O.6.5 Organizations, Groups, and Utility Provider Comments

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O-1

307 S. Smith Ave.
Corona, CA 92882
Ph 951 - 735-0650 Fax 951 - 735-1150
Email—countrywoodestates@hotmail.com

June 16, 2011

TO: Aaron Burton
Senior Environmental Planner
Caltrans District 8
464 West Fourth Street, Sixth Floor
San Bernardino, CA 92401

RE: State Route 91 Corridor Improvement Project

Mr. Burton,

On behalf of Countrywood Estates; I would like to inform you of the negative effects the "State Route 91 Corridor Improvement Project" will cause upon our park and its residents, if the second alternative were to be chosen. We ask that you choose alternative one for it will not affect the park. O-1-1

According to information provided at the Public Hearing, it is understood that the widening of Smith Avenue; the location of Countrywood Estates main entrance may be required. Entering and exiting the park is difficult as it is, therefore widening Smith Ave. would cause safety issues for our residents. O-1-2

The mobilehome unit at space 90 and the surrounding parking stalls may have to be removed. This not only will reduce the size of our park, and loss of rent, but inability to accommodate sufficient parking for our residents and their guest. Also, the resident residing in mobilehome space 90 would have to relocate to another park; causing an inconvenience to him and his family. O-1-3

The 10 + mobilehomes located near the existing freeway wall are going to be impacted by alternative two as well. The reduction or complete loss of backyards, disruption of peaceful enjoyment that will be created due to the construction of a sound barrier wall and the offset of being even closer to a busy freeway are our concerns. O-1-4

There is also the question of what is going to happen to the Recreational Vehicle area adjacent the freeway wall. This area is used by our residents to store their RV's. If this area is lost due to the expansion of the freeway, we also lose rent revenue and residents will have to relocate their RV's. O-1-5

Thank you for your time and consideration.

Sincerely,

Sandra Sierra
General Partner
Countrywood Estates MHP

O-1-1

Refer to responses to comments O-1-2 through O-1-5, below, which discuss potential project effects at this mobile home park.

O-1-2

Alternative 2f was identified as the preferred project for implementation. Refer to Section O.5.9, Common Response Related to the Identification of the Preferred Alternative, on page O-39 in Section O.5, Common Responses, for additional information on the Preferred Alternative. As a result, widening of Smith Avenue will not be required for the project; therefore, there will be no impact to the cited property or at the driveways at this property.

O-1-3

Alternatives 1 and 2 will not require the acquisition of property or removal of any homes from this mobile home park.

O-1-4

Alternatives 1 and 2 would not result in the acquisition of property or removal of any homes from this mobile home park; therefore, there would be no reduction in the yard sizes adjacent to SR-91. However, residences in the mobile home park located near SR-91 would experience a temporary noise increase during the construction of the sound barrier, when the existing sound wall is removed. The construction of the sound barrier would occur before the construction of the proposed project and would last less than 5 months. Although the proposed project would move traffic lanes slightly closer to the mobile home park, the completion of the new sound barrier would provide a noise level reduction of 2 to 3 dBA compared to the current traffic noise levels.

During construction, the contractors will be required to comply with all local noise ordinances. In the long term, the sound barrier provided at this location will result in lower noise levels from the freeway in this area.

O-1-5

Alternatives 1 and 2 would not result in the acquisition of property or removal of any homes from this mobile home park. Therefore, no property would be acquired from the recreational vehicle parking area.

July 5, 2011

bmla
LANDSCAPE
ARCHITECTURE

Mr. Aaron Burton
Caltrans District 8
464 W. 4th Street, 6th Floor
San Bernardino, CA 92401

Re: Comments for the State Route Corridor Improvement Project EIR

Dear Mr. Burton,

My client the owners of Frontage Properties, LLC has asked my firm to review the draft EIR for the SR91 expansion in regards to impacts to their property from the proposed construction envisioned by alternatives outlined in the document. Our concerns can be categorized in three areas: loss of freeway view, patron access and change to the right of way. Below are some of these concerns in detail. O-2-1

Visual

1. **Impact:** The freeway frontage views of Miguel's building and the pole sign will be lost because the East Bound Off ramp will block the sight lines for the motorists.
   Mitigation: The pole sign that exists should be raised to 75 feet above the existing finish grade where it is mounted so that it may be viewed from the East Bound Off Ramp. Wayfinding measures should be implemented that would direct patrons to the obscured frontage road businesses. O-2-2

2. **Impact:** The rerouting of the frontage road will disrupt the historical traffic patterns, we believe that it will be more difficult for existing and new patrons to find the businesses along the frontage road.
   Mitigation: Short term and long term Wayfinding solutions to direct traffic from the freeway exits to the Frontage Road businesses. O-2-3

3. **Impact:** The installation of the proposed sound walls would further obscure the existing businesses on the Frontage Road.
   Mitigation: The sound walls in front of the Miguel's property are deemed 'feasible' but not 'reasonable' in the EIR, so they should not be built. O-2-4

4. **Impact:** The proposed East Bound Off Ramp will pose a significant opportunity for graffiti if it is not obscured by landscape screening or enhanced by theme graphics.
   Mitigation: City identity graphics should be incorporated on the walls or bridge structure to discourage graffiti. Where space is available, screen planting should be used to reduce the visual impact of the off ramp structure in view of Frontage Road businesses. O-2-5

Phasing and Access Impacts

1. **Impact:** The Public access to Miguel's is vital for business viability during construction.
   Mitigation: Phasing plans should prioritize public access to businesses along Frontage Road. Closures must be avoided as these businesses are freeway patron dependant. O-2-6

bmla
LANDSCAPE ARCHITECTURE

2. **Impact:** As presented the Alternative 2 will encroach on the property at Frontage Road, we are concerned that construction will block access to the restaurant parking lot, this is unacceptable during business hours. **Mitigation:** Measures must be taken to provide obstruction free access to the businesses adjacent to the frontage road during business hours. O-2-7

Physical Site Concerns

1. **Impact:** Alternative 2 as proposed will encroach on Miguel's property with the plan to realign the Frontage Road and the taking of additional right of way. As proposed the existing garden walls, patio structures paving and pole and monument signs on private property will be negatively effected. **Mitigation:** The project will need to be required to repair and replace the impacted features in a manner that is suitable to the property owner and his representatives. O-2-8

2. **Impact:** Alternative 2 will impact an existing catch basin at the corner of Frontage and Via Josefa. **Mitigation:** Any alterations will need to consider temporary impacts to Miguel's property and local stormwater impacts if it changes or does not function for a period. O-2-9

Respectfully submitted,
BMLA, INC

Baxter E. Miller ASLA, President, License #2136

O-2-1

Refer to responses to comments O-2-2 through O-2-9, below.

O-2-2

The project will pay to adjust or replace the existing pole sign consistent with City code. The project would not physically affect the pole sign, but the new Maple Street elevated off-ramp would partially block views of the sign from the freeway. Any sign relocation or an increase in height of any sign to 75 ft would be subject to City of Corona approval in conformance with its established sign regulations and ordinance, and would also require coordination with the Department's Outdoor Advertising Unit.

The State of California does not permit posting of informational signs for specific businesses on freeways, but a recommendation will be made to post "Roadside Business" signage in advance of the exit. Acceptance of that recommendation will be dependent on a determination during final design that the signage would not conflict with required regulatory, directional, and safety signs. Any such signage would need to be coordinated with the Department's Outdoor Advertising Unit.

O-2-3

As noted, a recommendation will be made to post "Roadside Business" signage at the exit ramp intersection and along the local streets at Sixth Street and Paseo Grande. The frontage road in this area will be shifted to the south; the driveways to this business would be in the same locations. Drivers in the area will need to adjust to the new intersection of Paseo Grande and Frontage Road, but the improved intersection configurations should ultimately result in easier access to businesses and other properties. The Frontage Road will still be on the south side of SR-91 between Auto Center Drive and Maple Street.

Refer to response to comment O-2-8, below, for additional discussion of the project effects on this property.

O-2-4

Sound walls determined to be not reasonable would ordinarily not be included in the final design. Additionally, businesses that object to construction of sound walls will be given the opportunity to "opt out" as long as that option is not in conflict with other noise mitigation requirements. The wall at this location (NB M-3) was determined to be feasible but not reasonable based on the results of the noise survey; therefore, it is no longer included in the SR-91 CIP.

O-2-5

As discussed starting on page 3.7-1 in Section 3.7, Visual/Aesthetics, in the EIR/EIS, aesthetic and design features for sound walls, retaining walls, and bridge elements, including the eastbound off-ramp at the cited location will be incorporated in the design and construction of the SR-91 CIP Build Alternatives. Measures V-1 and V-2 starting on page 3.7-30 in Section 3.7.5, Avoidance, Minimization, and/or Mitigation Measures, specifically address the visual/aesthetic treatments and landscaping that will be incorporated in the project features.

Refer also to response to comment L-2-5 on page O-184, earlier in this report, for descriptions of the Department and City of Corona graffiti control and management projects.

O-2-6

Efforts will be made during the design/construction phase to minimize disruption of access to existing properties. The project will include a Construction Liaison to work with local property owners so that construction activities that affect those properties can be scheduled to minimize disruptions. A public outreach campaign will also be used to assist businesses and their patrons in minimizing inconveniences that arise during construction. The TMP required in Measure T-1 starting on page 3.6-32 in Section 3.6.4, Avoidance, Minimization, and/or Mitigation Measures, in the EIR/EIS, includes measures to inform travelers of conditions in the construction area, including directions to access adjacent land uses and "businesses are open" during construction signage.

Access to businesses will be provided at all times during business hours. If the business has multiple driveway locations, one will remain open while construction occurs at the other access points. If there is only one driveway, then one-half the driveway will be constructed at a time to allow access.

O-2-7

Refer to response to comment O-2-6, above.

O-2-8

The project will require acquisition of part of the parcel occupied by this business and will remove some parking and landscaping on that parcel. The project will provide right-of-way funds for reconstruction, replacement, and/or compensation with respect to property improvements on this parcel removed for the project. As a result, this business is expected to be able to continue operating at this location.

Refer also to Section O.5.1, Common Response Related to the Property Acquisition Process, on page O-6 in Section O.5, Common Responses, for information regarding the RCTC's property acquisition process.

O-2-9

It is standard practice that when a proposed project affects storm drains, catch basins, utilities, and other facilities within public street rights-of-way, those facilities are replaced, relocated, or removed if requested by the responsible agency as part of the project. As a result, any needed modifications to existing storm drains and catch basins in the public street rights-of-way will be included in the project improvements for the frontage road. Any modified storm drains and catch basins in the existing or proposed public street rights-of-way will be designed and constructed to collect and transport runoff from the existing and any new road surfaces. Those improvements will not address drainage concerns on private properties. The project improvements to the frontage road will be designed to not create a drainage issue on private property, either during construction or after the project construction is complete. During construction, temporary erosion and storm water control features such as berms will be used to direct any rain water collected within the public street right-of-way to the nearest functioning storm water drain or catch basin. In the long term, the street profiles, cross-slopes, and driveway and sidewalk grades will be designed to allow drainage to flow into public storm drain systems.

To: Aaron Burton, Shawn Oriay, Chris Benz-Blumbog

O-3

RE: SR-91 Corridor Improvement Project on Lincoln Ave.

We are located on 401 S. Lincoln Ave. Corona, CA 92882. According to June 9th public hearing for SR-91 corridor improvement project, if they select plan 1B, 1D, 2B, 2D, 2F, and 2H the parking lot in front of the businesses will be gone. By taking away the parking lot, you are leaving our customers without parking. This will cause financial hardship on our business. There is no parking on the rear side of the building either, there for we may go out of business. O-3-1

We have the following questions and concerns:

1) When will we know your decision on which plan you have selected? O-3-2
2) What about our business loss? O-3-3
3) Will parking be rearranged in front of the business for the convenience of our customers? Will you obtain permits from the city? O-3-4
4) Will we receive compensation for the losses during construction? O-3-5
5) Will the street be open? Will traffic be diverted? Will the freeway on and off ramp be open during construction? If closed, when will it be closed? O-3-6
6) How long will the construction last on Lincoln Street? Will it be 3, 6, 9, 12 months...? O-3-7
7) It's also noted that this building may be demolished and we may need to relocate. If we are relocated then our business good-will may be ruined.

We understand that the city may see this improvement as necessary and our goal with this is not to stop it, but as a business, we have to look out for what is best for our business as well as our employees. O-3-8

1) Lincoln Smoke Shop. Suite # K
2 Mr. Blue Donut Suite # F
3, N-H Beauty supply suite E
4. Lechner Chiropractic Inc ste D.
5. Taco Lucas Suite # G
6. Check Into Cash Suite # J
7. Signaroma Ste M
8. JOY massage # L
9. Gala Nails # H
10. City Best Insurance Services Inc.

O-3-1

The property at 401 South Lincoln Avenue would be a full acquisition under Alternatives 1b, 1d, 2b, 2d, 2h, and 2f, the Preferred Alternative. The businesses that will be removed from this property by the project are entitled to relocation benefits. Refer to Appendix D, Summary of Relocation Benefits, in the EIR/EIS for discussion of relocation benefits available to displaced businesses. Refer to Section O.5.1, Common Response Related to the Property Acquisition Process, on page O-6 and to Section O.5.2, Common Response Related to the Loss of Parking and Other Potential Impacts to Businesses, on page O-7 in Section O.5, Common Responses, for detailed discussion regarding the RCTC's property acquisition process and potential compensation for project impacts on individual businesses.

Refer to Attachments 3.4.A through 3.4.I in Section 3.4, Community Impacts, in this EIR/EIS for a list of commercial replacement properties available for lease and/or purchase in the general vicinity of the alignment of the SR-91 CIP Build Alternatives. The information in Attachments 3.4.A through 3.4.I is current as of July 2011, when the survey for available relocation properties was conducted. That survey identified 576 commercial properties available for lease and 295 commercial properties available for purchase in the project area.

O-3-2

Alternative 2f was identified by the PDT as the Preferred Alternative on September 20, 2011. Refer to Section O.5.4.1, Schedule, on page O-14 in Section O.5, Common Responses, which discusses the schedule for the completion of the environmental process and the identification of the Preferred Alternative for implementation.

