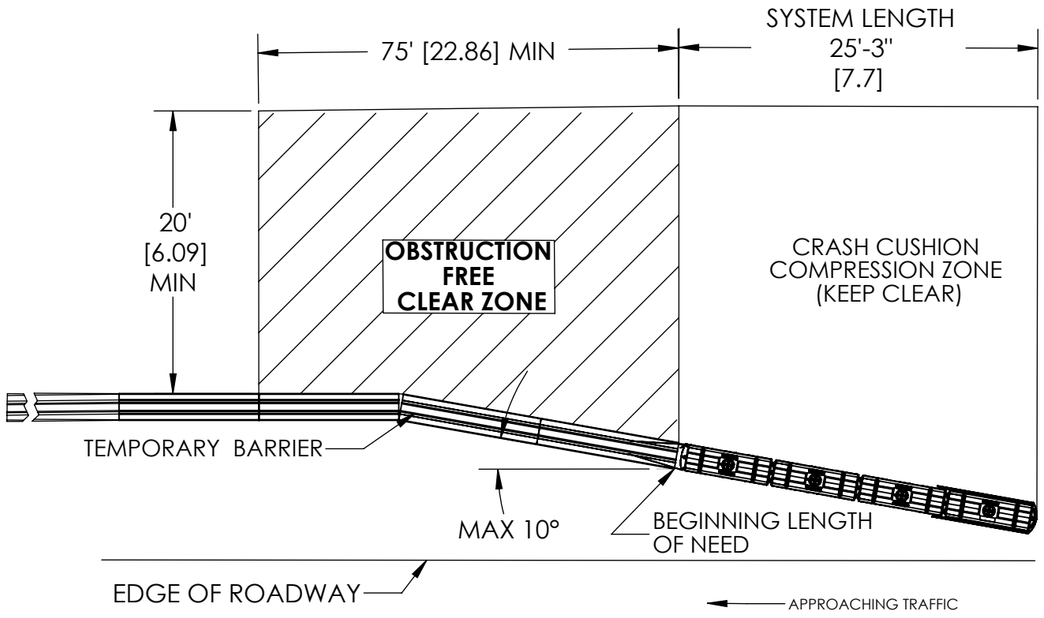
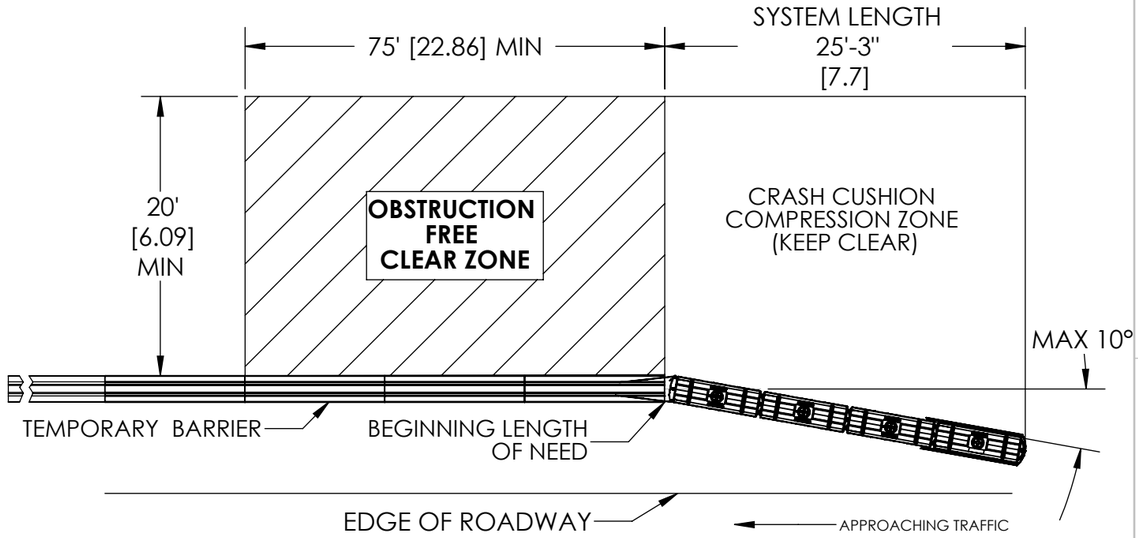
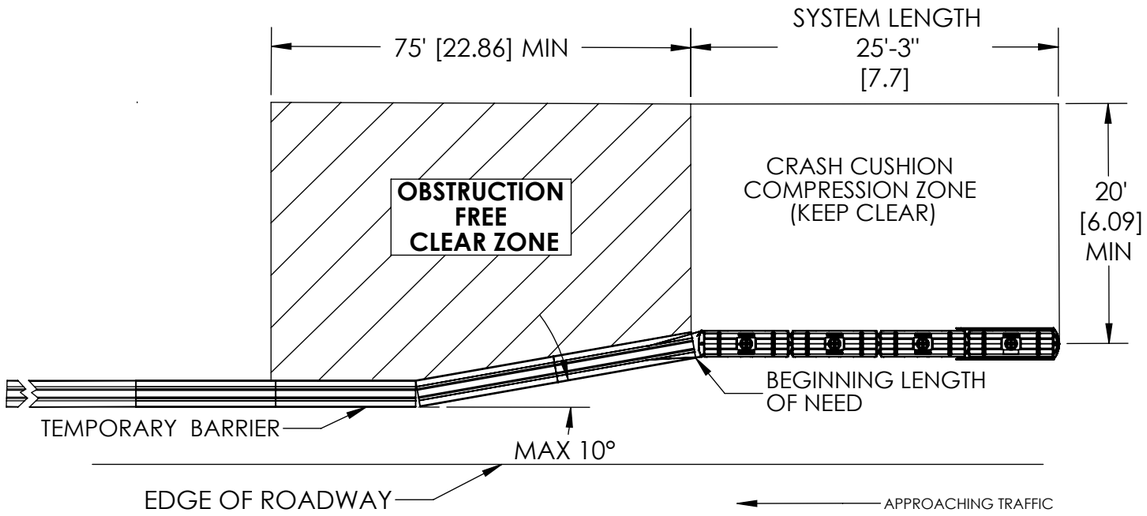
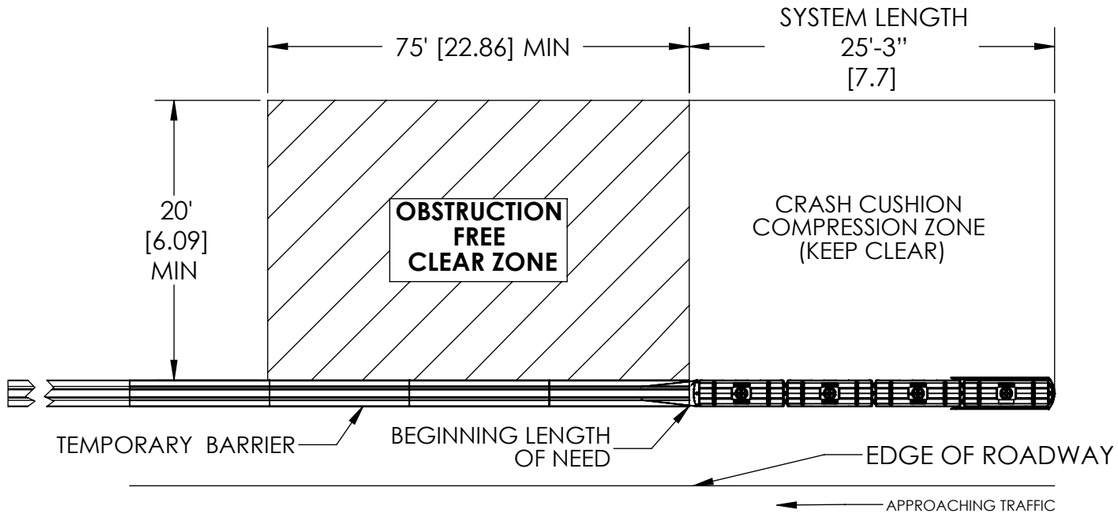
DRAWING NUMBER	DRAWING NAME	MOST RECENT REVISION DATE
300-148	SLED END TREATMENT ANCHORED/UNANCHORED CONFIGURATIONS	6/9/2011
300-147	SLED END TREATMENT SYSTEM	6/10/2011
300-146	SLED END TREATMENT TL3	6/10/2011
45044-Y	SLED END TREATMENT MODULE	6/10/2011
45044-T	SLED END TREATMENT TRANSITION ASSEMBLY (PAGE 1 OF 6 ONLY)	6/2/2010
SPEED CONFIGURATION	TL-2 & TL-3 SPEED CONFIGURATION	--









NOTES:

1. MINIMUM LENGTHS OF TEMPORARY CONCRETE BARRIER ARE BASED ON UN-ANCHORED LENGTHS
2. SLED END TREATMENT SYSTEM DOES NOT REQUIRE ATTACHMENT TO A FOUNDATION. THE SYSTEM CAN BE LOCATED ON FIRM SOIL, ASPHALT, OR CONCRETE SURFACES.
3. SLED SYSTEM ANGLED TOWARD TRAFFIC AT ANGLE APPROPRIATE PER STATE AND LOCAL SPECIFICATION FOR GATING CRASH CUSHION.
4. RUN OF BARRIER SHALL MEET THE LENGTH OF NEED CALCULATION
5. SLED SYSTEM TO BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS AND SPECIFICATION
6. AN APPROPRIATE OBSTRUCTION FREE CLEAR ZONE MUST BE ADJACENT TO THE SLED SYSTEM. THE OBSTRUCTION FREE CLEAR ZONE REPRESENTS THE IMPACT TEST RECOVERY AREA OF APPROXIMATELY 75 FT LONG BY 20 FT WIDE.
7. IN ADDITION TO THE RECOMMENDED OBSTRUCTION FREE CLEAR ZONE, AN AREA DIRECTLY ADJACENT TO THE CRASH CUSHION (CRASH CUSHION COMPRESSION ZONE) MUST BE KEPT CLEAR