O-3-3

Refer to response to comment O-3-1, above.

O-3-4

Refer to response to comment O-3-1, above.

O-3-5

Refer to response to comment O-3-1, above.

O-3-6

It is planned that Lincoln Street will remain open throughout construction, except for minor periods of less than 24 hours when traffic may be switched from one side of the street to another. Freeway ramps are also planned to be open during construction

except for some closures affecting each ramp for not more than two weekends. The actual timing of any closures will be determined during construction and will involve coordination among the design/build contractor, the Department, and the Construction Liaison who will work with business owners to minimize inconveniences.

O-3-7

The duration of construction on Lincoln Street will be determined primarily by the contractor but it is planned that the freeway bridge will be widened first, along with construction of the approach road widening. The approach road work is expected to require 3 to 6 months, while the bridge widening will require a longer duration, typically 12 months. After the widened road is opened, some short duration work may occur to match the existing roads and intersections to the new construction. The total length of the project construction activities on Lincoln Avenue would be expected to be 18 to 24 months.

O-3-8

Refer to response to comment O-3-1, above.

SOUTHERN CALIFORNIA EDISON

Louis B. Davis
Project Manager

O-4

July 7, 2011

Mr. Aaron Burton
CALTRANS District 8
464 West Fourth Street
San Bernardino, CA 92401

RE: Draft Environmental Impact Report/Environmental Impact Statement (DEIR/DEIS) for State Route (SR) 91

Dear Mr. Burton:

Southern California Edison (SCE) appreciates the opportunity to provide comment on the DEIR/DEIS for the SR 91 Project. The project is described as a proposal to improve the 91 Freeway from the State Route 241 interchange in the cities of Anaheim and Yorba Linda, to Pierce Street in the City of Riverside, and along the I -15 between Hidden Valley Parkway and Cajalco Road between the cities of Norco and Corona. Major features include either adding two high occupancy vehicle lanes connectors from SR 91 to I-15 and one high occupancy vehicle lane in each direction on I-15, or converting the existing high occupancy vehicle lanes on SR 91 to two tolled express lanes in each direction and express lane connectors to I-15, and adding one tolled express lane in each direction on I-15. The project description also includes the relocation of SCE electrical facilties along the route, including the potential relocation of 2 -66 kilovolt (kV) subtransmission lines.

O-4-1

SCE Company right-of-ways and fee-owned properties are purchased for the exclusive use of SCE to operate and maintain its present and future facilities. Any proposed use will be reviewed on a case-by-case basis by SCE. Approvals or denials will be in writing based upon review of the maps provided and compatibility with SCE right-of-way constraints and rights. In the event the project impacts SCE facilities or its land related rights, please forward six (6) sets of plans depicting SCE's facilities and associated land rights to the following location:

O-4-2

Real Properties Department
Southern California Edison Company
2131 Walnut Grove Avenue
G.O.3 – Second Floor
Rosemead, CA 91770

24487 Prielipp Rd.
Wildomar, CA 92595

Office: (951) 249-8468
E-mail: louis.davis@sce.com

Also, please note, when development plans result in the need to build new or relocate existing SCE electrical facilities that operate at or above 50 kV, the SCE construction may have environmental consequences subject to CEQA review as required by the California Public Utilities Commission (CPUC). If those environmental consequences are identified and addressed by the lead agency in the CEQA process for the larger project, SCE may not be required to pursue a later, separate, mandatory CEQA review through the CPUC's General Order 131-D (GO 131-D) process. If the SCE facilities are not adequately addressed in the CEQA review for the larger project, and the new facilities could result in significant environmental impacts, the required additional CEQA review at the CPUC could delay approval of the SCE power line portion of the project for two years or longer. O-4-3

SCE understands Caltrans is aware of general GO 131-D issues, as noted in the DEIS/DEIR. In the event, however, further engineering and design for SCE's 50+ kV relocations anticipate potential GO 131-D issues, SCE may need to meet with Caltrans to discuss and determine additional GO 131-D and permitting concerns as appropriate.

If you have any questions regarding this letter, please do not hesitate to contact me at (951) 249-8468.

Sincerely,

Louis Davis
Local Public Affairs Region Manager
Southern California Edison Company

cc Reed Reisner

O-4-1

No response is necessary because this text describes the project but does not ask a question or provide a comment related to the technical information or the analysis of environmental impacts in the EIR/EIS.

O-4-2

Negotiations with SCE for any impacted SCE utility facilities will be handled by the Project Construction Management Team, the RCTC, and the design/build contractor. Information on any potential effects in SCE rights-of-way and fee-owned properties will be provided to SCE during the project design/build phase.

O-4-3

Impacts to SCE overhead facilities of 50 kilovolts (kV) and greater are identified in Section 3.5.2, Environmental Consequences, on page 3.5-5 in the EIR/EIS. The estimated total length of overhead relocations of SCE facilities of 50 kV or greater is less than 2,000 ft. These overhead relocations will be "in-line" relocations. As a result, they will meet the criteria in Section III.B.1(c).f Public Utilities Commission (PUC) General Order 131-D, which states that compliance with Section IX.B of the General Order 131-D (which describes facilities requiring PUC approval) is not required for "the minor relocation of existing powerline facilities up to 2,000 feet in length, or the intersecting of additional support structures between existing support structures." Therefore, the PUC General Order 131-D process will not be required for the relocations of SCE facilities for this project.

Refer to Section 3.5, Utilities/Emergency Services, starting on page 3.5-1 in the EIR/EIS for descriptions of the existing utilities in the project study area (including SCE lines), the potential effects of the SR-91 CIP on those utilities, and mitigation to substantially reduce those impacts.

As discussed in Section 2.3.7.1, Identification of the Preferred Alternative, on page 2-124 in the EIR/EIS, Alternative 2f was identified as the SR-91 project for implementation. As discussed in Section 3.5.2.1, Summary of Impacts, on page 3.5-5 and as shown in Table 2.36 on page 2-125 in the EIR/EIS, Alternative 2f will not require the relocation of the existing SCE substation. As a result, no further CEQA analysis for the relocation of the SCE substation will be required. RCTC will continue to coordinate with SCE on the identification, protection in place, relocation, and/or removal of SCE facilities in the right-of-way limits for Alternative 2f as project implementation proceeds.

O-5

S & D ASSOCIATES
Real Estate Development

1020 N. BATAVIA STREET, SUITE B
ORANGE, CALIFORNIA 92867
(714) 997-7956
fax (714)997-4930

July 8, 2011

Aaron Burton
Senior Environmental Planner
CALTRANS DISTRICT 8
464 West Fourth Street, Sixth Floor
San Bernardino, CA 92401

Re: Lincoln Commercenter – 1141 thru 1159 Pomona Road, Corona
Maple Business Park – 1785/87 Pomona Rd. & 125/27 Bus. Ctr. Dr., Corona
June 9, 2011 Public Meeting Regarding Draft EIR/EIS
SR-91 Corridor Improvement Project (SR-91 CIP)

Dear Mr. Burton:

In follow up to the Public Meeting held on June 9, 2011 at the Corona Civic Center Gymnasium and on behalf of the owners of Lincoln Commercenter and the many business owners/tenants within the center, we wish to document the following concerns we have to the SR-91 Corridor Improvement Project and Draft Environmental Impact Report/Statement: O-5-1

1. We are of the opinion the construction of the SR-91 CIP will cause a negative impact to both Lincoln Commercenter and Maple Business Park by obstructing traffic and reducing accessibility into the center, not to mention the congestion, dirt, debris and noise that would be created during the construction period. Problems will certainly exist for customers accessing the center that will cause business revenue to drop and a hardship for the 41 business owners/tenants at Lincoln Commercenter and the 29 business owners/tenants at Maple Business Park. Are there compensatory damages available to the property owners and/or tenants of both properties for this particular concern? O-5-2

2. The removal of the existing freeway on/off ramp from in front of Lincoln Commercenter will cause a negative impact relative to less visibility and less accessibility into center. The existing freeway on/off ramp offers a great amount of visibility (exposure) for prospective tenants and customers coming into the center. One major contributing factor toward buying Lincoln Commercenter as an investor and toward leasing space and conducting a business as a potential tenant was the visibility/accessibility provided by the freeway on/off ramp. Unfortunately, the freeway visibility/accessibility that has been experienced for O-5-3

the past thirty (30) years will never be recoverable with the new proposed construction. One option that may help with continuing visibility to the center would be the installation of a high pylon sign identifying Lincoln Commercenter from the freeway. Are there compensatory damages available to the property owner for this particular concern? O-5-3

3. A Temporary Construction Easement is being considered along the front landscape berm of Lincoln Commercenter to help as a staging area for heavy equipment and supplies. We are concerned this would be very detrimental and an unsightly nuisance to the 41 business owners/tenants. Our tenants should not be burdened with a staging area of equipment and supplies when they will already be burdened with the heavy construction that will be taking place. Can this Temporary Construction Easement be avoided? O-5-4

4. The realignment of Pomona Road in front of Lincoln Commercenter is also a part of the SR-91 CIP that results in the partial acquisition of a section of land 2-foot square along the front landscape berm of our property. Can you please advise us specifically where this section of land is located and what it will be used for? What are the "Right-of-Way" procedures in this matter? O-5-5

We understand the necessity and benefits of the SR-91 CIP, unfortunately, in the case of Lincoln Commercenter and Maple Business Park, it causes a high emotion of fear not knowing what the future outcome will be when construction of this project is started and several years later completed. O-5-6

Thank you for your consideration in this matter. Please accept this letter in-lieu of the Public Comment Card. Should you have any questions, please do not hesitate to call.

Yours truly,

S & D ASSOCIATES

Douglas A. Ferrieri
Property Manager

Encl.

cc: File, Eliza Echevarria/RCTC, Cheryl Donahue/Arellano Associates

10
8-340-001
118-160-039
118-250-014
118-160-022
118-160-020
118-160-021
118-160-004
118-250-026
118-250-028
118-160-057
118-160-058
118-250-022
118-250-027
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118-171-039
118-171-040
118-171-026
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26 118-104-050
118-171-024
118-171-018
118-171-046
Avenue
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118-270
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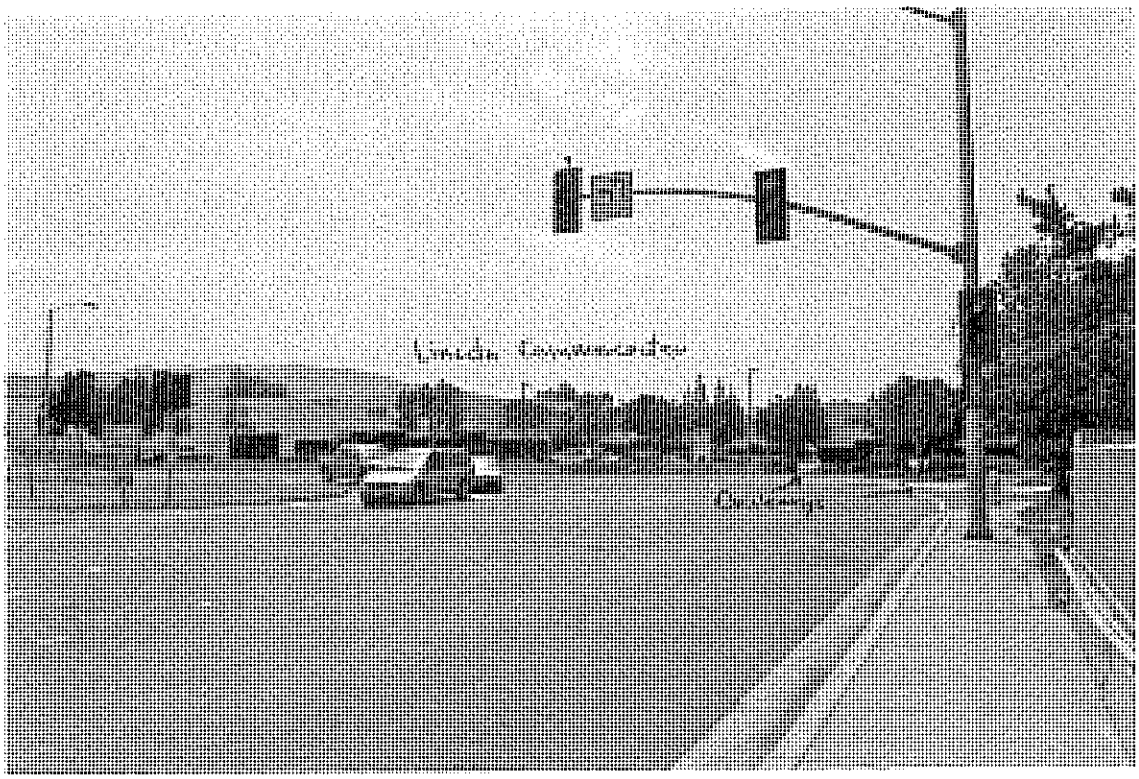
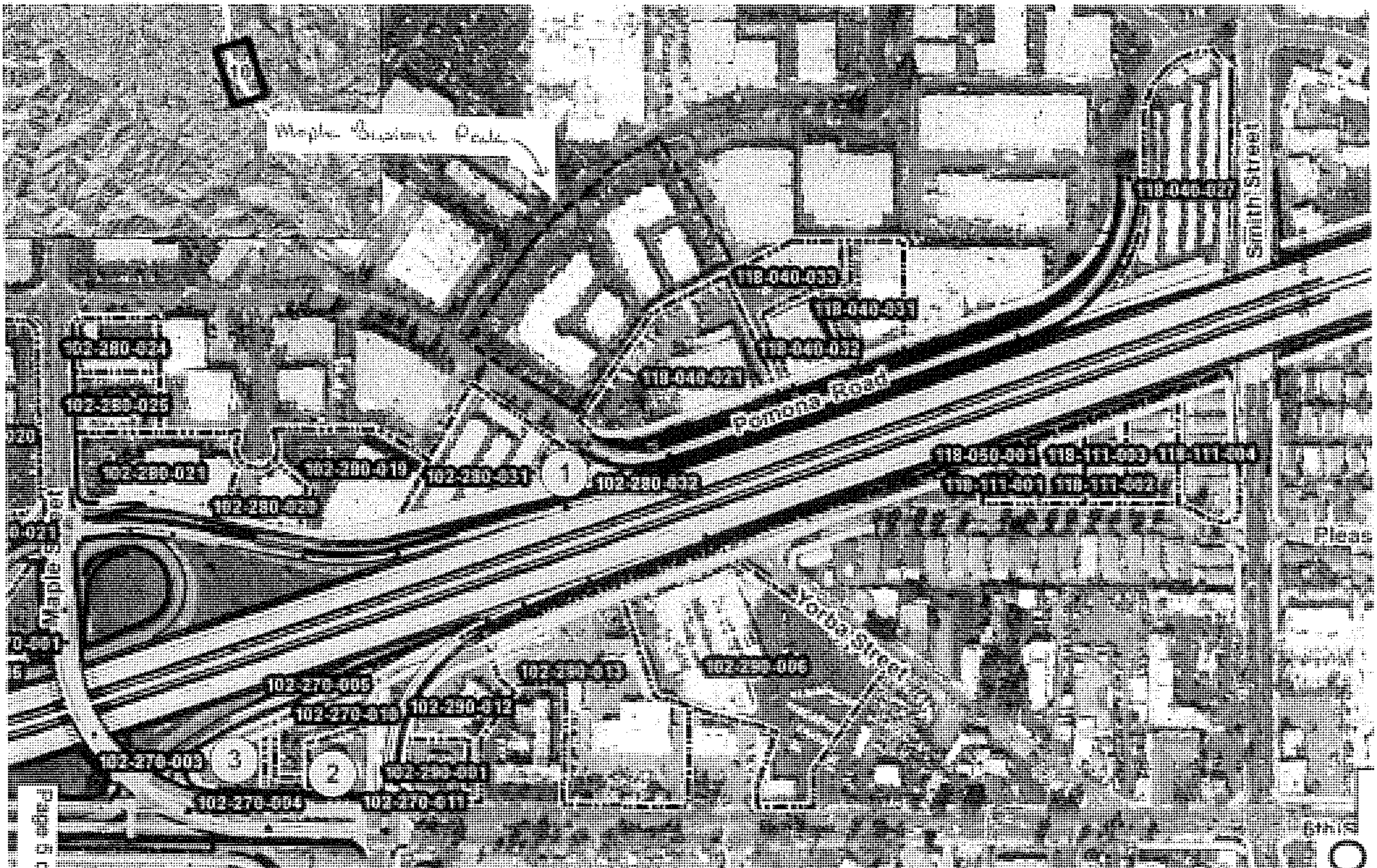
118-270-043