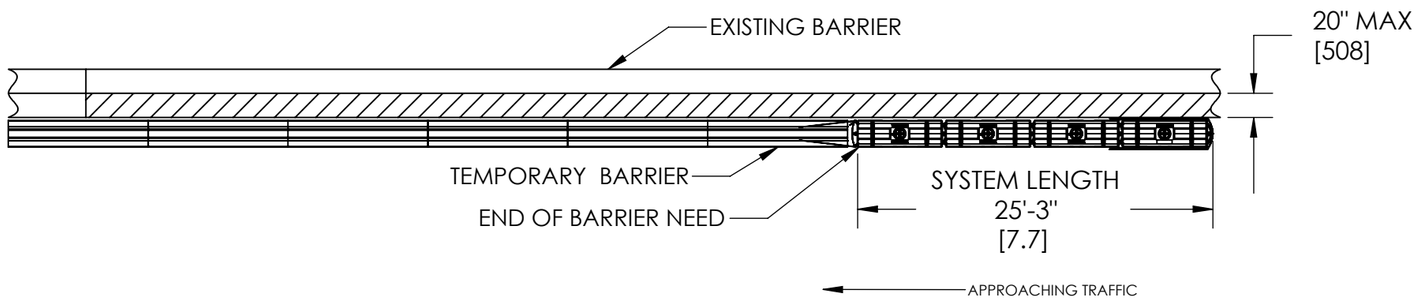
UNLESS OTHERWISE SPECIFIED:
ALL DIMENSIONS ARE IN FEET[m].

TrafFix Devices Inc.
160 Avenida La Pata
San Clemente, CA 92673
(949) 361-5663
FAX (949) 361-9205
www.traffixdevices.com

TITLE:
SLED END TREATMENT ANCHORED/UNANCHORED CONFIGURATIONS

DRAWN BY:	DATE:
Mary Dralle	06-09-11
CHECKED BY: FA	DATE: 06-09-11
APPROVED BY: FA	DATE: 06-09-11

SIZE	DWG. NO.	REV
B	300-148	C



ROADSIDE INSTALLATION ON APPROACH OF ELEVATED BRIDGES OR ROADWAYS

PLACEMENT OF THE SLED SYSTEM ON ELEVATED BRIDGE DECKS OR ROADWAYS ADJACENT TO EXISTING RAIL OR BARRIER SHALL BE OFFSET AT LEAST 20 INCHES [0.5 METER] FROM THE EXISTING RAIL OR BARRIER.

HATCHED AREA TO BE KEPT CLEAR OF ANY OBJECTS

UNLESS OTHERWISE SPECIFIED:
ALL DIMENSIONS ARE IN FEET[m].

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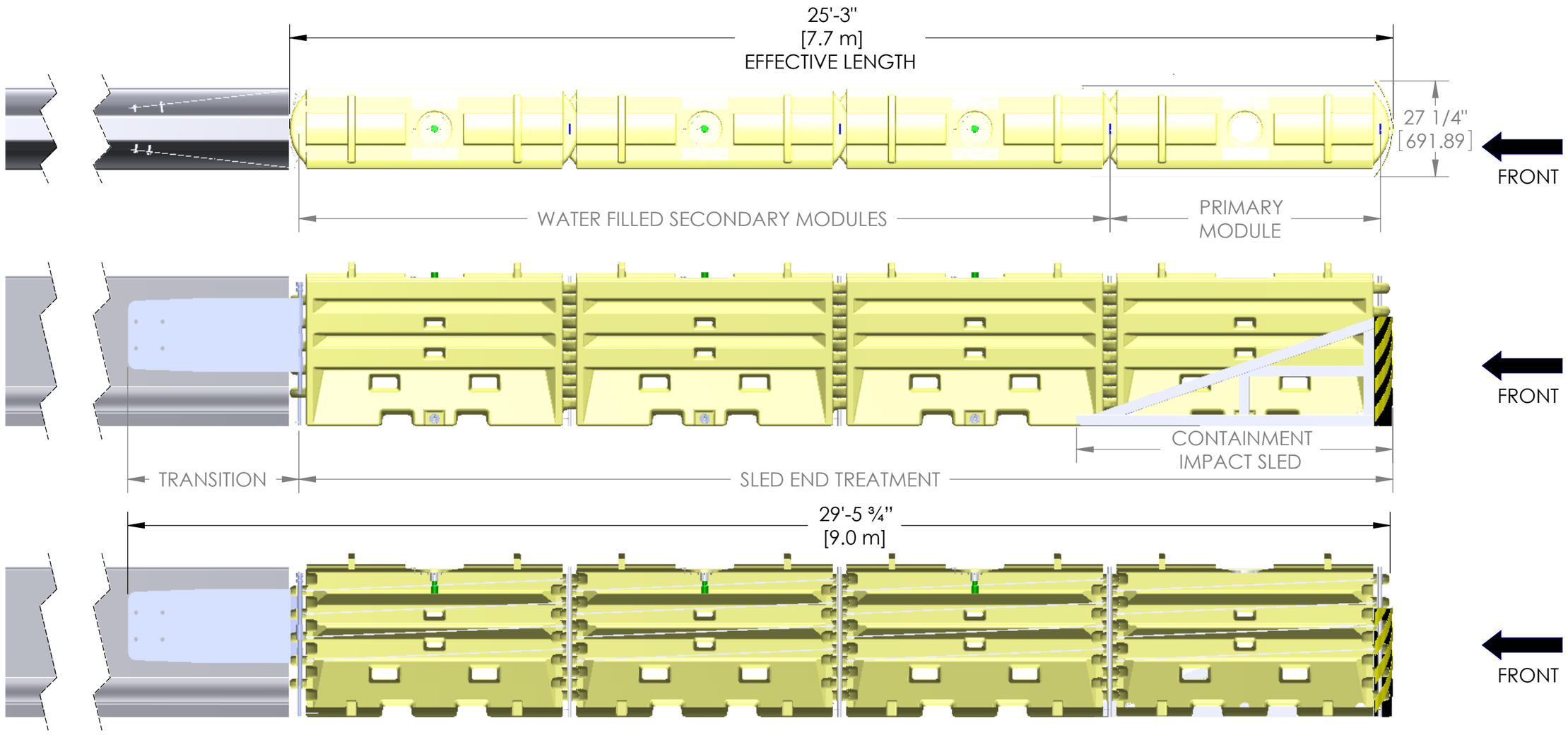
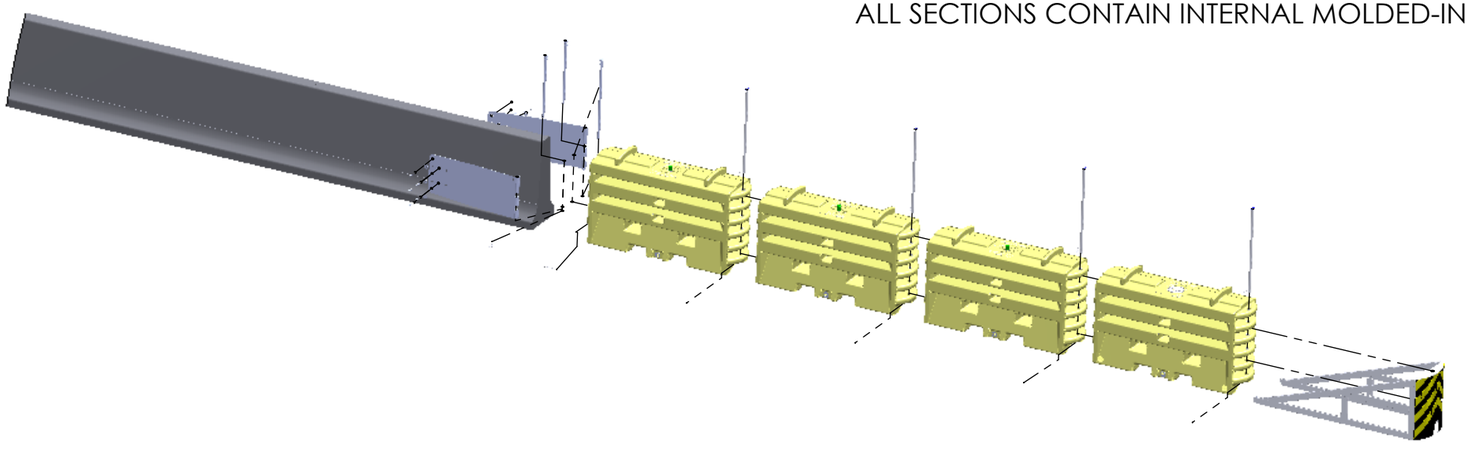
TITLE: SLED END TREATMENT ANCHORED/UNANCHORED CONFIGURATIONS

DRAWN BY: Mary Dralle	DATE: 06-09-11	SIZE B	DWG. NO. 300-148
CHECKED BY: FA	DATE: 06-09-11		REV C
APPROVED BY: FA	DATE: 06-09-11		SHEET 2 OF 2



CUT AWAY SLED END TREATMENT
ALL SECTIONS CONTAIN INTERNAL MOLDED-IN CABLES.