Current view of 91 Fwy on/off ramps at Lincoln Commercenter

7/6/11

O-5

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Maple Business Park
Smith Street
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118-040-033
118-040-031
118-040-032
118-040-021
Pomona Road
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102-280-021
102-280-019
102-280-031
1
102-280-032
102-280-020
118-050-001
118-111-003
118-111-004
118-111-001
118-111-002
Yorba Street
102-290-013
102-290-006
102-270-006
102-270-010
102-290-012
102-270-003
3
2
102-290-001
102-270-004
102-270-011

O-5

O-5-1

No response is necessary because this text describes the owners and tenants in the cited business complex but does not ask a question or provide a comment related to the technical information or the analysis of environmental impacts in the EIR/EIS.

O-5-2

Compensation may be available for lost business during construction consistent with the Uniform Act. However, the Uniform Act does not generally provide compensation for loss of business during construction as long as reasonable access is maintained. A determinination of whether the businesses are eligible for such compensation will be made once the specific access plan is developed as part of the Final TMP described below. The EIR/EIS includes a substantial number of mitigation measures to address short-term project impacts on adjacent land uses during construction. Measure T-1 specifically requires the preparation and implementation of a Final TMP to address specific short-term traffic impacts during project construction. The TMP includes a number of elements specifically intended to maintain access to/from businesses in the vicinity of project construction areas. Those elements include a public information/public awareness campaign; traveler information strategies (including fixed and portable changeable message signs); signage to indicate "businesses are open during construction;" incident management to minimize travel delays in and around construction areas; coordination with TMPs for other projects under construction concurrently with the SR-91 CIP; and a wide range of other elements. Refer to Measure T-1 on page 3.6-32 in the EIR/EIS for a detailed description of the elements included in the TMP.

Appendix E, Environmental Commitments Record, in the EIR/EIS indicates which measures will be implemented during construction and who will implement those measures. In addition, the RCTC Project Manager and Project Engineer will monitor the design/build contractor activities to ensure that the measures are properly implemented. The intent of these measures is to minimize the effects of project construction related to dust, noise, and access to area businesses during construction.

O-5-3

The traffic volumes on Pomona Road will not be reduced as a result of the reconfiguration of the Lincoln Avenue westbound on- and off-ramps. In the existing condition, Pomona Road and the freeway ramps use the same traffic signal at Lincoln Avenue. The project proposes separating those two ramp connections to Pomona Road with the accessibility to Pomona Road maintained from all directions. With the

proposed ramps placed on fill material, the visibility of properties from the mainline freeway will be reduced for approximately 1,000 ft, but will not impact decision points on the freeway for anyone exiting at Lincoln Avenue.

In addition, the visibility of businesses and accessibility are generally not considered environmental concerns under CEQA or NEPA. Therefore, no response related to these topics is required as part of the environmental concerns considered under CEQA or NEPA. However, RCTC will work with the business owners and tenants during the design/build phase of the project to attempt to reach a resolution for these types of issues that would be acceptable to all parties.

O-5-4

The realignment of Pomona Road adjacent to this business will require extending/ modifying the existing driveways to this site to reach the new alignment of Pomona Road. The purpose of the TCE at this location is for construction of this driveway; that TCE would not be used as a staging area for supplies or equipment. Staging yards will be located on available public spaces or private vacant lands with rental agreements between the contractor and property owner.

O-5-5

Refer to response to comment O-5-4, above.

O-5-6

The Department and RCTC appreciate your comments, input, and questions on this important transportation project.

O-6

3435 Wilshire Boulevard
Suite 320
Los Angeles, CA 90010 1904

SIERRA CLUB
FOUNDED 1892
Angeles Chapter

(213) 387-4287 phone
(213) 387-5383 fax
www.angeles.sierraclub.org

Puente-Chino Hills Task Force
245 Verbena Lane
Brea, CA 92823

July 8, 2011

Mr. Aaron Burton
California Department of Transportation
District 8
464 West Street, Sixth Floor
San Bernardino, California 92401

RE: Comments on State Route 91 Corridor Improvement Project Draft Environmental Impact Report/Environmental Impact Statement

The following comments are submitted on behalf of the Puente-Chino Hills Task Force of the Sierra Club, Angeles Chapter, in response to the Draft Environmental Impact Report/Environmental Impact Statement (DEIR/S) prepared for the State Route 91 Corridor Improvement Project (Project).

The mission of the Puente-Chino Hills Task Force is to work towards the preservation and biological integrity of Chino Hills State Park and the Puente-Chino Hills Wildlife Corridor, which extends from the Whittier Narrows to the Santa Ana Mountains, as well as providing open-space and recreational activities within the Puente-Chino Hills. O-6-1

After review of the DEIR/S we believe that this document is inadequate to meet CEQA and NEPA requirements, as it fails to analyze the significant environmental impacts of the Project and detail mitigation measures to address those impacts. This document does not adequately explain the project description so as to be able to meaningfully be able to respond in an appropriate way. Therefore, we feel that the DEIR/S must be revised and recirculated in order to be able to fully understand the issues at stake. This environmental document does not allow for that review. The detailed reasons are discussed below. O-6-2

- In a number of instances, the proposed mitigation for a Project impact is put off until a future date. This does not allow for the determination of whether the proposed mitigation is adequate for the impact. This goes against the primary purpose of CEQA which is to allow for a full airing of all the proposed environmental impacts and mitigations for a project. Without this full information, a full review is impossible and therefore the DEIR/S is inadequate and must be revised and recirculated. O-6-3

- Once the true impacts on Chino Hills State Park (CHSP) from the project are identified, what will the mitigation be? The current DEIR/S does not even identify specific mitigations for the minimal amount of taking that is identified. Are we just to hope that the mitigation identified at some later date is adequate? Specific mitigations need to be identified in the revised and recirculated DEIR/S. O-6-4

- One of the more fantastical items in the DEIR/S is that this project that will allow more cars to move between counties will not be growth inducing because it is "not expected to influence the amount, timing, or location of growth in the project area" (3.2-11). Is this unsubstantiated statement because the region has grown in the past without the Project? Evidently, growth just happens. This is one of the many conclusions in the DEIR/S, albeit the most outrageous one, that has no analysis behind it. If Caltrans insists on making this statement then the revised and recirculated DEIR/S must have actual analysis to support those conclusions. O-6-5

- Even though the Noise Study Report has a picture of Coal Canyon on the cover, there is no actual noise analysis performed at the Coal Canyon wildlife undercrossing. The nearest measurement site was on Brush Canyon Drive approximately ½ mile away from the wildlife undercrossing. The next closest measurement point, at the Green River Golf Course, is further away and 30 feet below the freeway grade. Therefore it is impossible to determine what the noise levels are for the animals trying to use the undercrossing, and therefore, impossible to determine the impact to those animals. How much louder will it be for the animals? Will this impact their use of the undercrossing? What can be done to mitigate the impact? In fact, there is no mention of the noise impact on wildlife movement in the Noise Study Report. This must be analyzed and mitigated in the revised and recirculated DEIR/S. O-6-6

- There is also no mention of the cumulative noise impacts on the movement of animals through any of the wildlife undercrossings, but especially at Coal Canyon. The existing SR 91 has an impact already on the use of the wildlife undercrossing. What is the cumulative impact of the noise of the extra traffic due to the extra lanes going to be? This analysis still needs to be performed in the revised and recirculated EIR/S. O-6-7

- The DEIR/S concedes that it was not able to directly review the entire Biological Survey Area (BSA) due to access issues and had to rely on the use of binoculars to complete the survey. In at least one case, the Braunton's milk-vetch was "believed" to have been washed away based on communications with Department biologists (3.21-6). It is impossible to determine what the biological setting for the Project is in this manner. An actual survey of the biological setting, not an unscientific pseudo-poll, is required. O-6-8

- Many species were not observed during surveys even though the BSA is a potential habitat. Without a full survey, there is no confidence that the results actually represent conditions on the ground. O-6-9

- This same type of analysis was used in the treatment of the impacts to the Santa Ana Sucker, a federally threatened species. This lack of analysis is attributed to a "belief" that the species was extirpated below the Prado Dam, even though an 8 inch sucker was seen in 2010 (3.21-4). This species needs a detailed analysis of how it will be impacted by this Project. O-6-10

- This method of analysis infects the entire Plant and Animal Species sections. The use of the MSHCP does not remove Caltrans's responsibility to actually analyze the impacts of this Project on all plant and animal species. It is impossible to determine the true impact until the full analysis is performed. O-6-11

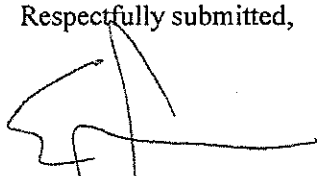
- There is some mention of the other cumulative effects of the project on the Coal Canyon Wildlife undercrossing but very little actual analysis. The DEIR/S states, "Because many wildlife corridor improvements have already been implemented at Coal Canyon, the Build Alternatives are not expected to result in substantial temporary adverse effects on wildlife movement during O-6-12

construction" (3.17-21). The only "improvements" have been the actual acquisition of both sides of the undercrossing and the removal of the asphalt. Indeed, Caltrans failed to clean out the two culverts under the freeway for many years and they have never re-vegetated the underpass. In addition, the underpass has absorbed the construction impacts of recent freeway construction projects. So what corridor improvements is the report referring to? Without knowing what corridor improvements are being referred to it is impossible to analyze if this statement is in fact true and therefore, if the conclusions about the impacts are appropriate. O-6-12

- The DEIR/S underestimates the amount of Parkland that will be impacted by the Project. It only identifies 0.06 acres that will be used by the footings for the new Green River westbound exit. But it fails to take into account how the ramp on top of those footings will impact Chino Hills State Park (CHSP) trailhead and trails. But what will be the actual impact to CHSP users from having a huge freeway off-ramp above their heads? Will this make that portion of the Park essentially useless for park uses? Any mitigation measures must take into account the actual impact to CHSP and the users of CHSP from the project. The current absurdly small footprint does not reflect reality and once again does not provide the full information on the true impacts of the Project. O-6-13

Due to the above concerns, we believe that the DEIR/S is unacceptable. The current DEIR/S does not provide adequate information about the Project setting, its impacts, or the appropriate mitigation of those impacts. Therefore, a revised DEIR/S must be prepared and recirculated that addresses the above issues and fully meets CEQA and NEPA requirements. O-6-14

Respectfully submitted,



Eric Johnson, Chair
Puente-Chino Hills Task Force
Angeles Chapter of the Sierra Club

O-6-1

Refer to responses to comments O-6-3 through O-6-14, below.

O-6-2

Refer to responses to comments O-6-3 through O-6-14, below.

O-6-3

This comment states that the Draft EIR/EIS has "In a number of instances, proposed mitigation for a Project impact is put off until a future date." Avoidance, minimization, and mitigation measures and other conditions for the SR-91 CIP are described in detail in Chapter 3 and Appendix E in the EIR/EIS. Those measures and conditions identify specific avoidance, minimization, and/or mitigation activities and compensatory measures for the environmental topic, the responsible party to complete the activity, the phase in which the activity is to be done, and the timing on when the activity will take place and be completed.

Specifically, the measures and conditions required for and included in the project, as listed in Appendix E, are sufficiently detailed to indicate the actions that will be necessary to avoid, minimize, and/or mitigate for the adverse environmental impacts of the project. For example, refer to Section O.5.10, Common Response Related to the Biological Opinion, on page O-39, for discussion regarding the Biological Opinion for the project received from the USFWS on November 30, 2011, and the conditions placed on the project in the Biological Opinion project mitigation obligations. The mitigation for the use of land at CHSP was developed in consultation with State Parks before and after the Draft EIR/EIS. As indicated in the revised measures in Section 3.1.4.3, Measures for Parks and Recreational Facilities, on page 3.1-92 in the EIR/EIS, the original measures were refined to reflect the consultation with State Parks on mitigation for the use of land from CHSP.

Refer also to Section O.5.5, Common Response Related to Chino Hills State Park, on page O-18 in Section O.5, Common Responses, for project effects at CHSP, mitigation for those effects, and the consultation with State Parks regarding the project effects and refining the mitigation at CHSP.

O-6-4

Refer to Section O.5.5, Common Response Related to Chino Hills State Park, on page O-18 in Section O.5, Common Responses, for discussion of the project effects at CHSP, the refined mitigation for those effects, and the consultation with State Parks regarding the project effects and refining the mitigation at CHSP.

Refer also to Section O.5.4.3, Recirculation, in Section O.5.4, Common Response Related to the Environmental Process and Schedule, on page O-15, for discussion regarding why RCTC and the Department did not prepare or circulate a revised Draft EIR/EIS because such recirculation was not required under either CEQA or NEPA.

O-6-5

As discussed starting on page 3.2-1 in Section 3.2, Growth, in the EIR/EIS, extensive growth and development have historically occurred in the project study area and Orange and Riverside Counties in advance of, or even in the absence of, planned transportation improvements. These areas have experienced rapid population, housing, and employment growth over the last couple of decades. This growth is associated with planned regional and local growth in population and employment. Orange and Riverside Counties are projected to continue to experience growth in population and jobs even in the local jurisdictions that are relatively constrained by limited land available for development. The improved travel times expected to be achieved as a result of Build Alternatives could have a slight influence on demand for residential and nonresidential uses in the project area or nearby cities; however, it would not be expected to be sufficient to result in the need to modify adopted General Plans to allow for greater levels of development (residential and nonresidential).

Refer also to the discussion of project type, project location, growth pressure, and constraints to growth starting on page 3.2-10 in Section 3.2, Growth. The analysis in Section 3.2 answers the following specific question related to growth: *Is project-related growth reasonably foreseeable?* As discussed above, the SR-91 CIP is not expected to influence the amount, timing, or location of growth in the project area as a result of the type or location of the project. Therefore, the SR-91 CIP Build Alternatives will not result in reasonably foreseeable project-related growth in the study area.

O-6-6

The noise study conducted for the SR-91 CIP followed the Department's standard protocols for assessing noise impacts, which are based on FHWA guidelines. Those protocols and guidelines are based on assessing noise effects on sensitive human receptors and not animal species because the Department and FHWA have not adopted any standards for assessing noise impacts to animal species. As a result, measurements of existing noise levels or estimated future with and without project noise levels at Coal Canyon were not developed in the noise study.

As noted, noise data were not available for the Coal Canyon undercrossing area. Noise data from other nearby similarly situated monitoring locations (refer to Receivers 2M, 3M, and 124M in Table 3.15.13 in Section 3.15, Noise, in the EIR/EIS) for the design year with and without project traffic data were reviewed and compared to existing noise levels to identify the potential for increased noise from traffic volumes in this area. Receiver 124M is the closest to the Coal Canyon wildlife crossing, at approximately 1,000 ft east of that crossing. Traffic volumes will be the same at Receiver 124M as at Coal Canyon because there are no intervening ramps where volumes traffic could change. As a result, changes in noise volumes at Coal Canyon are expected to be the same as at Receiver 124M.

The forecasts in Table 3.15.13 indicate that noise levels are anticipated to be approximately the same in the future with or without the project, and that those future noise levels will be approximately 1–2 decibels (dB) greater than existing conditions. The actual noise contour lines would shift out, corresponding to the widening of the freeway (approximately one lane in each direction at Coal Canyon). Such a shift would be less than 1 dB at any ground location. Discussion was added to the Coal Canyon text in Section 3.17.3, Environmental Consequences, on page 3.17-16 in the EIR/EIS to describe this analysis.

RCTC has made additional commitments relevant to CHSP that directly benefit the Coal Canyon wildlife crossing. A stand-alone project will be developed to construct barriers on the south and north sides of SR-91 to shield headlight glare and freeway noise at Coal Canyon. These barriers are estimated to be approximately 1,500 ft and 1,300 ft long on the south and north sides of SR-91, respectively. That project will follow environmental process requirements and engage subject area experts to establish the specific requirements and effectiveness of the proposed barriers to meet the project purpose. In consideration of and reliance on the needs of State Parks and other open space plans that depend on CHSP, and subject to environmental review, RCTC commits to build this barrier in tandem with the completion of the SR-91 Ultimate Project in this area, which is planned for completion in 2035. RCTC will work with the Department and other agencies to fund and implement this project. RCTC has committed to provide this noise and glare mitigation at the time the impact would occur. The future noise estimates in the vicinity of Coal Canyon provided in Section 3.15 do not include any noise reduction that might occur as a result of this barrier.

As described in Section 3.17, Natural Communities, in the EIR/EIS, the Build Alternatives would result in temporary, but not substantial, adverse impacts on wildlife movement during construction. Those temporary impacts would be substantially mitigated based on implementation of Measures NC-6 through NC-16 provided starting on page 3.17-30.

The Build Alternatives would not result in adverse impacts related to wildlife movement after the completion of construction.

O-6-7

As discussed in response to comment O-6-6, above, noise levels at the Coal Canyon undercrossing are not expected to increase as a result of the SR-91 CIP. Therefore, the SR-91 CIP is not expected to contribute to cumulative adverse noise impacts in the Coal Canyon undercrossing.

O-6-8

Refer to response to comment O-8-18 on page O-385 for discussion related to Braunton's milk-vetch. Refer to Section O.5.10, Common Response Related to the Biological Opinion, on page O-39, for discussion regarding the Biological Opinion for the project received from the USFWS on November 30, 2011, and the project mitigation obligations.

O-6-9

All areas in the BSA were surveyed on foot for threatened, endangered, and sensitive species except for those areas where the property owners declined to provide right-of-entry. Areas unable to be surveyed on foot were surveyed with the aid of binoculars and evaluated from accessible areas. All areas, whether surveyed on foot or not, were evaluated at the same level of detail. Specifically, where suitable habitat was present, species were assumed present and the analysis was based on that assumed presence. There is no requirement to survey for all species. This ensured that the project mitigation measures will mitigate project effects on special-status species. Measures such as Measure NC-3 in Section 3.17.4, Avoidance, Minimization, and/or Mitigation Measures, starting on page 3.17-27 in the EIR/EIS are included in the project and will substantially mitigate the project impacts to special-status species. Refer to Section O.5.10, Common Response Related to the Biological Opinion, on page O-39, for discussion regarding the Biological Opinion for the project received from the USFWS on November 30, 2011, and the project mitigation obligations in that Biological Opinion.

To ensure that the SR-91 CIP EIR/EIS properly identifies and mitigates impacts to special-status species, extensive coordination was conducted with the resource agencies (USFWS, CDFG, State Parks, Corps, and the RCA) as described in Chapter 5, Comments and Coordination.

O-6-10

A focused survey was not conducted for the Santa Ana sucker because the proposed project will not directly impact this species. Information about the believed extirpation of the Santa Ana sucker below Prado Dam was provided by Sally Brown of the USFWS. However, as indicated in this comment, one Santa Ana sucker was observed below Prado Dam in 2010; therefore, its presence has been assumed. Based on that assumption, in analyzing the project impacts, it has been determined that the proposed project may indirectly impact this species. The following measures are included in the Build Alternatives to avoid, minimize, and/or mitigate potential project impacts to the Santa Ana sucker:

- Measures WQ-1, WQ-2, WQ-3, and WQ-4 in Section 3.10.4, Avoidance, Minimization, and/or Mitigation Measures, starting on page 3.10-34 in the EIR/EIS
- Measures NC-1, NC-2, and NC-3 in Section 3.17.4, Avoidance, Minimization, and/or Mitigation Measures, starting on page 3.17-27
- Measures WET-1, WET-2, and WET-3 in Section 3.18.4, Avoidance, Minimization, and/or Mitigation Measures, starting on page 3.18-14

Section 7 Consultation was conducted and a Biological Opinion was received from the USFWS on November 30, 2011. The Biological Opinion is provided in Appendix N, Biological Opinion. Refer to Section O.5.10, Common Response Related to the Biological Opinion, on page O-39 in Section O.5, Common Responses, for additional information regarding the Biological Opinion.

O-6-11

Refer to response to comment O-6-9, above, for discussion of the level of analysis of areas not surveyed on foot. With regard to the coverage of the project under the Western Riverside County MSHCP, the Western Riverside County MSHCP consistency determination was approved by the Regional Conservation Authority in April 2011. A discussion of this process is provided in Section 3.17. For impacts to sensitive species in Orange County, appropriate surveys in the Orange County part of the BSA were conducted.

A Section 7 Consultation was conducted and a Biological Opinion was received from the USFWS. Refer to Section O.5.10, Common Response Related to the Biological Opinion, on page O-39 in Section O.5, Common Responses, for additional information regarding the Biological Opinion.

O-6-12

As described in Section 3.17.3.3, Temporary Impacts, on page 3.17-24 in the EIR/EIS, the Build Alternatives would result in temporary, but not substantial, adverse impacts on wildlife movement during construction. Those temporary impacts would be substantially mitigated based on implementation of Measures NC-6 through NC-16, which are provided starting on page 3.17-27 in the EIR/EIS.

The Build Alternatives are not expected to result in substantial adverse impacts related to wildlife movement after the completion of construction. Therefore, no mitigation is required.

In addition to the closure of the Coal Canyon interchange by the Department in 2003, the acquisition of both sides of the undercrossing, and the removal of asphalt, biologists conducting field surveys for the SR-91 CIP noted repairs and improvements to wildlife fencing at this crossing and the maintenance of the Coal Canyon Wash culverts. In addition, Department District 12 is proposing to conduct some planting in State right-of-way at Coal Canyon as a separate, unrelated project. The purpose of this planting is to attract more wildlife to this crossing. Additional details regarding the Department plantings are provided in response to comment S-3-17 on page O-114.

O-6-13

Refer to Section O.5.5, Common Response Related to Chino Hills State Park, on page O-18 in Section O.5, Common Responses, for project effects at CHSP, mitigation for those effects, and consultation with State Parks regarding the project effects and mitigation at CHSP. The amount of land permanently impacted by the project at CHSP has been refined and reduced to 0.48 ac as described in Section O.5.5. As described in Section O.5.5, the ramp will extend over only 0.48 ac of land within the boundary of CHSP; it will not affect or restrict access to the trailhead or Prado Road in this area. The off-ramp will not extend over any part of CHSP where park visitors will be and, as a result, the off-ramp will not be above park users. Extensive mitigation, including provision of a 30-space parking area for trail users, is included in the project as described in Section O.5.5.

O-6-14

As reflected in the responses to comments O-6-1 through O-6-13, above, in other responses to comments in this Appendix, and throughout the EIR/EIS, RCTC and the Department have confirmed that the Draft EIR/EIS as prepared and circulated to the public provides sufficient information to adequately identify and assess the potential impacts of the proposed project and includes mitigation that is sufficiently detailed to adequately address those potential impacts. As a result, RCTC and the Department did not prepare or circulate a revised Draft EIR/EIS. In addition, consistent with the requirements of NEPA, the Final EIS will be available prior to the ROD.

CENTER *for* BIOLOGICAL DIVERSITY

July 8, 2011

Via Electronic Mail and Certified Mail with CD of Attached Exhibits

Ms. Eliza Echevarria
Community Relations Manager
Riverside County Transportation Commission
4080 Lemon Street, 3rd Floor
Riverside, CA 92501
eechevarria@rctc.org

Re: Comments on SR-91 Corridor Improvement Project Draft EIR/EIS

Ms. Echevarria:

These comments are submitted on behalf of the Center for Biological Diversity (the "Center") on the SR-91 Corridor Improvement Project (the "Project") Draft Environmental Impact Report/Statement ("DEIR/S"). The Center is a non-profit, public interest environmental organization dedicated to the protection of native species and their habitats through science, policy, and environmental law. The Center's Climate Law Institute works to reduce greenhouse gas emissions to protect biological diversity, our environment, and public health. The Center has 44,000 members, throughout California and the United States, including in the County of Riverside. Center members will be directly impacted by the Project.

The Project contemplates adding an additional general purpose lane on SR-91 in each direction. Alternative 2 would add an additional general purpose lane in each direction and also extend the existing tolled express lanes and convert the existing HOV lanes to tolled express lanes. While the Project would have many significant impacts, these comments focus on the global warming impacts resulting from the Project. The DEIR/S is fundamentally flawed because it discounts induced travel generated by the contemplated freeway widening, improperly asserts Project greenhouse gas impacts are speculative, and fails to consider a reasonable range of alternatives, including investments in transit in lieu of road widening. As a result of the DEIR/S' numerous and serious inadequacies, there can be no meaningful public review of the Project. The California Department of Transportation ("Caltrans") must revise and recirculate the DEIR/S in order to permit an adequate understanding of the environmental issues at stake.

O-7-1

I. THE DEIR/S FAILS TO COMPLY WITH CEQA AND NEPA.

A. The DEIR/S Underestimates the Increase in Vehicular Traffic and Vehicle Miles Traveled That Would Occur Upon Implementation of the Proposed Project.

The proposed Project would result in a substantial increase in freeway capacity and, as a result, would facilitate increased travel. The reduction in traffic congestion will result in increases in vehicle speeds, which will lead in turn to additional "induced" travel. Induced travel occurs when the cost of travel is reduced (*i.e.*, travel time reduction due to additional capacity), causing an increase in demand (*i.e.*, more travelers using the improved facility). The reduction in travel time causes various responses by travelers, including diversion from other routes, changes in destinations, changes in mode, departure time shifts, and the creation of new trips all together.

The phenomenon of induced travel has been extensively documented. One recent study, prepared by Todd Litman of the Victoria Transport Institute,[1] described the effects of vehicle-generated traffic. Set forth below is a summary of this research:

- Using data on California freeway expansion, traffic volumes, and various demographic and economic factors between 1980 and 1994, Cervero (2003) found the long-term elasticity of VMT [vehicle miles traveled] with respect to traffic speed to be 0.64, meaning that a 10% increase in speed increases VMT 6.4%. Thus, about 80% of added road capacity is filled with additional peak-period traffic.