UNLESS OTHERWISE SPECIFIED:
ALL DIMENSIONS ARE IN INCHES[mm].
TOLERANCES:
FRACTIONAL: X/X ± 1" [25.4mm]
DECIMAL: .000 ± .0625
DEGREES: ± 0.5°

DRAWN BY: Mary Dralle	DATE: 06-10-11
CHECKED BY: FA	DATE: 06-10-11
APPROVED BY: FA	DATE: 06-10-11

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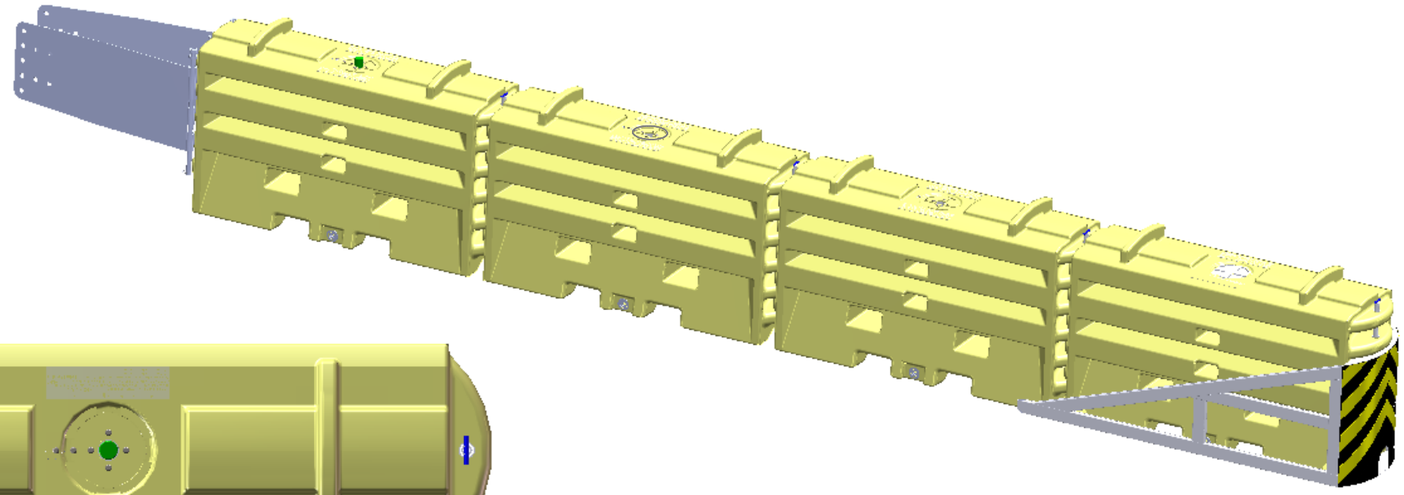
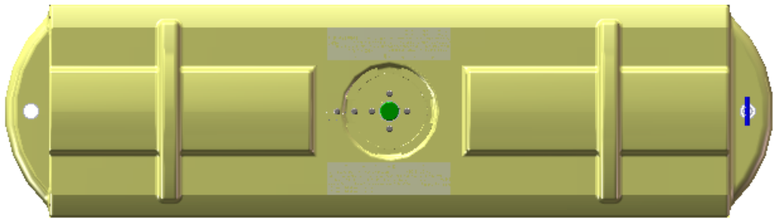
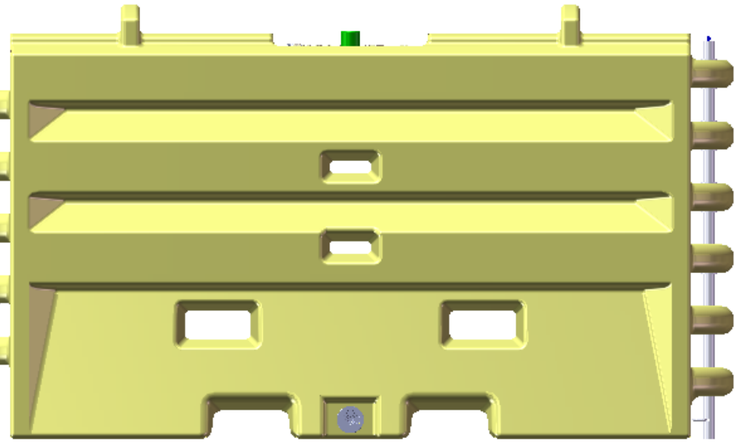
TITLE:
SLED END TREATMENT SYSTEM

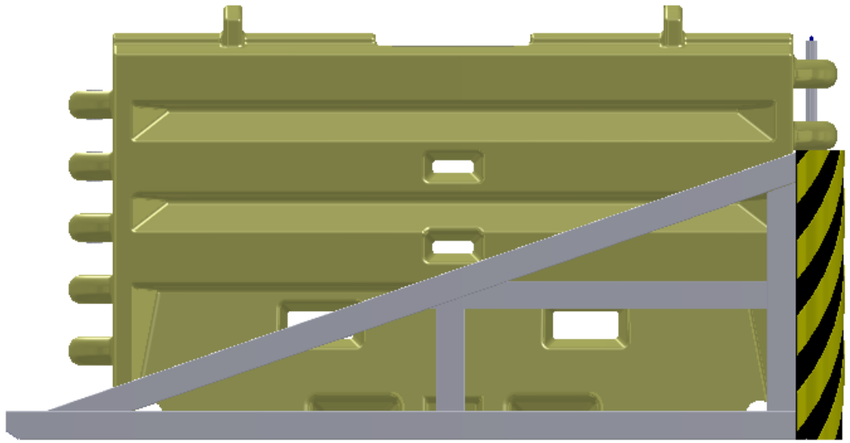
SIZE	DWG. NO.	REV
B	300-147	A

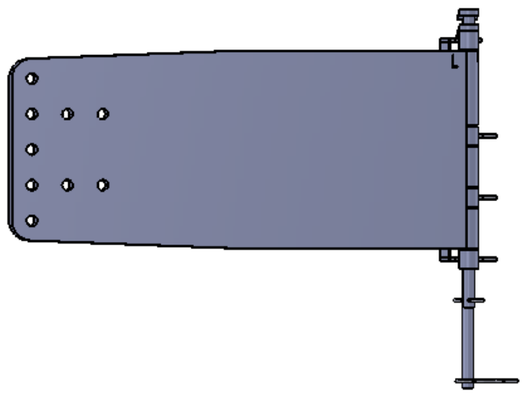
SHEET 1 OF 1











45044-T

45044-Y

45044-CIS

PN	DESCRIPTION	QTY
45044-Y-CIS	Containment Impact Sled	1
45044-Y	43" SLED End Treatment Module	3
45044-T	SLED End Treatment Transition	1

UNLESS OTHERWISE SPECIFIED:
ALL DIMENSIONS ARE IN INCHES[mm].
TOLERANCES:
FRACTIONAL: X/X ± 1/16" [1.6mm]
DECIMAL: .000 ± .0625
DEGREES: ± 0.5°

TrafFix Devices Inc.
160 Avenida La Pata
San Clemente, CA 92673
(949) 361-5663
FAX (949) 361-9205
www.traffixdevices.com

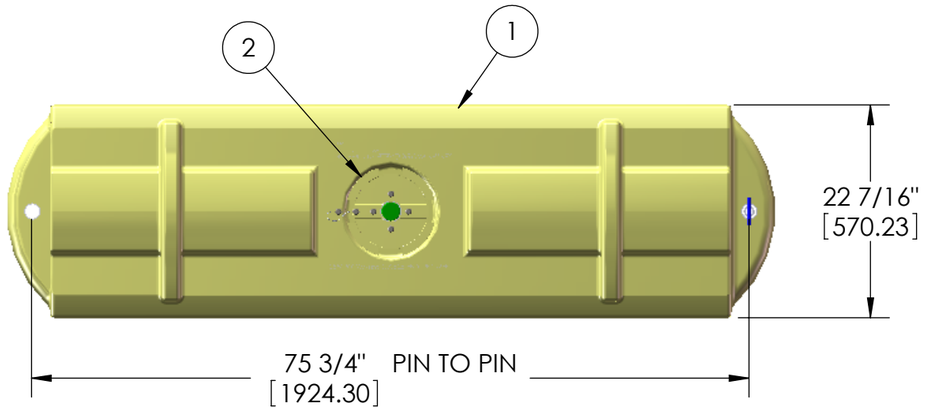
TITLE:

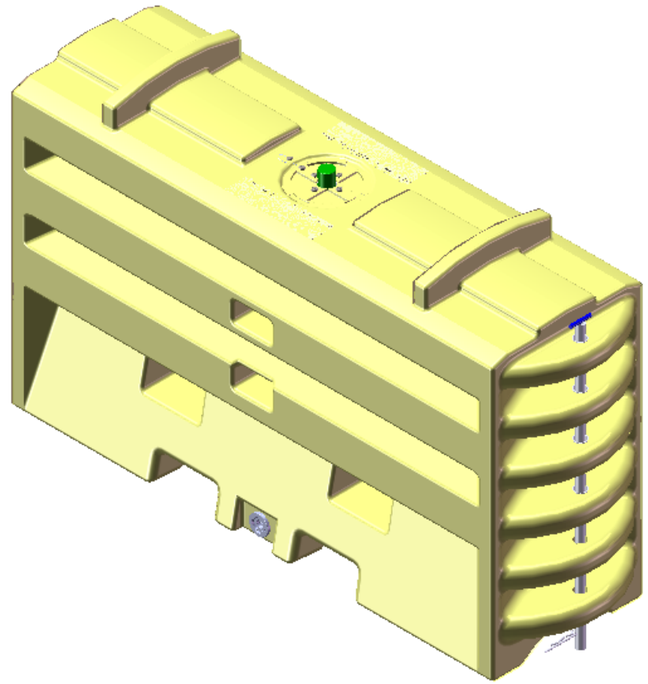
SLED End Treatment TL3

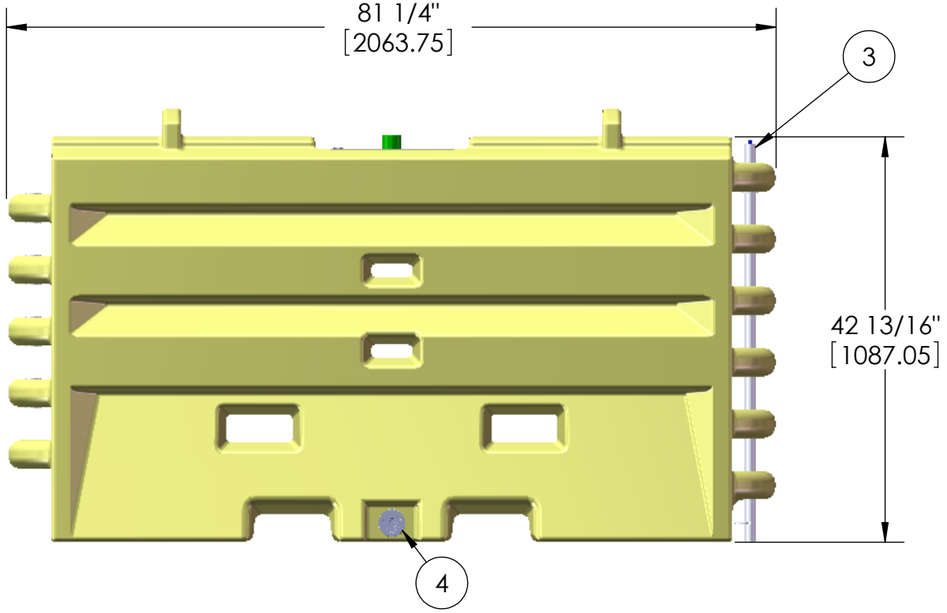
DRAWN BY: Mary Dralle	DATE: 06-10-11	
CHECKED BY: GM	DATE: 06-10-11	
APPROVED BY: GM	DATE: 06-10-11	

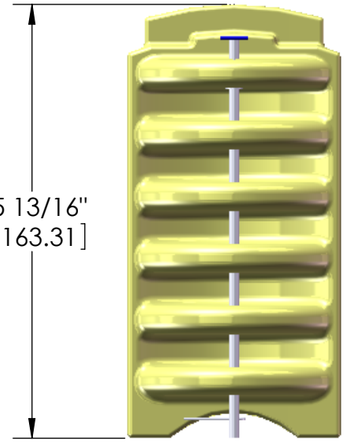
SIZE B | DWG. NO. 300-146 | REV A

SHEET 1 OF 1









SLED END TREATMENT
UNITS: INCHES [mm]
COLOR: YELLOW
EMPTY WEIGHT: APPROX. 160 LBS. [73 kg]
FILLED WEIGHT: APPROX. 2000 LBS [907 kg].
FILL MATERIAL: WATER

ITEM	DESCRIPTION	PN	QTY
1	43" SLED End Treatment	45044-YEL	1
2	Water Level Indicator Fill Cap	18009-Y-I	1
3	Sentry Water Cable Barrier T-Pin w/Keeper Pin	45043-CP	1
4	Water Wall Drain Plug	45033-RC-B	1

UNLESS OTHERWISE SPECIFIED:
ALL DIMENSIONS ARE IN INCHES[mm].
TOLERANCES:
FRACTIONAL: X/X ± 1/16" [1.6mm]
DECIMAL: .000 ± .0625
DEGREES: ± 0.5°

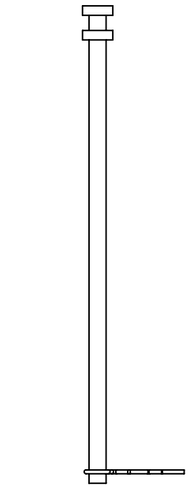
DRAWN BY: Mary Dralle	DATE: 06-10-11	
CHECKED BY: FA	DATE: 06-10-11	
APPROVED BY: FA	DATE: 06-10-11	

TrafFix Devices Inc.
160 Avenida La Pata
San Clemente, CA 92673
(949) 361-5663
FAX (949) 361-9205
www.traffixdevices.com

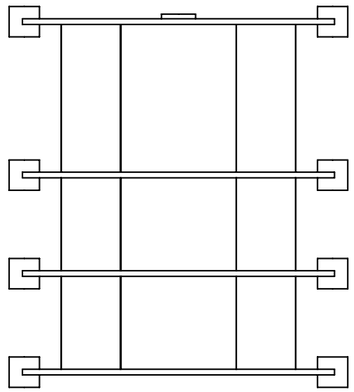
TITLE:
SLED END TREATMENT MODULE

SIZE	DWG. NO.	REV
B	45044-Y	A

SHEET 1 OF 1

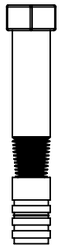


45145
SLED TRANSITION
SHORT DROP PIN



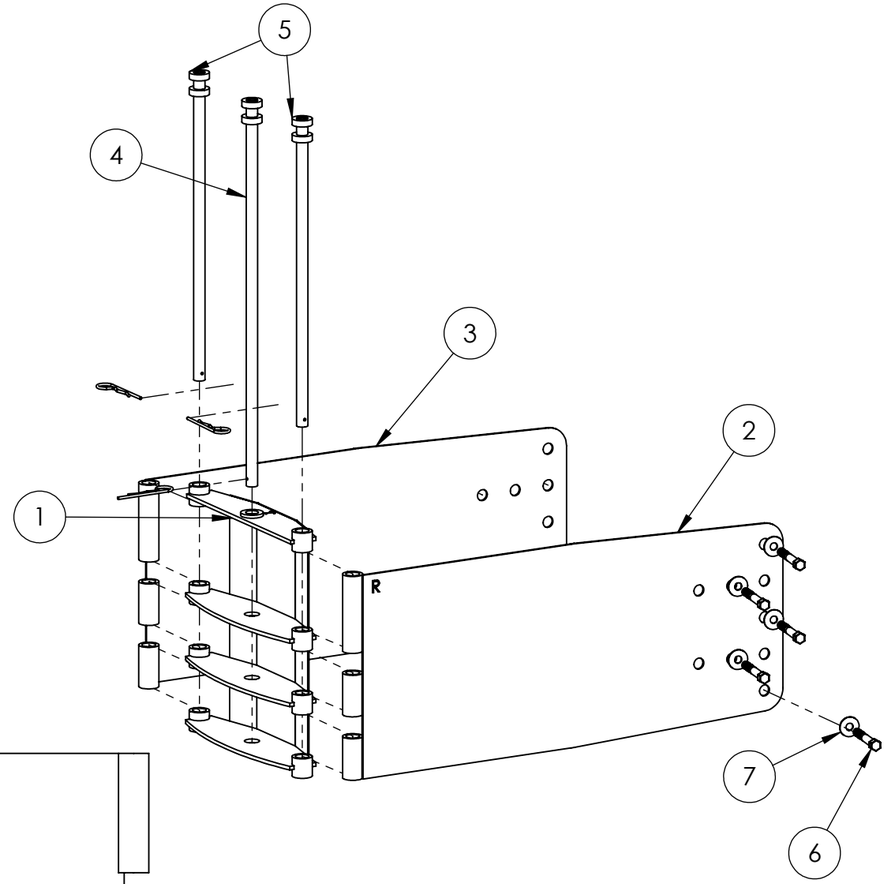
45130
SLED TRANSITION FRAME

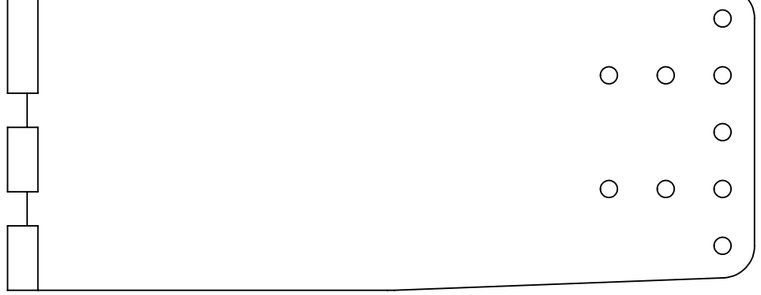
45140
SLED TRANSITION
LONGDROP PIN



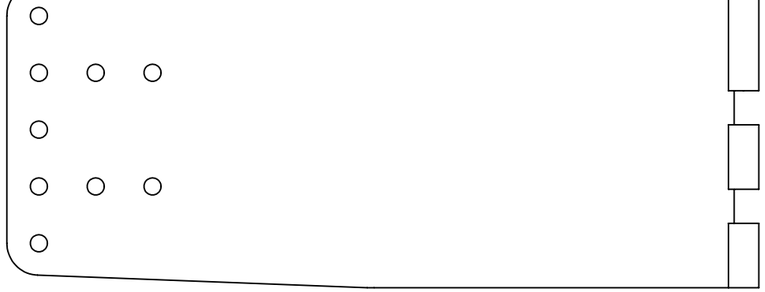
45047
BOLT,
TAPER ANCHOR,
3/4" X 4-1/8"

12060
WASHER, FLAT,
3/4"IDX2"OD





45150L
SLED TRANSITION PANEL, LEFT



45150R
SLED TRANSITION PANEL, RIGHT

ITEM NO.	DESCRIPTION	PN	QTY
1	SLED TRANSITION FRAME ASSY	45130	1
2	RIGHT SLED TRANSITION PANEL ASSY	45150R	1
3	LEFT SLED TRANSITION PANEL ASSY	45150L	1
4	SLED TRANSITION LONG DROP PIN	45140	1
5	SLED TRANSITION SHORT DROP PIN	45145	2
6	BOLT, TAPER ANCHOR, 3/4" X 4/1/8"	45047	9
7	WASHER, FLAT, 3/4"ID X 2"OD	12060	9

2. FINISH: HOT DIP GALVANIZE
1. MATERIAL: A36 AND A513 STEEL
NOTES: UNLESS OTHERWISE SPECIFIED

UNLESS OTHERWISE SPECIFIED:
ALL DIMENSIONS ARE IN INCHES[mm].
TOLERANCES:
FRACTIONAL: X/X ± 1/16" [1.6mm]
DECIMAL: .000 ± .0625
DEGREES: ± 0.5°