O-7-2

- Time-series data indicates an elasticity of vehicle travel with respect to lane miles of 0.5 in the short run, and 0.8 in the long run (Noland, 2001). This means that half of increased roadway capacity is filled with added travel within about 5 years, and 80% of the increased capacity eventually fills. Urban roads, which tend to be most congested, had higher elasticity values than rural roads, as expected due to their greater congestion and latent demand.

- The medium-term elasticity of highway traffic with respect to California state highway capacity was measured to be 0.6-0.7 at the county level and 0.9 at the municipal level (Hansen and Huang, 1997). This means that 60-90% of increased road capacity is filled with new traffic within five years. Each 1% increase in highway lane-miles increased VMT about 0.65%.

- A major study found the following elasticity values for vehicle travel with respect to travel time: urban roads, -0.27 in the short-term and -0.57 over the long term; rural roads, -0.67 in the short term and -1.33 in the long term (Goodwin, 1996). These values are used by the U.S. Federal Highway Administration for highway

[1] Todd Litman, Victoria Transport Policy Institute, Smart Congestion Reductions: Reevaluating the Role of Highway Expansion for Improving Urban Transportation (February 2, 2010) at 8.

project evaluation. Because of these effects it is unsurprising that urban highway expansion provides modest congestion reduction (STPP 2001).

Southern California, including Riverside County, has continually attempted to build its way out of highway congestion. Riverside County is estimated to have induced travel increases between 14-62%.[2] Other studies from California have supported the observation that an increase in available lanes will induce additional miles traveled by vehicles.[3] ("A 1% increase in lane-miles yields an immediate (within the same year) VMT increase of around 0.2%, with the full long-run effect materializing over 2 years at the county level and 4 years at the metropolitan one."). As summarized in broader terms by Robert Cervero at the Department of City and Regional Planning at the University of California, Berkeley in a 2001 study:

> Another study of 70 U.S. metropolitan areas over a 15-year time period concluded that areas investing heavily in road capacity fared no better in easing traffic congestion than areas that did not (Surface Transportation Policy Project, 1998). Based on a meta-analysis of more than 100 road expansion projects in the United Kingdom, Goodwin (1996) found that proportional savings in travel time were matched by proportional increases in traffic on almost a one to one basis, a finding that prompted the U.K. Government to jettison its longstanding policy, "predict and provide," of responding to traffic-growth forecasts by building more motorways.[4]

O-7-2

The DEIR/S barely acknowledges, much less accounts for, the potential for the Project to induce travel. Indeed, it is unclear what, if any adjustments the EIR made to Project impacts to account for induced travel. As a result, the DEIR/S overstates the need for, and the benefit of, the proposed Project and understates the environmental impacts of the Project. Because many of the environmental impact analyses (*e.g.*, traffic, air quality, climate change and noise) are based on the Project's trip generation, an underestimation in trip volumes necessarily results in an underestimation of the Project's environmental effects. In addition, the DEIR/S fails to grapple with the fact that widening freeways are a temporary solution, at best, to the complex problems of traffic congestion.

A revised DEIR/S should evaluate the travel-inducing consequences of the proposed Project through proper travel-demand modeling. Only by modeling various land use, destination, mode choice and route choice scenarios is it possible to understand actual travel behavior. By failing to properly account for the induced travel generated by the Project, the DEIR/S misleads decisionmakers and the public on the full extent of Project impacts.

B. The DEIR/S Fails to Provide Any Analysis of Impacts to Public Transit Service or Systems.

O-7-3

[2] Robert B. Noland & William A. Cowart, Analysis of Metropolitan Highway Capacity and the Growth in Vehicle Miles of Travel (2000) at 26.
[3] Mark Hansen & Yuanlin Huang, Road Supply and Traffic in California Urban Areas (1997) at 218.
[4] Robert Cervero, Road Expansion, Urban Growth, and Induced Travel: A Path Analysis (2001) at 1.

O-7

One of the locally preferred strategies identified in the Major Investment Study (MIS) is to maximize the transit system by increasing Metrolink service and evaluating the addition of express busses and high-speed trains such as Maglev. (DEIR/S at 1-11.) Despite this objective, the DEIR/S provides no discussion of any transit facilities in connection with the Project. Nor does the document provide any analysis of the effect the increase in freeway capacity would have on local and regional transit use. These omissions are glaring, as it is widely known that increases in freeway capacity, as this Project entails, tend to result in reductions in transit ridership. Unfortunately, with this Project, such impacts to transit would be expected to become more severe over time. If transit ridership continues to decline (because travelers are taking advantage of freed-up capacity on freeway lanes), regional transportation agencies earmark even less funding to transit systems and transit service. With less funding, transit agencies cut, or eliminate altogether, routes and transit headways, which in turn further reduces transit ridership.

Caltrans' failure to analyze the relationship between freeway capacity and transit service demonstrates the agency's antiquated approach to transportation planning. In fact, there has been a sea-change in transportation planning over the last several years. Whereas traditional transportation planners, such as Caltrans, tend to evaluate transport primarily in terms of motor vehicle traffic, using indicators such as roadway level of service ratings, average traffic speeds, and travel time indices, these evaluations pertain only to roadway travel conditions.[5] By contrast, as Litman explains, modern planners use broader, more flexible methods for analyzing mobility, and place greater emphasis on improving public transit:

O-7-3

> From this perspective, transit investments are only valuable to the degree that they reduce motorist delay. However, modern planning tends to use more comprehensive analysis methods that evaluate transport system quality based on *mobility* (the movement of people and goods) and *accessibility* (the ease of reaching desired goods, services and activities). Modern planning also tends to give more consideration to other planning objectives besides congestion reduction, and to a wider range of accessibility improvement strategies, including various mobility management strategies and smart growth land use policies. More comprehensive planning tends to place a higher value on public transit investments, particularly when implemented in conjunction with supportive policies such as road and parking pricing, commute trip reduction programs, and transit oriented land use development.

Id. (emphasis in original).

Consistent with this more contemporary approach to transportation planning, the Office of Planning and Research recently amended the CEQA Guidelines. The CEQA Environmental Checklist Form now deemphasizes the importance of accommodating the

[5] *See* Todd Litman, Smart Congestion Reductions II: Reevaluating the Role of Public Transit for Improving Urban Transportation, Victoria Transport Policy Institute (September 9, 2010) at 2.

automobile to meet transportation mobility needs. Instead, the Checklist suggests that a lead agency should evaluate a Project's potential to "conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities." *See* Appendix G section XVI (f).

O-7-3

Nevertheless, rather than plan for regional transportation mobility in this more holistic manner, Caltrans continues its myopic focus on accommodating the automobile. In keeping with contemporary planning norms, the DEIR/S must be revised to evaluate the Project's interaction with and impact on transit use.

C. The DEIR/S Fails to Adequately Evaluate and Mitigate Impacts Related to Climate Change.

1. Analyzing Global Warming Impacts under CEQA and NEPA.

The law is clear that lead agencies must thoroughly evaluate a project's impacts on climate change under CEQA. In 2007, the state Legislature passed Senate Bill 97, which required the Governor's Office of Planning and Research to prepare guidelines "for the mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions *as required by* [CEQA], including, but not limited to, effects associated with *transportation* or energy consumption." SB 97 (2007), codified as Pub. Res. Code § 21083.05 (emphasis added). Consistent with this mandate, the state Natural Resources Agency adopted revisions to the CEQA Guidelines that require lead agencies to determine the significance of a proposed project's greenhouse gas ("GHG") emissions. CEQA Guidelines § 15064.4 ("A lead agency should make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate, or estimate the amount of greenhouse gas emissions resulting from a project"). The agency may do this through one of two methods. First, it may perform a quantified analysis, which involves using a significance threshold based on a numeric standard, i.e., emissions over a certain level, constitute a significant impact. *Id.* at § 15064.4(a)(1). Alternatively, an agency may use a qualitative analysis which determines significance based on (1) a project's compliance with performance standards for GHG reductions or (2) its consistency with GHG reduction plans or regulations put into place by other agencies (*e.g.*, a Climate Action Plan). *Id.* at § 15064.4(a)(2).

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Agencies must also analyze the cumulative impacts of a project's GHG emissions in conjunction with other projects causing related impacts. CEQA Guidelines § 15130. Indeed, climate change is the classic example of a cumulative effects problem; emissions from numerous sources combine to create the most pressing environmental and societal problem of our time. *Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1217 (9th Cir. 2008) ("the impact of greenhouse gas emissions on climate change is precisely the kind of cumulative impacts analysis that NEPA requires agencies to conduct."); *Kings County Farm Bureau v. City of Hanford*, 221 Cal.App.3d 692, 720 (1990) ("Perhaps the best example [of a cumulative impact] is air pollution, where thousands of relatively small sources of pollution cause serious a serious environmental health problem."). If an agency's analysis indicates that a proposed project will have a significant project-specific or cumulative impact on climate change,

the agency must identify and adopt feasible mitigation measures to address this impact. CEQA Guidelines § 15126.4(c).

The California Air Pollution Control Officers Association ("CAPCOA")[6] has issued a "CEQA & Climate Change" white paper to assist lead agencies in analyzing greenhouse gas impacts under CEQA.[7] Although the paper was issued before the new CEQA Guidelines regarding GHGs became effective, its analysis and recommendations, which were reviewed by air quality specialists from numerous air districts and the California Air Resources Board, are still useful. Noting that "the absence of an adopted threshold does not relieve the agency from the obligation to determine significance" of a project's impacts on climate change, CAPCOA explored various approaches to determining significance and then evaluated the effectiveness of each approach. In doing so, CAPCOA determined that only thresholds of zero emissions or of 900 tons of CO2 equivalent ("CO2 eq.")[8] emissions had "high" effectiveness in reducing GHG emissions and "high" consistency with the emission reduction targets set forth in AB 32 and Executive Order S-3-05. *Id.*

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NEPA also requires Caltrans to analyze the Project's GHG emissions. *Ctr. for Biological Diversity*, 538 F.3d at 1217 (NEPA requires agencies to assess impacts of project on GHG emissions); *Earth Island Institute*, 351 F.3d at 1300 (NEPA requires that federal agencies "consider *every* significant aspect of the environmental impact of a proposed action . . . .") (emphasis added) (citations omitted). The President's Council on Environmental Quality recently issued draft guidance on analyzing this issue under NEPA.[9] This document recognizes that "the NEPA process should incorporate consideration of both the impact of an agency action on the environment through the mechanism of GHG emissions and the impact of changing climate on that agency action."[10] Specifically, the proposed regulations would require that agencies: (1) quantify the direct GHG emissions over the project's life, (2) discuss measures to reduce GHG emissions, and (3) qualitatively discuss the link between GHG emissions and climate change. Agencies are not excused from analyzing impacts from GHG emissions just because these regulations are not yet in effect; instead, as the draft document states, the new regulations are "not intended as a '*new*' component of NEPA analysis, but rather as a potentially important factor to be considered within the *existing* NEPA framework."[11]

2. The DEIR/S' Perfunctory Climate Change Analysis Fails to Inform the Public and Decision-makers About the Project's Greenhouse Gas Emissions.

O-7-5

[6] CAPCOA is an association of air pollution control officers representing all local air quality agencies and air districts in California.
[7] CAPCOA, *CEQA and Climate Change* (2008).
[8] Carbon dioxide equivalents (CO2 eq.) provide a universal standard of measurement against which the impacts of releasing different greenhouse gases can be evaluated. As the base unit, carbon dioxide's numeric value is 1.0 while other more potent greenhouse gases have a higher numeric value.
[9] CEQ, Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions (Feb. 2010).
[10] *Id.* at 11.
[11] *Id.* at 11 (emphasis added).

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The DEIR/S is seriously flawed because it trivializes the Project's contribution to climate change. The DEIR/S labels impacts due to climate change as "speculative" and then fails to conduct an adequate analysis of these potential impacts. However, the Project's GHG emissions from construction equipment, increased VMT, and energy use are far from speculative. As detailed below, the DEIR/S must be revised and recirculated to properly assess the Project's impacts on global climate change. The revised DEIR/S must also identify enforceable mitigation for the Project's significant climate change impacts.

The California Climate Action Team's 2009 Report to Governor Schwarzenegger details the science behind, and the environmental impacts of, global warming.[12] The Climate Action Team report makes clear what the DEIR/S has grudgingly accepted: the release of greenhouse gases into the atmosphere leads to global warming, which in turn leads to a myriad of environmental impacts. As stated in the Climate Action Team's report, "[c]limate change poses serious risks to California's natural resources. California-specific impacts are expected to include changes in temperature, precipitation patterns, and water availability, as well as rising sea levels and altered coastal conditions." Moreover, climate change is already beginning to have significant impacts on natural resources in coastal areas.

As the Supreme Court noted, "[t]he harms associated with climate change are serious and well recognized." *Massachusetts v. EPA*, 127 S. Ct. 1438, 1455 (2007). Reducing greenhouse gas emissions in order to limit these harms is one of the most urgent challenges of our time, one recognized by the targets embodied in Governor Schwarzenegger's Executive Order S-3-05 and AB 32, California's Global Warming Solution Act of 2006, codified at Health and Safety Code § 38500, *et seq*. By these authorities, California has committed to reducing emissions to 1990 levels by 2020, and to 80 percent below 1990 levels by 2050.

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Despite all of this – the scientific consensus, the potentially catastrophic impacts on the State, and California's well-founded commitment to reducing emissions – the DEIR/S' climate change analysis is essentially perfunctory. It fails to determine a threshold of significance, it calculates only a portion of the GHG emissions for which the Project will be responsible, and then ignores its obligation to determine whether the impact is significant. The document even neglects to describe the expected impacts of climate change on the region: more drought, more severe weather, sea level rise, etc. It thus fails to satisfy the most basic purpose of an EIR/EIS: to disclose to decision makers and the public a project's significant environmental impacts. *See* Pub. Res. Code § 21061 ("The purpose of an environmental impact report is to provide public agencies and the public in general with detailed information about the effect that a proposed project is likely to have on the environment"); 40 C.F.R. § 1500.1(b) ("NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken.").

[12] *See* California Environmental Protection Agency, Climate Action Team Biennial Report to Governor Schwarzenegger and the Legislature, April 2010, available at http://www.climatechange.ca.gov/ climate action team /reports/index.html. The entire Report is incorporated herein by reference.

Having failed to make a significance determination, as CEQA requires, the DEIR/S then fails to identify mitigation measures to reduce or avoid the Project's project-specific and cumulative contributions to global warming. The DEIR/S further suggests that because there are no adopted thresholds or similar requirements on the federal level, it has no obligation to conduct the analysis of these impacts. This approach, which flies in the face of science and law, stands in stark contrast to the conscientious treatment of global warming impacts undertaken by other lead agencies throughout the state. Caltrans must make substantial modifications to the DEIR/S' climate change analysis to achieve compliance with CEQA and NEPA.

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3. The DEIR/S' Refusal to Make a Significance Determination Regarding the Project's Contribution to Climate Change Is Unlawful.

The DEIR/S contains no thresholds of significance for the Project's potential impacts on climate change. Instead, the DEIR/S suggests that in the absence of specific regulations, development of a significance threshold would be "speculative." (DEIR/S at 4-51.) This approach is unlawful. First, the CEQA Guidelines expressly require agencies to "make a good-faith effort . . . to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project." CEQA Guidelines § 15064.4. Indeed, the Guidelines were recently updated with a new section entitled "Determining the Significance of Impacts from Greenhouse Gas Emissions." *Id.* In any event, there is nothing in CEQA that relieves a lead agency from its obligation to determine significant effects simply because the impact is related to a rapidly-evolving area of science and policy. *See Protect the Historic Amador Waterways v. Amador Water Agency* (2004) 116 Cal.App.4th 1099, 1106-12 (CEQA does not allow impact analysis to be labeled too "speculative" based on lack of threshold). Thus, there is no justification for Caltrans' refusal to make a significance finding for GHG emissions. *See* CEQA Guidelines § 15065 (entitled "*Mandatory* Findings of Significance") (emphasis added).

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CEQA Guidelines section 15064.4(a)(1) & (2) provides two methods for making a significance determination related to GHG emissions. An agency may either:

> (1) use "a model or methodology to quantify greenhouse gas emissions resulting from a project . . . [that] it considers most appropriate provided it supports its decision with substantial evidence," or
>
> (2) "[r]ely on a qualitative analysis or performance based standard []."

Caltrans pursued neither approach here, opting to make no significance determination at all. Again, there is no justification for this intransigence. The Guidelines give direction for what an agency must do, and Caltrans must comply.

Determining whether a project may have a significant effect plays a critical role in the CEQA and NEPA processes, and this determination must be "based to the extent possible on scientific and factual data." CEQA Guideline § 15064(a) and (b). Accordingly, a significance threshold for greenhouse gases must reflect the grave threats

posed by the cumulative impact of adding new sources of emissions into an environment when deep reductions from existing emission levels are necessary to avert the worst consequences of global warming. *See Center for Biological Diversity*, 508 F.3d at 550 ("we cannot afford to ignore even modest contributions to global warming.").

Although the CEQA Guidelines do not provide a particular methodology for making the significance determination, other agencies and groups have established methodologies, and their analyses may be useful for Caltrans. The "CEQA & Climate Change" paper by CAPCOA proposes a variety of potential thresholds of significance, and describes appropriate applications for each. According to CAPCOA's analysis, the only two thresholds that are highly effective at reducing emissions and consistent with AB 32 and Executive Order S-3-05 are a threshold of zero or a quantitative threshold of 900-ton CO2 Equivalent. The zero threshold is preferable in light of ongoing scientific advances showing that global warming is more significant than originally anticipated. For example, even the ambitious emissions reduction targets set by Executive Order S-3-05 in 2005, which were consistent with contemporaneous science indicating that reductions of 80% below 1990 levels by developed countries would be sufficient to stabilize the climate, are now believed to be insufficient.

Based on these and other recent climate change observations, leading scientists now agree that "humanity must aim for an even lower level of GHGs."[13] Thus, the scientific and factual data now support a threshold of significance of zero in order to ensure that new projects do not have a cumulatively significant impact on global warming. Consistent with this data, many EIRs have adopted a zero threshold of significance because it is the most "scientifically supportable" threshold. *See, e.g.*, DEIR, Venoco Ellwood Full Field Development Project at 4.3-33, SCH # 2006061146; *Communities for a Better Env't v. City of Richmond*, 184 Cal.App.4th 70, 92 (2010) (EIR using net-zero significance threshold).

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Although the DEIR/S fails to make a significance determination, it does offer minimal, unsupported data that purports to demonstrate that the Project would actually reduce GHG emissions. (DEIR/S at 4-46.) Although Caltrans may have intended that this data show the Project would not result in significant impacts to climate change, the paltry analysis is insufficient for a true significance determination and, in any event, is faulty itself. For instance, the analysis compares emissions from the Project alternatives in the year 2030 to the "2030 no build" alternative and then concludes that the Project would decrease CO2 emissions relative to business as usual. However, for a significance determination, CEQA requires an agency to analyze "[t]he extent to which the project may increase or reduce greenhouse gas emissions as *compared to the existing environmental setting* . . . ." CEQA Guidelines § 15064.4(b)(1) (emphasis added). The Act does *not* allow comparison of future Project impacts to hypothetical future impacts from business as usual. *Woodward Park Homeowners Assn, Inc. v. City of Fresno*, 58 Cal.Rptr.3d 102, 119 (2007) (EIR may not compare proposed project to build-out of an existing plan). As Caltrans' chart shows, even using the agency's inadequate data, the

[13] James Hansen et al., *Target Atmospheric CO_2: Where Should Humanity Aim?* 2 Open Atmospheric Sci. J. 217, 226 (2008).

Project alternatives would result in an increase in CO_2 emissions of approximately *3,000 tons per day* over current emissions.

O-7-6

In short, Caltrans must revise the DEIR/S to make the required significance determination. Moreover, such a significance determination must "be based on substantial evidence in the record." Pub. Res. Code § 15064(f).

4. The Rationale That Widening SR-91 Will Reduce GHG Emissions Is Flawed.

As the attached Sightline Institute article explains, under almost any set of plausible assumptions, widening a highway in a congested urban area will substantially increase long-term greenhouse gas emissions.[14] Road-building proponents often suggest that adding lanes to a highway will reduce greenhouse gas emissions. By easing congestion, they argue, new lanes will reduce the amount of fuel that vehicles waste in stop-and-go traffic, leading to reduced emissions of climate-warming gases from cars and trucks. Over the short term—perhaps 5 to 10 years after new lanes are opened to traffic—this argument may hold some slim merit. Nevertheless, when one considers the full increase in emissions from highway construction and additional VMT, experts at Sightline conclude that adding one mile of new highway lane will increase CO_2 emissions by more than 100,000 tons over 50 years.[15]

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A recent report shows how the nation's increase in VMT is projected to overwhelm planned improvements in vehicle efficiency, thus making reductions in GHG emissions impossible without concomitant reductions in VMT.[16] Recognizing the nation's unsustainable growth in driving, the American Association of State Highway and Transportation Officials, representing state departments of transportation, is urging that the growth of VMT be cut in half.[17] Under these circumstances, Caltrans' contention that the Project will result in reduced GHG emissions is simply untenable.

5. The DEIR/S Omits Analysis Of Significant Sources of GHG Emissions.

The DEIR/S fails to recognize that the Project will contribute to GHG emissions through sources other than vehicles driving on the completed Project. To reflect the Project's actual effect on climate change, the DEIR/S needs to inventory the carbon emissions generated through: (1) Project-related increases in VMT; (2) energy consumption; (3) electric generation for lighting of the Project; (4) construction activities (*e.g.*, ground clearing and equipment operation);[18] and (5) the manufacturing and lifecycle of the Project's building materials. Without an inventory of these additional

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[14] *See* "Increases in Greenhouse-gas Emissions From Highway-widening Projects," Sightline Institute, October 2007.
[15] *Id.*
[16] Growing Cooler: Evidence on Urban Development and Climate Change" at 3.
[17] *Id.*
[18] For example, these activities will cause fugitive emissions such as methane.

emissions, the DEIR/S' analysis is incomplete, and the formulation of appropriate mitigation is impossible.

The DEIR/S fails to quantify emissions from Project construction. In addition, the DEIR/S omits analysis of emissions from sources other than fuel consumption of roadway users. Moreover, gases and pollutants other than carbon dioxide also contribute to the greenhouse effect. For instance, methane (CH4), Nitrous Oxide (N2O), and hydrofluorocarbons (HFCs) also contribute to climate change. *See* CEQA Guidelines § 15364.5 (defining "greenhouse gas" to include methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride). The DEIR/S must fully inventory the Project's emissions of each of these gases and pollutants.[19] The DEIR/S' failure to account for the Project's full inventory of GHG emissions violates both NEPA and CEQA.

Equally troubling, the DEIR/S' calculation of greenhouse gas emissions fails to account for the Project's increase in black carbon emissions. Black carbon, which is a component of soot produced by incomplete combustion, is a significant contributor to global warming. Although combustion produces a mixture of black carbon and organic carbon, the proportion of black carbon produced by burning fossil fuels, such as diesel, is much greater than that produced by burning biomass.[20]

Black carbon heats the atmosphere through a variety of mechanisms. First, it is highly efficient at absorbing solar radiation and in turn heating the surrounding atmosphere. Second, atmospheric black carbon absorbs reflected radiation from the surface. Third, when black carbon lands on snow and ice, it reduces the reflectivity of the white surface, which causes increased atmospheric warming and accelerates the rate of snow and ice melt. Fourth, black carbon evaporates low clouds. Notably, black carbon is often complexed with other aerosols such as sulfates, which greatly increases its heating potential.

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Due to black carbon's short atmospheric life span[21] and high global warming potential, decreasing black carbon emissions offers an opportunity to mitigate the effects of global warming trends in the short term.[22] At the same time, it is estimated that black carbon is the second greatest contributor to global warming behind carbon dioxide. In developed countries, diesel burning is the main source of black carbon.[23]

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[19] Because carbon dioxide is the prevalent greenhouse gas, we frequently refer here to "carbon emissions." This term should be taken to mean any greenhouse gas emissions from any source.

[20] *See* Ramanathan and Carmichael, Global and Regional Climate Changes Due to Black Carbon, Scripps Institution of Oceanography, March 2008.

[21] Black carbon is considered a "short lived pollutant" because it remains in the atmosphere for only about a week, in contrast to carbon dioxide, which remains in the atmosphere for over 100 years. *Id.*

[22] *Id.*

[23] Diesel emissions include a number of compounds such as sulfur oxides, nitrogen oxides, hydrocarbons, carbon monoxide, and particulate matter. Diesel particulate matter is approximately 75% elemental carbon. *See* EPA 2002 Diesel Health Assessment at http://www.scribd.com/doc/1011457/Health-Assessment-Document-for-Diesel-Engine-Exhaust-EPA-May-2002.

Development of the Project will require the use of diesel-powered heavy duty trucks and construction equipment. Because diesel is the main source of black carbon and these emissions are a major contributor to global warming, the DEIR/S must analyze this issue in its assessment of Project impacts.

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6. The DEIR/S Avoids Its Duty to Adopt All Feasible Mitigation and Alternatives to Reduce Project Emissions

Had the DEIR/S included all sources of GHG emissions in its analysis, it would have found that Project-generated emissions and cumulative emissions exceed all of the potential thresholds of significance discussed above. The Project's contribution to global warming must therefore be considered significant. With this significance determination comes CEQA's and NEPA's mandate to identify and adopt feasible mitigation measures that would reduce or avoid the impact. CEQA Guidelines § 15126.3(a)(1); *see also Woodward Park Homeowners Ass'n, Inc. v. City of Fresno* (2007) 150 Cal. App. 4th 683, 724 ("The EIR also must describe feasible measures that could minimize significant impacts."); *South Fork Band Council v. U.S. Dept. of Interior*, 588 F. 3d 718, 727 (9th Cir. 2009).

Under CEQA, "public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects." *Berkeley Keep Jets Over the Bay Comm. v. Bd. of Port Comm'rs*, 91 Cal. App. 4th 1344,1354 (2001) (quoting Pub. Res. Code § 21002). Accordingly, CEQA requires lead agencies to identify and analyze all feasible mitigation, even if this mitigation will not reduce the impact to a level of insignificance. CEQA Guidelines § 15126.4(a)(1)(A) (discussion of mitigation "shall identify mitigation measures for each significant environmental effect identified in the EIR"); *see also Woodward Park Homeowners Ass'n, Inc.*, 150 Cal. App. 4th at 724 ("The EIR also must describe feasible measures that could minimize significant impacts."). NEPA, in turn, "require[s] that an EIS discuss mitigation measures, with 'sufficient detail to ensure that environmental consequences have been fairly evaluated.' An essential component of a reasonably complete mitigation discussion is an assessment of whether the proposed mitigation measures can be effective." *South Fork Band Council*, 588 F. 3d at 727 (quoting *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 352 (1989)).

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Here, rather than identify feasible mitigation measures for climate change impacts, the DEIR/S points to a series of general strategies identified in Caltrans 2006 *Climate Action Program*. (DEIR/S at 4-52.) The DEIR/S omits an array of obvious mitigation measures that could reduce the Project's greenhouse gas emissions. Numerous mitigation measures are detailed in Appendix B and C to the 2008 CAPCOA report, and Caltrans must consider all feasible, applicable measures therein. Most importantly, the DEIR/S must consider (1) measures to reduce VMT, such as contributing all of funds generated from the Project's lane-pricing toward public transportation, and (2) measures to reduce the Project's energy consumption. In addition, Caltrans must consider the following small sampling of feasible measures:

- Requiring that off-road diesel-powered vehicles used for construction be new low-emission vehicles, or use retrofit emission control devices, such as diesel oxidation catalysts and diesel particulate filters verified by the California Air Resources Board.

- Requiring the Project to generate all or a portion of its own power through alternative means, such as photovoltaic arrays.

- Requiring use of a catalyzed diesel particulate filter on both new and existing diesel engines (because black carbon is a component of diesel particulate matter, strategies that reduce particulate matter will also reduce black carbon).