TrafFix Devices Inc.
160 Avenida La Pata
San Clemente, CA 92673
(949) 361-5663
FAX (949) 361-9205
www.traffixdevices.com

TITLE: SLED END TREATMENT TRANSITION ASSY

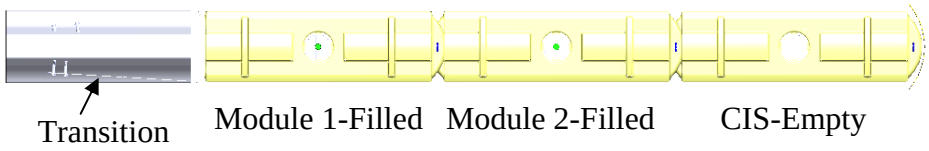
DRAWN BY: Mary Dralle	DATE: 06-02-10	
CHECKED BY: FA	DATE: 06-02-10	
APPROVED BY: FA	DATE: 06-02-10	

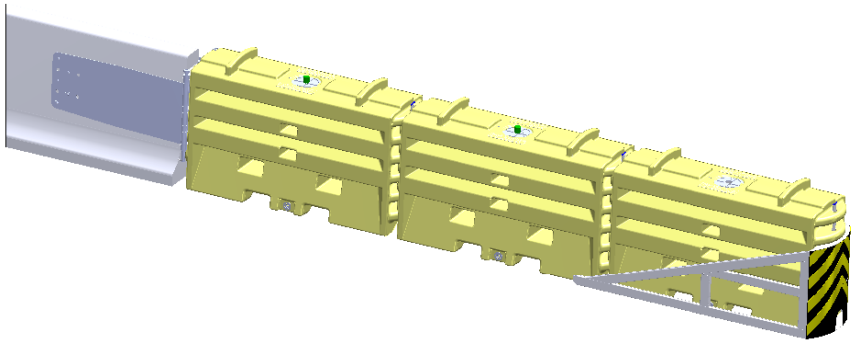
SIZE B | DWG. NO. 45044-T | REV B

SHEET 1 OF 6

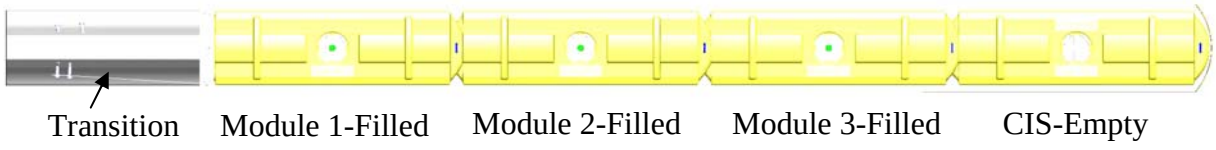
Speed Configuration

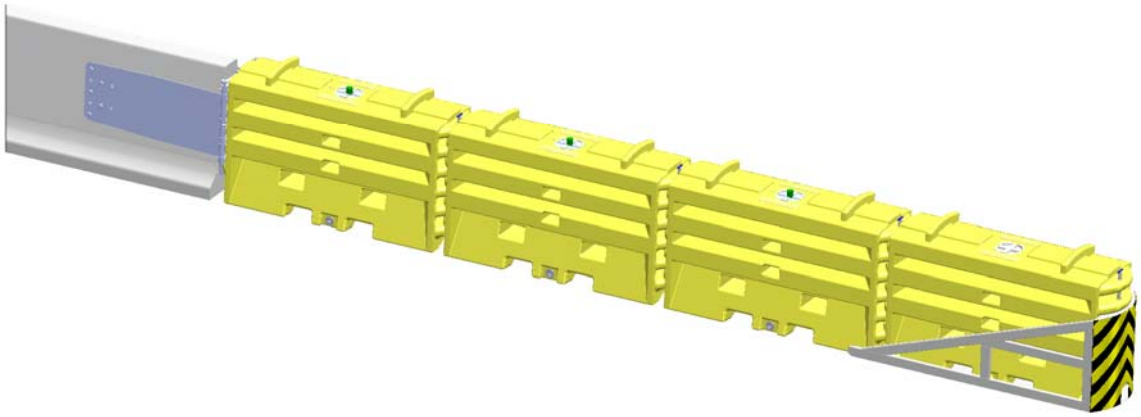
TL-2 Configuration





TL-3 Configuration





* CIS is ALWAYS empty.

UNIVERSAL TAU-II® | REDIRECTIVE, NON-GATING CRASH CUSHION - PARTIALLY REUSABLE

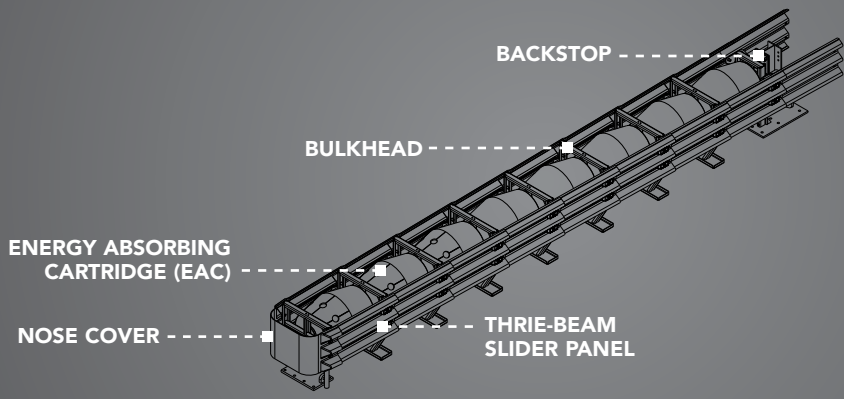
- SHIELDS MULTIPLE WIDTH HAZARDS
- PARTIALLY REUSABLE DESIGN
- QUICK AND EASY TO INSTALL
- NCHRP 350 ACCEPTED

BARRIER SYSTEMS®
BY LINDSAY

UNIVERSAL TAU-II® | REDIRECTIVE, NON-GATING CRASH CUSHION - PARTIALLY REUSABLE

PHYSICAL SPECIFICATIONS

Classification	R-NG-PR	
TL-3 Length	23′ 10″	7.3 m
Width	27 - 102″	0.7 - 3 m
Height	31 ½″	800 mm
TL-3 Weight	2700 lb.	1225 kg
Test Level	NCHRP 350	TL 1/2/3



DESIGNED TO SHIELD MULTIPLE WIDTH HAZARDS

The Redirective, Non-Gating, Partially Reusable (R-NG-PR) Universal TAU-II Crash Cushion consists of a full family of systems designed to meet the requirements of NCHRP Report 350, TL-2 & TL-3 to shield almost any width hazard. The system is available in lengths and capacities for both low and high speed applications from 30-75 mph (50-120 km/h). The Universal TAU-II System can shield hazards with widths up to 102″ (2.6 m). The Universal TAU-II System is ideally suited for roadway hazards located on the side of a road or in a median. Ease of installation, low profile foundation, numerous transition options, and low priced replacement components make the Universal TAU-II System an ideal crash cushion to shield most roadside and median hazards.

FREQUENTLY ASKED QUESTIONS

What components of the Universal TAU-II System need to be replaced after a design impact?

Typically only the damaged cartridges will need to be replaced. The nose and slider panels are designed to withstand multiple design impacts.

What type of foundation is needed for the Universal TAU-II System?

A 6″ (152 mm) reinforced concrete pad is required. The Universal TAU-II System can also also be ordered to be installed on asphalt.

What transitions are available?

Since Universal TAU-II transitions are non-proprietary, all approved thrie-beam barrier transitions will work with the system.

Can the TAU-II System be used for low and high speeds?

The Universal TAU-II System is designed for speeds from 31 to 75 mph (50 to 120 km/h).

FEATURES

- High speed designs available
- Minimum number of anchors needed to secure the system
- Can be installed over bridge expansion joints
- Low profile foundation ideal for deployment on bridge decks
- Numerous transition options
- Low priced replacement components
- Standard reusable nose
- Designed for use with standard, thrie beam transitions

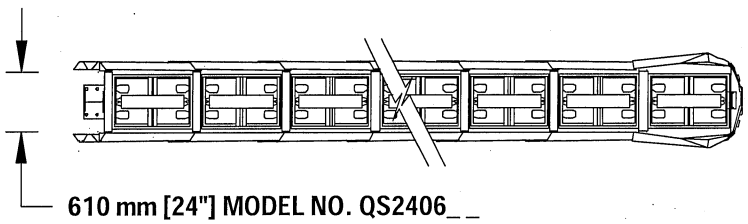
DISTRIBUTED BY:

LINDSAY™ TRANSPORTATION SOLUTIONS | BARRIER SYSTEMS® BY LINDSAY | RAILROAD PRODUCTS BY LINDSAY | SNOLINE™ BY LINDSAY

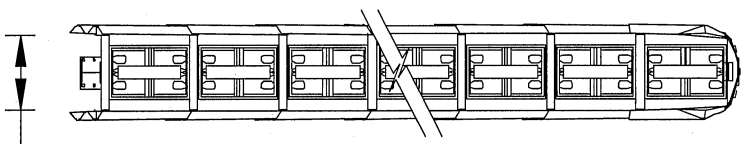
Lindsay Transportation Solutions Sales and Services, Inc.
180 River Road • Rio Vista, CA 94571 • +1 707.374.6800 U.S. Toll Free: 888.800.3691 • www.barrriersystemsinc.com

PT # TAU04-03252013

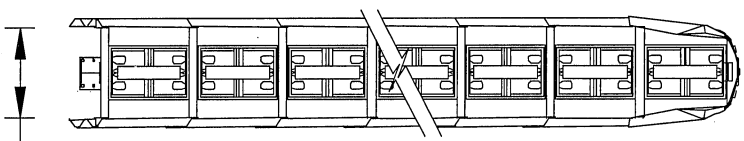
QUADGUARD® SYSTEMS FOR NARROW HAZARDS PERMANENT



610 mm [24"] MODEL NO. QS2406_ _

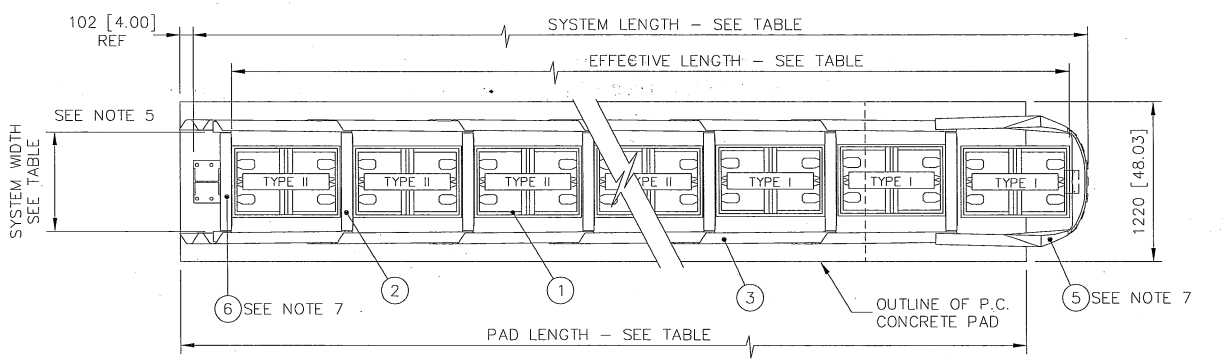


760 mm [30"] MODEL NO. QS3006_ _



915 mm [36"] MODEL NO. QS3606_ _

Note: The drawing package provided with the QuadGuard System is site specific and should take precedence over the drawing package provided in this manual. These drawings are for reference only and may not be up to date.



* G = GREY or Y = YELLOW

BAYS	610 [24"] WIDTH MODEL#	762 [30"] WIDTH MODEL#	914 [36"] WIDTH MODEL#	SYSTEM LENGTH m	SYSTEM LENGTH ft–in	EFFECTIVE LENGTH m	EFFECTIVE LENGTH ft–in	PAD LENGTH m	PAD LENGTH ft–in	MAX DESIGN SPEED km/h [MPH]	# OF CARTRIDGES TYPE I	# OF CARTRIDGES TYPE II
1	QS2401*	QS3001*	QS3601*	2.16	[7'–1"]	1.73	[5'–8"]	2.74	[9'–0"]	40 [25]	2	0
2	QS2402*	QS3002*	QS3602*	3.08	[10'–1"]	2.64	[8'–8"]	2.74	[9'–0"]	60 [37]	2	1
3	QS2403*	QS3003*	QS3603*	4.00	[13'–1"]	3.56	[11'–8"]	3.66	[12'–0"]	70 [44]	3	1
4	QS2404*	QS3004*	QS3604*	4.91	[16'–1"]	4.47	[14'–8"]	4.57	[15'–0"]	80 [50]	3	2
5	QS2405*	QS3005*	QS3605*	5.83	[19'–1"]	5.38	[17'–8"]	5.49	[18'–0"]	90 [56]	4	2
6	QS2406*	QS3006*	QS3606*	6.74	[22'–1"]	6.30	[20'–8"]	6.40	[21'–0"]	△100 [62]	4	3
7	QS2407*	QS3007*	QS3607*	7.65	[25'–1"]	7.21	[23'–8"]	7.32	[24'–0"]	△105 [65]	4	4
8	QS2408*	QS3008*	QS3608*	8.57	[28'–1"]	8.13	[26'–8"]	8.23	[27'–0"]	△110 [68]	4	5
9	QS2409*	QS3009*	QS3609*	9.49	[31'–1"]	9.04	[29'–8"]	9.14	[30'–0"]	△115 [71]	4	6
10	QS2410*	QS3010*	QS3610*	10.40	[34'–1"]	9.96	[32'–8"]	10.06	[33'–0"]	△120 [75]	5	6
11	QS2411*	QS3011*	QS3611*	11.32	[37'–1"]	10.87	[35'–8"]	10.97	[36'–0"]	△120 [75]	5	7
12	QS2412*	QS3012*	QS3612*	12.23	[40'–1"]	11.79	[38'–8"]	11.89	[39'–0"]	△120 [75]	5	8

NOTES:
1. IN COMPLIANCE WITH THE AASHTO 1996 ROADSIDE DESIGN GUIDE, MANUFACTURER RECOMMENDS REMOVAL OF ALL CURBS AND ISLANDS TO ENSURE PROPER IMPACT PERFORMANCE.
2. PROVISION SHALL BE MADE FOR REAR FENDER PANELS TO SLIDE REARWARD UPON IMPACT 762 [30.00] MIN.
3. 150 [6.00] MIN. REINFORCED 28 MPa [4000 PSI] P.C. CONCRETE PAD OR 200 [8.00] MIN. NON–REINFORCED 28 MPa [4000 PSI] P.C. CONCRETE ROADWAY, MEASURING AT LEAST 3.66 m [12'–0"] WIDE BY 15.24 m [50'–0"] LONG.
4. SEE THE "QUADGUARD SYSTEM DESIGN MANUAL", FOR A DESCRIPTION OF ITS IMPACT PERFORMANCE CHARACTERISTICS AND DESIGN LIMITATIONS BEFORE PLACING A SYSTEM AT A GIVEN SITE. INFORMATION AND COPIES OF ABOVE MANUAL ARE AVAILABLE BY CALLING CUSTOMER SERVICE DEPARTMENT AT (888) 323–6374.
5. WHERE NECESSARY, THE CUSTOMER SHALL SUPPLY A TRANSITION FROM THE QUADGUARD SYSTEM TO THE OBJECT BEING SHIELDED.
6. UNITS OF MEASUREMENT ARE MILLIMETERS [INCHES], UNLESS OTHERWISE NOTED.
7. BACKUP AND NOSE ASSEMBLIES NOT INCLUDED IN MODEL NUMBER. ORDER SEPARATELY.
8. THE NUMBER OF BAYS INDICATED IN THE TABLE IS BASED ON CALCULATED VALUES TO ENSURE ADEQUATE SYSTEM CAPACITY TO DISSIPATE THE LONGITUDINAL IMPACT ENERGY OF A 2000 kg VEHICLE TRAVELING AT THE SPEED INDICATED.
△9. THE SIX BAY SYSTEM HAS BEEN FULLY TESTED AT 100 km/h UNDER THE FULL 8 TEST MATRIX OF NCHRP 350 TL–3. SYSTEMS LONGER THAN SIX BAYS SHALL ALSO BE CAPABLE OF MEETING THE OCCUPANT RISK CRITERIA AS RECOMMENDED IN NCHRP 350 FOR VEHICLES WEIGHING 2000 kg IMPACTING HEAD ON AT THE SPEED INDICATED IN THE TABLE.

UNIDIRECTIONAL

KEY
1. QUADGUARD CARTRIDGE
2. DIAPHRAGM
3. FENDER PANEL
4. MONORAIL
5. NOSE ASSEMBLY
6. BACKUP

Revisions	Date	Rev.	By	Ckd.	App.
REVISED NOTE 4, ADDED NOTE 8.	03/03/99	F	LWC	BB	SPT
ADDED NOTE 9.	12/3/99	G	DK	DO	SPT
REVISED NOTE 3	9/25/01	H	DDW	STT	SPT

REFERENCES

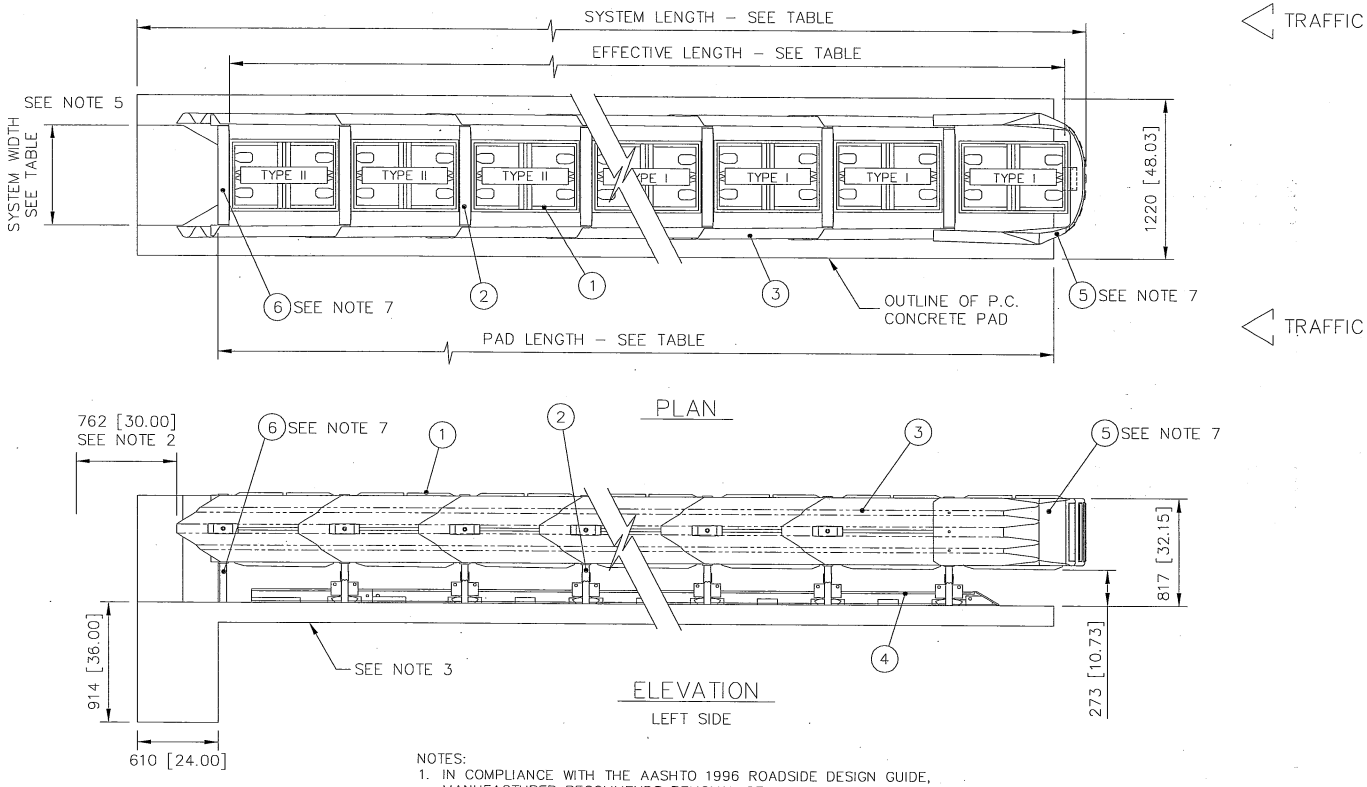
SERIAL#		DIAPHRAGM ASSY.	35–40–07
SALES ORDER#		NOSE ASSY.	35–40–05
EH PROJECT#		FENDER PANEL ASSY.	35–40–04
DESIGN SPEED	See Chart Above	BACKUP ASSY.	35–40–03
NOSE COLOR		RAIL ASSY.	35–40–06
NUMBER OF UNITS		CONCRETE PAD	35–40–11