- Minimizing and recycling construction-related waste.

- Using salvaged and recycled-content materials for hard surfaces and non-plant landscaping materials.

- Maximizing water conservation measures in landscaping, using drought-tolerant plants in lieu of turf, planting shade trees.

- Landscaping to preserve natural vegetation and maintain watershed integrity. O-7-9

- Utilizing the combination of construction materials with the lowest carbon footprint.

- Requiring the use of "cool pavement" that reflects more solar energy. Such measures, which can markedly reduce heat islands, have been used effectively in California and elsewhere. In fact, new building standards in California, called "CalGreen", will require use of such pavement in certain instances. *See* http://www.arb.ca.gov/research/seminars/gilbert/gilbert.pdf for a complete description of cool pavement issues, technology and use.

All of these measures would result in direct reductions in emissions that would otherwise be attributable to the Project. In addition, through a combination of other on-site and off-site measures, the agency could require all aspects of the Project to be "carbon neutral." Off-site measures to be adopted include energy efficient retrofits of existing structures and SCAQMD's adopted protocols for replacement of inefficient boilers.[24]

D. The DEIR/S' Analysis of Alternatives is Inadequate.

Under CEQA, a proper analysis of alternatives is essential to comply with the Act's mandate that significant environmental damage be avoided or substantially lessened where feasible. Pub. Res. Code § 21002; CEQA Guidelines §§ 15002(a)(3), 15021(a)(2), 15126(d); *Citizens for Quality Growth v. City of Mount Shasta*, 198 O-7-10

[24] SCAQMD, Boiler Protocol (2010).

Cal.App.3d 433, 443-45 (1988). As stated in *Laurel Heights Improvement Association v. Regents of University of California*, "[w]ithout meaningful analysis of alternatives in the DEIR, neither the courts nor the public can fulfill their proper roles in the CEQA process . . . . [Courts will not] countenance a result that would require blind trust by the public, especially in light of CEQA's fundamental goal that the public be fully informed as to the consequences of action by their public officials." 47 Cal.3d 376, 404 (1998). The discussion of alternatives must focus on those alternatives to the project or its location that are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would incur additional cost. CEQA Guidelines § 15126.6(b).

Similarly, the evaluation of alternatives is the "heart" of an EIS. 40 C.F.R. § 1502.14 (2004). It "guarantee[s] that agency decision makers have before them and take into proper account *all possible approaches to a particular project . . . which would alter the environmental impact and the cost-benefit balance . . .*" *Bob Marshall Alliance v. Hodel*, 852 F.2d 1223, 1228 (9th Cir. 1988) (emphasis added, internal citations, quotations and alterations omitted). NEPA's regulations and Ninth Circuit case law also require an agency to "[r]igorously explore and objectively evaluate all reasonable alternatives." § 1502.14(a) (emphasis added); *Citizens for a Better Henderson v. Hodel*, 768 F.2d 1051, 1057 (9th Cir. 1985) (EIS must consider "every" reasonable alternative).

The courts, in the Ninth Circuit as elsewhere, have consistently held that a federal agency's failure to consider a reasonable alternative is fatal to a NEPA analysis. *See, e.g., Idaho Conservation League v. Mumma*, 956 F.2d 1508, 1519-20 (9th Cir. 1992) ("The existence of a viable, but unexamined alternative renders an environmental impact statement inadequate."); Forty Most Asked Questions Concerning CEQ's NEPA Regulations, 48 Fed. Reg. 18,026 (March 16, 1981) ("In determining the scope of alternatives to be considered, the emphasis is on what is 'reasonable' rather than on whether the proponent or applicant likes or is itself capable of carrying out the particular alternative. Reasonable alternatives include those that are practical or feasible from a technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant."). "In order to be adequate, an environmental impact statement must consider not every possible alternative, but every reasonable alternative." *Friends of Endangered Species v. Jantzen*, 760 F.2d 976, 988 (9th Cir.1985); *California v. Block*, 690 F.2d 753, 766-67 (9th Cir. 1982); *Save Lake Washington*, 641 F.2d at 1334 (9th Cir. 1981).

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The DEIR/S for the Project fails to heed these basic mandates. First, while the document purports to identify four alternatives, these alternatives are so similar that they become identical for purposes of environmental review. Second, the DEIR/S' perfunctory comparative analysis of the Project alternatives fails to adequately distinguish the environmental impacts of each option, to the extent there are differences. Indeed, each of the Project's "build" alternatives would have virtually identical environmental impacts. Finally, because none of the proposed alternatives would come close to meeting the Project's objectives, the entire alternatives analysis is ultimately meaningless.

1. The DEIR/S Fails to Consider a Reasonable Range of Alternatives.

Other than the "no build" alternative, the DEIR/S presents two "build" alternatives that are extraordinarily similar. This limited analysis is plainly insufficient. Offering only slight differences in freeway construction does not constitute an adequate alternatives analysis. *See Sierra Club v. United States DOT*, 962 F. Supp. 1037 (N.D. Ill. 1997). Indeed, as the courts have explained, presenting clear distinctions – and vigorously exploring all feasible alternatives – is particularly important when an agency is addressing complex or difficult issues, such as the appropriate manner to address transportation mobility in Riverside County. *See Greenpeace v. National Marine Fisheries Service*, 55 F. Supp. 2d 1248 (W.D. Wash. 1999) (alternatives analysis did not sharply define the issue and present a clear basis for choice); *Mann v. Community Redevelopment Agency*, 233 Cal. App. 3d 1143, 1151 (1991) (the alternatives discussed in an EIR must present "enough of a variation to allow informed decision making"). O-7-11

Not surprisingly, because of the lack of clear distinctions among the alternatives, the "build" options pose similar environmental risks. Since the primary purpose of an alternatives analysis under CEQA and NEPA is to explore different options to proposed actions that will adversely affect the environment, analyzing only slight variations of the same proposal – all of which have essentially identical environmental effects – does not constitute an adequate alternatives analysis. *Laurel Heights Improv. Ass'n*, 47 Cal.3d at 403 (purpose of an EIR's alternatives analysis is to identify ways to reduce or avoid significant environmental effects); CEQA Guidelines § 15126.6(c) (agency should analyze alternatives that "could avoid or substantially lessen one or more of the significant effects."); Pub. Res. Code § 21002 (same).

2. The DEIR/S Fails to Consider a Public Transportation Alternative.

Caltrans' alternatives analysis is colored by the agency's interest in maximizing traffic speeds and minimizing congestion along the existing S-91 freeway, rather than by a concern for improving regional transportation generally. Thus, the DEIR/S narrowly focuses on adding capacity to the existing freeway, and ignores a whole range of multi-modal transportation alternatives that could fulfill the Project goals, including the elevated structure/maglev alternatives that were considered in the Major Investment Study that preceded the current environmental review. Because the DEIR/S never evaluates a non-freeway alternative, it does not accomplish the rigorous exploration of all viable alternatives required by NEPA and CEQA. O-7-12

A number of recent publications have proposed strategies for improving mobility through a variety of transportation modes. As the Victoria Transport Policy Institute explains, true "multi-modal" planning must consider various modes of transportation (public transit, automobile, cycling and walking) that reduce automobile dependency.[25]

[25] *See* Todd Litman, Victoria Transport Policy Institute, "Introduction to Multi-Modal Transportation Planning," September 17, 2009.

This perspective challenges conventional transportation planning, which tends to focus on a specific set of options (primarily automobile travel) that strive to maximize traffic speeds, and minimize congestion.[26] In one study, the Victoria Transport Policy Institute found that with a mature roadway system (such as the transportation system in southern California), it may be better to increase transport diversity and encourage efficiency rather than continuing to expand highway capacity.[27]

Caltrans' failure to consider public transportation and other reduced road-building alternatives renders the DEIR/S inadequate. *See Utahans for Better Transportation v. U.S. Dept. of Transportation*, 305 F.3d 1152, 1170 (10th Cir 2002) (rejecting U.S. DOT's argument that it did not need to consider option of developing transit prior to proceeding with highway project because "[r]egional transit choices that may be made in the future are not reasonable alternatives to off-set [sic] the need for new roadway construction now."); CEQA Guidelines § 15126.6(b) (the alternatives discussion must focus on alternatives that will lessen any significant effects of a project). Because such an alternative is reasonable and viable, and because it would lessen the Project's impacts, the agency must examine it in the DEIR/S. O-7-12

Finally, the S-91 Project would be tremendously expensive. Considering that public transportation is likely the more sustainable approach to meeting the region's long-term mobility needs, Caltrans must evaluate whether shifting this investment to public transportation would ultimately be more cost-effective than increasing highway capacity.

3. The DEIR/S Fails to Analyze an Alternative That Assumes More Urbanized Land Uses and Increased Transit Use.

Over the last few years, the public has grown increasingly unwilling to endure lengthy commutes from the suburbs – and more willing to live closer to jobs. In 1900, about 13 percent of the global population lived in or near cities.[28] By 2050, that number is projected to rise to 70 percent.[29] Americans, in general, are beginning to embrace the concept of "smart growth." Finding transit-oriented developments and new urbanist neighborhoods going up in many cities in the country, the Urban Land Institute sees such infill, compact development as a growing trend:

> Next-generation projects will orient to infill, urbanizing suburbs, and transit-oriented development. Smaller housing units-close to mass transit, work, and 24-hour amenities gain favor over large houses on big lots at the suburban edge. People will continue to seek greater convenience and want to reduce energy expenses. Shorter commutes and smaller heating bills make up for higher infill real estate costs.

O-7-13

[26] *Id.* at 2.
[27] Todd Litman, Victoria Transport Policy Institute, "Smart Congestion Reductions," Feb. 2, 2010, at 3.
[28] *See* Cherry, Nathan and Nagle, Kurt. Essential Elements of Sustainable Design, Planning, The Magazine of the American Planning Association, March 2010, p. 25.
[29] *Id.*

> Road congestion, higher energy costs, and climate change concerns combine to alter people's thinking about where they decide to live and work. 'It's a fundamental shift.' The lifestyle cost-of-living equation starts to swing away more dramatically from bigger houses on bigger lots at the suburban edge to greater convenience and efficiencies gained from infill housing closer to work. These homes may be more expensive on a price-per-pound basis, but reduced driving costs and lower heating/cooling bills provide offsets . . . 'near-in suburbs will do well especially if they link to business cores by mass transportation.' Empty nesters and later-marrying boomers continue to flock to cities and urbanizing suburban areas. For aging baby boomers, infill apartment or town-house living means less upkeep and proximity to cultural and entertainment attractions.[30]

O-7-13

This dramatic shift in land use, towards more compact mixed-use development, would reduce the "need" for expansion of SR-91. Moreover, there is a strong synergy between increased land use intensities and expanded public transit. Transit investments help to focus the attention of local communities and developers. The combination of more increased land use densities and public transportation is much stronger than either approach individually.

Caltrans might object that it has no authority over land use and thus is not obligated to consider a "smart growth" alternative. The objection is unfounded. Caltrans certainly has the ability to develop a transportation alternative that uses, as its foundation, this societal trend toward transit-oriented development and development-oriented transit. Caltrans should develop such an alternative and evaluate its environmental impacts in a revised DEIR/S.

4. The DEIR/S Fails to Evaluate An Alternative That Includes Modifications to the Existing SR-91 General Purpose Lanes.

The current SR-91 roadway could support operational modifications that would meet the goal of easing congestion without the construction or traffic-inducement of the proposed Project. For example, converting one or more of the present lanes to a reversible mode would improve flow in the appropriate direction, depending on the time of day. This approach would also allow flexibility to accommodate future demographic or land use changes, and would require no construction.

O-7-14

Alternately, a moderate toll on all traffic (possibly only during peak periods) would be sufficient to maintain acceptable traffic flow. This scenario would also serve to avoid the problems of induced development and traffic, and the increased congestion on local roadways that would accompany the proposed Project.

[30] Urban Land Institute, Emerging Trends in Real Estate, 2010.

While imposing a toll on existing interstate lanes is not currently permitted, federal and state governments are urgently seeking solutions to long-term transportation funding. Consequently, the tolling of interstate highways and the increased reliance on general revenue appropriations to support the federal surface transportation program has been a subject of an ongoing debate in the transportation community. The revised DEIR/S should identify and evaluate an alternative that imposes tolls on existing interstate lanes.

O-7-14

Once this, and the other alternatives discussed above are developed, Caltrans must use appropriate modeling (i.e., gravity model with a feedback process) to compare the effects of these non-freeway widening alternatives to those of the proposed SR-91 Project.

Thank you for considering these comments. If you have any questions, please contact Matt Vespa, mvespa@biologicaldiversity.org, (415) 436-9682 x309.

Please ensure that we are notified of any future action on this Project.

Sincerely,

Matthew Vespa
Senior Attorney

Encl.: The following references are included in the accompanying CD for your review and inclusion in the administrative record.

ENCLOSED REFERENCES

Exhibit A. CAPCOA, *CEQA and Climate Change* (2008)

Exhibit B. Robert Cervero, Road Expansion, Urban Growth, and Induced Travel: A Path Analysis (2001)

Exhibit C. Mark Hansen & Yuanlin Huang, Road Supply and Traffic in California Urban Areas (1997)

Exhibit D. Todd Litman, Victoria Transport Policy Institute, Smart Congestion Reductions: Reevaluating the Role of Highway Expansion for Improving Urban Transportation (February 2, 2010)

Exhibit E.	Todd Litman, Smart Congestion Reductions II: Reevaluating the Role of Public Transit for Improving Urban Transportation, Victoria Transport Policy Institute (September 9, 2010)
Exhibit F.	Robert B. Noland & William A. Cowart, Analysis of Metropolitan Highway Capacity and the Growth in Vehicle Miles of Travel (2000)
Exhibit G.	Robert B. Noland, Relationship Between Highway Capacity and Induced Travel, 35 Transportation Research 47 (2001).
Exhibit H.	Sightline Institute, "Increases in Greenhouse-gas Emissions From Highway-widening Projects," October 2007
Exhibit I.	SCAQMD, Boiler Protocol (2010)

O-7-1

Refer to responses to comments O-7-2 through O-7-14 below, which respond to the comments summarized in comment O-7-1 that are provided in detail in the comments provided on pages 2 through 19 of this comment letter.