DRAWN: S. LEWIS	DATE: 03/21/96
DESIGNED: J. MACHADO	DATE: 06/07/96
CHECKED: JMV/MHO	DATE: 06/07/96
APPROVED: S. TRAGESER	DATE: 06/07/96
CAD FILE:: QSTSCVR–U.dwg	

ENERGY ABSORPTION SYSTEMS, INC.
ENGINEERING AND RESEARCH DEPARTMENT

QUADGUARD® SYSTEM
W/ TENSION STRUT BACKUP

SCALE	DWG.	SHEET	REV
1=40	QSTSCVR–U	1 of 1	H



* G = GREY or Y = YELLOW

BAYS	610[24] WIDTH MODEL#	762[30] WIDTH MODEL#	915[36] WIDTH MODEL#	SYSTEM LENGTH m	SYSTEM LENGTH ft-in	EFFECTIVE LENGTH m	EFFECTIVE LENGTH ft-in	PAD LENGTH m	PAD LENGTH ft-in	MAX DESIGN SPEED km/h [MPH]	# OF CARTRIDGES TYPE I	# OF CARTRIDGES TYPE II
1	QS2401*	QS3001*	QS3601*	2.59	[8'-6"]	1.73	[5'-8"]	1.68	[5'-6"]	40 [25]	2	0
2	QS2402*	QS3002*	QS3602*	3.51	[11'-6"]	2.64	[8'-8"]	2.59	[8'-6"]	60 [37]	2	1
3	QS2403*	QS3003*	QS3603*	4.42	[14'-6"]	3.56	[11'-8"]	3.51	[11'-6"]	70 [44]	3	1
4	QS2404*	QS3004*	QS3604*	5.33	[17'-6"]	4.47	[14'-8"]	4.42	[14'-6"]	80 [50]	3	2
5	QS2405*	QS3005*	QS3605*	6.25	[20'-6"]	5.38	[17'-8"]	5.33	[17'-6"]	90 [56]	4	2
6	QS2406*	QS3006*	QS3606*	7.16	[23'-6"]	6.30	[20'-8"]	6.25	[20'-6"]	△100 [62]	4	3
7	QS2407*	QS3007*	QS3607*	8.08	[26'-6"]	7.21	[23'-8"]	7.16	[23'-6"]	△105 [65]	4	4
8	QS2408*	QS3008*	QS3608*	8.99	[29'-6"]	8.13	[26'-8"]	8.08	[26'-6"]	△110 [68]	4	5
9	QS2409*	QS3009*	QS3609*	9.91	[32'-6"]	9.04	[29'-8"]	8.99	[29'-6"]	△115 [71]	4	6
10	QS2410*	QS3010*	QS3610*	10.82	[35'-6"]	9.96	[32'-8"]	9.91	[32'-6"]	△120 [75]	5	6
11	QS2411*	QS3011*	QS3611*	11.73	[38'-6"]	10.87	[35'-8"]	10.82	[35'-6"]	△120 [75]	5	7
12	QS2412*	QS3012*	QS3612*	12.65	[41'-6"]	11.79	[38'-8"]	11.74	[38'-6"]	△120 [75]	5	8

NOTES:

1. IN COMPLIANCE WITH THE AASHTO 1996 ROADSIDE DESIGN GUIDE, MANUFACTURER RECOMMENDS REMOVAL OF ALL CURBS AND ISLANDS TO ENSURE PROPER IMPACT PERFORMANCE.
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4. SEE THE "QUADGUARD SYSTEM DESIGN MANUAL", FOR A DESCRIPTION OF ITS IMPACT PERFORMANCE CHARACTERISTICS AND DESIGN LIMITATIONS BEFORE PLACING A SYSTEM AT A GIVEN SITE. INFORMATION AND COPIES OF ABOVE MANUAL ARE AVAILABLE BY CALLING CUSTOMER SERVICE DEPARTMENT AT (888) 323-6374.
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9. △ THE SIX BAY SYSTEM HAS BEEN FULLY TESTED AT 100 km/h UNDER THE FULL 8 TEST MATRIX OF NCHRP 350 TL-3. SYSTEMS LONGER THAN SIX BAYS SHALL ALSO BE CAPABLE OF MEETING THE OCCUPANT RISK CRITERIA AS RECOMMENDED IN NCHRP 350 FOR VEHICLES WEIGHING 2000 kg IMPACTING HEAD ON AT THE SPEED INDICATED IN THE TABLE.

UNIDIRECTIONAL

KEY

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6. BACKUP

Revisions	Date	Rev.	By	Ckd.	App.
REVISED NOTE 4., ADDED NOTE 8.	02/25/99	G	LWC	BB	SPT
ADDED NOTE 9	12/3/99	H	DK	DO	SPT
REVISED NOTE 3	2/14/02	I	DDW	STT	SPT

REFERENCES

SERIAL#		DIAPHRAGM ASSY.	35-40-07
SALES ORDER#		NOSE ASSY.	35-40-05
EH PROJECT#		FENDER PANEL ASSY.	35-40-04
DESIGN SPEED	See Chart Above	BACKUP ASSY.	35-40-08, 14
NOSE COLOR		RAIL ASSY.	35-40-06
NUMBER OF UNITS		CONCRETE PAD	35-40-09

DRAWN: T. BUSSE	DATE: 08/08/96
DESIGNED: JVM/MHO	DATE: 03/01/96
CHECKED: BB	DATE: 08/13/96
APPROVED: J. Machado	DATE: 08/13/96
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ENERGY ABSORPTION SYSTEMS, INC.
ENGINEERING AND RESEARCH DEPARTMENT

QUADGUARD® SYSTEM
W/ CONCRETE BACKUP

SCALE	DWG.	SHEET	REV
1=40	QSCBCVR-U	1 of 1	I

SCI Products Inc.

The World's Only

Speed-Dependent

Crash Attenuators.

SMART CUSHION INNOVATIONS™

NCHRP 350 Approved

Marketed and Distributed by

Work Area Protection

SMART CUSHION INNOVATIONS™

The World's Only Speed-Dependent Crash Attenuators

The Smart Cushion Innovations (SCI) crash attenuator is a revolutionary, speed-dependent product that varies stopping resistance during an impact. The Smart Cushion Innovations (SCI) crash attenuator allows lighter and slower-moving vehicles to have longer ridedown distances and lower ridedown G forces.

Unlike fixed-resistance attenuators, the Smart Cushion Innovations (SCI) attenuator does not reach maximum stopping resistance unless a vehicle is traveling at the maximum design speed. This fully redirective, non-gating, bi-directional, impact attenuator was designed for maximum safety and reusability, as well as outstanding durability before, during and after an impact.

The SCI is the only attenuator with a reverse-tapered design to eliminate side panel stress during a collapse. It also has an extremely low angle of exit on side impacts (<1°) to keep vehicles from rebounding back into traffic and causing secondary accidents. This is the lowest angle of exit for any redirective attenuator on the market.

How It Works

The hydraulic porting of the attenuator ensures that the proper resistance is used to stop the vehicle before it reaches the end of the cushion's usable length.

The SCI was specifically designed for durability and resetability to enable resets to be performed in less than one hour. After a frontal impact, an experienced crew can perform the two-stage reset in less than 45 minutes. Side impacts within NCHRP 350 specifications should not damage the attenuator.

After an impact, the cushion requires a dual-stage pull-out with the replacement of two 1/4" shear bolts. The crash attenuator requires a minimal inventory of spare parts because of the new side panels' durability and the normal requirement of only two shear bolts on the frontal impact reset. Minimal damage means quick resetting and reduced worker exposure to traffic, as well as lower costs for traffic control, replacement parts and labor.

Ready To Install

SCI attenuators come fully assembled for a pick-and-set install. A typical installation can be performed in less than 1-1/2 hours. The units require no backstops for permanent or temporary construction applications.

NCHRP 350 Test Results

All NCHRP 350 tests were performed on the same unit in four consecutive days. All tests showed outstanding results for ridedown G forces and low angle of exit. There were no replacement parts required prior to the next test except for shear bolts.

"It's a very easy installation. We set the SCI impact attenuator with a truck-mounted crane, drove into the concrete surfacing and then did some epoxy work. The installation went real well and took about an hour. It would normally take longer for a different type of system. SCI manufactures a quality product and I'm sure they save many lives."

— Tyler Chicoine, Garcia-Chicoine Enterprises Inc., Lincoln, Nebraska

Repair Costs

Based on NCHRP 350 Test results, the **SCI**100GM required the following parts and labor:

NCHRP 350 TEST LEVEL III REPAIR RESULTS	Part Names	Cost	Repair Hrs.	Cost	Total Cost
#3-31 2000 kg vehicle 0 degree frontal impact at 102 km/h	2 – Shear Bolts	$1	2 man hours	$80	$81
#3-32 820 kg vehicle 15 degree frontal impact at 101 km/h	2 - Shear Bolts	$1	2 man hours	$80	$81
#3-33 2000 kg vehicle 15 degree frontal impact at 101 km/h	2 - Shear Bolts	$1	2 man hours	$80	$81
#3-37 2000 kg vehicle 20 degree side impact at 99 km/h	0	$0	0	$0	$0
#3-39 2000 kg vehicle 20 degree rev. side impact at 99 km/h	0	$0	0	$0	$0

Test Levels Available

The **SCI**70GM is our Test Level 2 (45 MPH) attenuator and the **SCI**100GM is our Test Level 3 (62 MPH) attenuator. Both attenuators can protect a wide range of hazards including bridges, median barriers and highway signs.

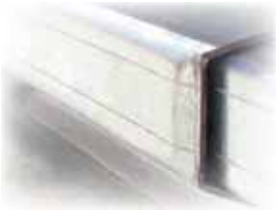
The first speed-dependent, variable-resistance attenuator that can ramp resistance up or down to provide the smoothest ridedown of any system on the market.

*"The **SCI**100GM unit has experienced three hits in a very short period. The first was well above the NCHRP 350 criteria. The crash used every bit of the capacity the unit has and I believe the driver survived because of the performance of the unit in extreme circumstances. The next two hits were within the NCHRP 350 criteria and the unit functioned as designed with very little repair cost. As we gain experience in resetting units, the job can be accomplished in less than 30 minutes for a majority of hits. Damage to the unit for the last two hits was limited to the shear pins and the chevron plate."*

— Ron Jones, Trafficade Services Inc., Phoenix, Arizona

Features

Support Gussets.
Gussets located behind the panels reduce gap formation and deformation to prevent snagging on reverse side impacts.

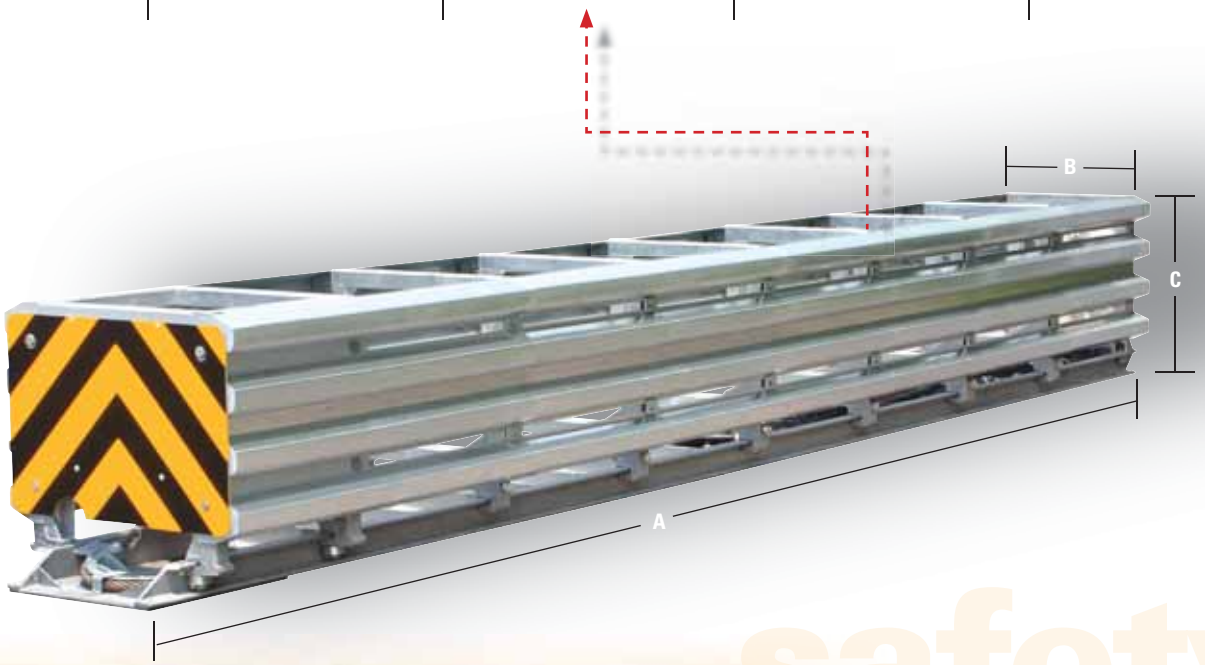


Stronger Side Panel.
Our panels are over 90% stronger than curved profiles. The profile allows the edges to be beveled, reducing the potential for snagging and damage on reverse-direction impacts. The panel also smoothly redirects vehicles on side impacts. The side panel is fabricated from 10-gauge, 60-ksi, minimum-yield steel with a G90 galvanized coating.

Cable & Cylinder System.
This system allows longer ridedown distances for smaller vehicles, as well as smoother ridedown with lower G forces for all vehicles. The cylinder's hydraulic porting assures a controlled ridedown by applying the necessary resistance required based on the speed of the vehicle.

Side Guide Design.
This new design withstands side impacts with no damage. It also allows individual replacement of the support frames.

Front Rollers.
The roller guide design on the front sled produces a smooth, aligned collapse by reducing friction and binding.



SCI Dimensions	Test Level 2	Test Level 3
A	13′ 6″	21′ 6″
B	24″	24″
C	34″	34″
Weight	2470 lbs.	3450 lbs.

Weights are for attenuators only

SMART CUSHION INNOVATIONS™

Highlights

Safety Benefits

- Variable force (speed-dependent), not fixed force, provides consistent deceleration during ridedown.
- Longer ridedown distances and lower sustained G forces for lighter or slower-moving vehicles.
- Low angle of exit on side impacts (<1°) to keep vehicle from deflecting back into traffic.
- Quick and easy resetting for reduced worker exposure to traffic.
- Reduced out-of-service time to maximize highway safety.

Cost Benefits

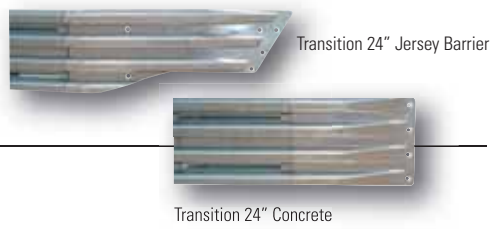
- Minimal replacement parts requirement reduces spare parts inventory and parts costs.
- Quick, easy resetting reduces labor and traffic control costs.
- The new, reverse-tapered design eliminates side panel stress on frontal impacts to reduce damage and system fatigue from multiple impacts.
- Low life cycle cost benefits increase dramatically as impacts occur.

About Work Area Protection Corporation

Work Area Protection Corporation is the international leader in traffic control devices and work zone safety products. Since 1969, we have been meeting customer needs and exceeding quality standards with a wide range of highway and construction safety products. We back those products with knowledgeable, personalized customer service and strong distributor support.

Part No.	Description	Weight
Attenuators		
9400	**SCI**100GM Attenuator 24" wide w/Concrete Anchors Test Level 3	3500 lbs.
9450	**SCI**100GM Attenuator 24" wide w/Asphalt Anchors Test Level 3	3575 lbs.
9451	**SCI**70GM Attenuator 24" wide w/Concrete Anchors Test Level 2	2500 lbs.
9452	**SCI**70GM Attenuator 24" wide w/Asphalt Anchors Test Level 2	2550 lbs.
Anchor Kits		
9401	Concrete Anchor Kit for **SCI**100GM	
9402	Asphalt Anchor Kit for **SCI**100GM	
9453	Concrete Anchor Kit for **SCI**70GM	
9454	Asphalt Anchor Kit for **SCI**70GM	
Accessories		
9406	Shear Bolt	
9424	Delineator Panel Yellow Test Level 3	
9456	Delineator Panel Yellow Test Level 2	
9439	Epoxy 22 oz. Cartridge Required for Attenuator Part No. 9400=4/9450=12/9451=3/9452=9	
9440	Nozzle Epoxy Mixing – 1 nozzle required per cartridge	
9444	Spare Parts Kit Test Level 3	
9458	Spare Parts Kit Test Level 2	
Transitions		
9431	Transition 24" Jersey Barrier - Right (viewed from front)	
9432	Transition 24" Jersey Barrier - Left (viewed from front)	
9433	Transition 24" Concrete - Left & Right	

Call for other transition design availability



Transition 24" Jersey Barrier

Transition 24" Concrete

Disclaimer
This product is only intended for use as a redirective impact attenuator. Installations must be performed according to manufacturer's specification. Improper installations, modifications or unintended use creates a hazardous condition that can cause personal injury, property damage or death. Any modification or unintended use of this product shall immediately void all manufacturers' warranties. SCI Products Inc. disclaims all liability for injuries to persons or property resulting from any modifications to, unintended use of or unspecified installation of this product.

Designs are subject to change without notice.
SMART CUSHION INNOVATIONS is a trademark of SCI Products Inc.
PATENT PENDING.

SCI Products Inc.

Permanent Message Boards • Attenuators • Speed Awareness Products • LED Signals • Advanced Warners

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