A greenhouse gas (GHG) emissions analysis was performed in accordance with CEQA requirements. That analysis is provided in Section 4.3, Climate Change, on page 4-43 in the EIR/EIS.

Chapter 4.0, California Environmental Quality Act Evaluation, starting on page 4-1 in the EIR/EIS, provides a detailed analysis of the project impacts under CEQA, including assessment of the significance of those impacts. The comment asserts that the "...Project would have many significant impacts..."

As shown in Section 4.2.3, Significant Environmental Effects of the Project, the project will result in significant adverse impacts under CEQA related to the following environmental parameters that can be mitigated to below a level of significance under CEQA: aesthetics, biological resources, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, utility and service systems, land use and planning, population and housing, noise, public services, and transportation/traffic. As explained in detail in Section 4.2.3, those impacts would all be reduced to below a level of significance after implementation of the mitigation measures included in the project.

The standard under CEQA for assessing whether a project would or would not result in an unavoidable significant adverse impact is based on the impacts after implementation of mitigation. As shown in Section 4.2.4, Unavoidable Significant Environmental Effects of the Project, the project would result in unavoidable adverse impacts after mitigation in only four categories: short- and long-term noise, permanent impacts to oak woodland habitat, cumulative impacts, and adverse effects to human beings (as a result of the other significant unavoidable adverse impacts).

Refer also to Section O.5.4.3, Recirculation, in Section O.5.4, Common Response Related to the Environmental Process and Schedule, on page O-14, for discussion regarding why RCTC and the Department did not prepare or circulate a revised Draft EIR/EIS because such recirculation was not required under either CEQA or NEPA.

O-7-2

The comments provided in this letter regarding induced growth arising from capacity increases on highways do not provide conclusive evidence that growth observed in the cited studies is a direct result of increased capacity. Accepted modeling procedures were used to project expected traffic growth. The model projections were based on SCAG approved population and employment estimates. In addition, refer to Section 3.2, Growth, starting on page 3.2-1 in the EIR/EIS, which provides analysis indicating that the Build Alternatives will not result in growth-inducing impacts. As a result, no analysis of induced growth or induced travel demand is necessary.

O-7-3

Refer to Section O.5.7, Common Response Related to Alternatives, on page O-30 in Section O.5, Common Responses. That section summarizes the transit alternatives considered in the SR-91 corridor and acknowledges that those types of transit improvements are needed in addition to the SR-91 CIP to meet the mobility needs in this corridor. Further, the SR-91 CIP and the transit alternatives are consistent and do not conflict with each other. The SR-91 Implementation Plan for 2011, approved by the RCTC and OCTA, provides implementation dates for the public transportation improvements/enhancements in the SR-91 CIP corridor study limits.

O-7-4

Section 3.14, Air Quality, starting on page 3.14-1 in the EIR/EIS, Section 4.3, Climate Change, starting on page 4-43 in the EIR/EIS, and the *Final Air Quality Assessment Report* quantify the project effects on regional GHG emissions and qualitatively discuss the short-term construction impacts.

The air quality analysis was prepared using Department-adopted protocols and guidance (Department SER, EIR/EIS Annotated Outline, July 2011). The Department has not adopted the SCAQMD thresholds or any other numeric thresholds for determining CEQA significance. The analysis determined that the proposed project would not result in any long-term global climate change (GCC) impacts. Therefore, no mitigation measures are required.

O-7-5

The climate change/GHG analysis in the EIR/EIS was prepared following the Department SER guidelines as noted in response to comment O-7-4, above. Nonetheless, additional quantitative analysis of construction emissions was prepared using the SMAQMD emissions model. The results of that analysis are provided starting on page 4-47 of Chapter 4.0. The construction emissions would be mitigated

as discussed in Section 4.4, Mitigation Measures for Significant Impacts Under CEQA, on page 4-61 in the EIR/EIS. The CO_2 emissions generated during construction are summarized in Table 4.1 on page 4-48 in the EIR/EIS.

Table 4.2 on page 4-51 in the EIR/EIS lists the GHG emissions in the SR-91 area under Baseline/Existing (2007), 2015, and 2035 conditions. Section 4.3.1.5 on page 4-55 of the EIR/EIS states that the CO_2 emissions are projected to increase over existing levels in both the No Build and Build conditions. However, as shown in Table 4.3, when compared to the No Build conditions, the proposed project would reduce regional GHG emissions by 180 to 360 tons per day (tpd). Therefore, the proposed project would not contribute to a long-term increase in GHG emissions. The SR-91 CIP would not have any impact on long-term weather, drought, or sea level change. Section 4.3.1.7, Adaptation Strategies, on page 4-57 in the EIR/EIS evaluates the potential effect of the proposed project on sea level rise.

O-7-6

The CO_2 emissions analysis, discussed in Section 4.3, Air Quality, in the EIR/EIS, included existing, future no build, and future build conditions. Table 4.2 on page 4-53 in the EIR/EIS lists the existing GHG emissions in the SR-91 area. Section 4.3.1.5 on page 4-55 of the EIR/EIS states that the CO_2 emissions are projected to increase over existing levels in both the No Build and Build conditions.When the 2035 GHG emissions are compared to the existing conditions, there is a 3,000 tpd increase in regional GHG emissions. The referenced 3,000 tpd increase in CO_2 is due to regional growth that is independent of the project and that would, therefore, occur with or without the project. As a result, that increase will be the same under the future with and without project conditions. The 0.9 to 4.4 percent decrease in regional emissions, listed in Table 4.2, between the No Build and Build conditions demonstrates that the proposed project would not contribute to a long-term increase in GHG emissions.

O-7-7

The traffic analysis prepared for the SR-91 CIP evaluated the effect that the proposed project would have on regional VMT and vehicle hours traveled (VHT) under the Baseline/Existing (2007), 2015, and 2035 conditions. GHG emissions were calculated for the region under with and without project conditions using that traffic data. When the 2035 GHG emissions are compared to the existing conditions, there is a 3,000 tpd increase in regional GHG emissions. The referenced 3,000 tpd increase in CO_2 is due to regional growth that is independent of the project and that would, therefore, occur with or without the project. As a result, that increase will be the same under the future

with and without project conditions. It was determined that the proposed Build Alternatives would reduce the long-term GHG emissions compared to the No Build conditions. This comment asserts that, over a 50-year period, a highway widening project will increase CO_2 emissions by 100,000 tons per mile of new highway lane by encouraging growth. Refer to response to comment R-5-5 and to Section 3.2, Growth, in the EIR/EIS, which indicate the SR-91 CIP is not expected to encourage regional growth. Therefore, the additional lanes built by the proposed project would not result in a long-term increase in GHG emissions. Table 4.2 on page 4-51 in the EIR/EIS lists the existing GHG emissions in the SR-91 area. As shown on that table, in 2035 the proposed project would reduce the regional CO_2 emissions by 180 to 360 tpd or 65,000 to 130,000 tons per year when compared to the 2035 No Build conditions. Therefore, the proposed project would not contribute to a long-term increase in GHG emissions.

O-7-8

Refer to response to comment O-7-5, above. The EIR/EIS did not quantify the lifecycle GHG emissions. Lifecycle emissions associated with the manufacture of the building materials are the responsibility of the manufacturer (e.g., the cement plants and metal refineries).

According to the Center for Climate and Energy Solutions,[1] the incomplete combustion of fossil fuels, primarily from diesel vehicles, is the only transportation-related source of black carbon. As shown in Tables 3.14.20 through 3.14.24 starting on page 3.14-35 in the EIR/EIS, the proposed project would substantially reduce the emissions of diesel particulates in the project area. Diesel particulate matter was used as a surrogate for the analysis of black carbon. Therefore, as the project would decrease the regional diesel exhaust emissions it would also decrease the emissions of black carbon, and the impact of black carbon from the project on GCC would be less than significant under CEQA.

O-7-9

Refer to response to comment O-7-5, above. Because the SR-91 CIP would not result in adverse impacts related to GHG, no measures addressing that type of impact are required. A number of detailed measures are proposed for implementation during project construction to address short-term air quality emissions. Refer to Measures

[1] http://www.c2es.org/global-warming-basics/blackcarbon-factsheet.

SC-1 through SC-5 in Section 3.14.4.1, Standard Conditions, starting on page 3.14-39 in the EIR/EIS.

O-7-10

This comment raises specific issues regarding the alternatives considered in the EIR/EIS as follows:

- *"...the document purports to identify four alternatives, these alternatives are so similar that they become identical for purposes of environmental review."*

  The EIR/EIS does not identify "four alternatives." Refer to Section 2.1, Project Description, on page 2-1 in the EIR/EIS, which clearly indicates that two Build Alternatives (1 and 2) are considered in the EIR/EIS. Refer to Section 2.3.4, Phasing Plans for the Build Alternatives, on page 2-85 which describes possible phasing of the construction of the improvements included in Alternatives 1 and 2. That phasing discussion does not present the individual phases as separate alternatives. As a result, as documented throughout the EIR/EIS, Alternatives 1 and 2 are the two Build Alternatives evaluated in the EIR/EIS; the phasing of the improvements in those Alternatives is discussed when that phasing could result in the project impacts occurring in a specific phase so the reader understands the implications and impacts of phased implementation of Alternatives 1 and 2 with the design variations discussed in Chapter 2, Project Alternatives.

  NEPA requires that an EIS evaluate feasible alternatives that meet the defined project purpose and need and also a no action alternative. CEQA requires that an EIR evaluate a range of reasonable and feasible alternatives that would meet most of the basic objectives of the project, avoid or reduce impacts of the project, and also include a no project alternative. Alternatives 1 and 2 satisfy the requirements of NEPA and CEQA related to the range of alternatives because although they each provide the same number of GP lanes, the HOV facilities operate differently under the two Build Alternatives. They also meet the defined purpose and need for the project.

  Refer to the following sections in the EIR/EIS for additional discussion regarding the alternatives evaluated in the EIR/EIS and other alternatives considered but not evaluated in detail in the EIR/EIS:

  - Section 2.3, Range of Alternatives, starting on page 2-7, includes detailed descriptions of the two Build Alternatives and the No Build Alternative.

- Section 2.3.5, Transportation Systems Management and Traffic Demand Management, starting on page 2-120, describes these and explains why they are not included in the Build Alternatives or evaluated in the EIR/EIS.
- Section 2.3.5.3, Major Investment Study Alternatives, starting on page 2-122 explains the other corridors studied in the MIS and why they are not evaluated in the EIR/EIS.
- Section 2.3.6, No Build Alternative, starting on page 2-123, describes the No Build Alternative evaluated in the EIR/EIS.
- Table 2.36, Comparison of the Alternatives, on page 2-125, provides a comparison of the Build and No Build Alternatives evaluated in the EIR/EIS.
- Section 2.3.7.1, Identification of the Preferred Alternative, starting on page 2-124, explains the process used to identify Alternative 2f as the Preferred Alternative.
- Section 2.3.8, Alternatives Considered but Eliminated from Further Discussion Prior to the Draft Environmental Document, starting on page 2-140, describes a range of alternatives considered but not carried forward for evaluation in the Draft EIR/EIS because they would not operate as effectively as the Build Alternatives, were more costly than Alternative 1 without providing the same level of benefits as Alternative 2, would incur greater operational costs and activities to operate the facility, were inconsistent with the MIS recommendations, would result in greater environmental impacts including greater right-of-way needs, and other reasons as detailed in Section 2.3.8.

- *"...the DEIR/S' perfunctory comparative analysis of the Project alternatives fails to adequately distinguish the environmental impacts of each option, to the extent there are differences."*

  Refer to Table S.3, Summary of Impacts for the No Build Alternative and Impacts with Differences in Impacts Between Alternatives 1 and 2 (starting on page S-27), and Table S.4, Summary of Impacts for the No Build Alternative and Impacts with No Substantial Difference Between Alternatives 1 and 2 (starting on page S-41) in the EIR/EIS, which clearly distinguish those impacts where there is a difference between Alternatives 1 and 2 (Table S.3) and among the design options in those Alternatives, and where there is only a minor or no difference between Alternatives 1 and 2 (Table S.4). It is not unreasonable to expect that the two Build Alternatives would often result in similar impacts because they both propose improvements in the same freeway corridor. Nonetheless, the

improvements they propose vary substantially, particularly in relation to the differences in the HOV lane/tolled express lane features.

- *"Finally, because none of the proposed alternatives would come close to meeting the Project's objectives, the entire alternatives analysis is ultimately meaningless."*

  As described in Section 1.2, Purpose of the Project, on page 1-11 in the EIR/EIS, the proposed project is intended to achieve the following specific purposes:

  1. Improve the vehicle, person, and goods movement within the SR-91 corridor to more effectively serve existing and future travel demand between and within Riverside and Orange Counties.
  2. Provide improvements along the SR-91 and I-15 transportation corridors as well as to related local roads, and to reduce diversion of regional traffic from the freeways into the surrounding communities.

  As discussed in detail in Chapter 2, Project Alternatives, in the EIR/EIS Alternatives 1 and 2 both propose substantial improvements on SR-91 and I-15, including GP lanes, HOV or tolled express lanes, HOV/tolled express lane connectors between SR-91 and I-15, and improvements at most interchanges with local streets. As documented in detail in Section 3.6, Traffic and Transportation/ Pedestrian and Bicycle Facilities, in the EIR/EIS the project segments of SR-91 and I-15 perform better under Alternatives 1 and 2 than under the No Build Alternative, and the Build Alternatives are able to move more vehicles in these corridors than under the No Build Alternative. As a result, RCTC and the Department have determined that Alternatives 1 and 2 both meet the defined project purposes and that the No Build Alternative does not meet those defined purposes.

In summary, RCTC and the Department have determined that the two Build Alternatives (with their design variations) described and evaluated in the EIR/EIS meet the intent of CEQA and NEPA related to the range and definition of alternatives for consideration in EIRs and EISs, respectively.

O-7-11

Refer to Section O.5.7, Common Response Related to Alternatives, on page O-30 in Section O.5, Common Responses, and to response to comment O-7-10, above, for

discussions regarding the range of alternatives considered in the SR-91 corridor in a number of planning studies prior to and including studies for the SR-91 CIP.

O-7-12

As discussed in Section 2.3.5, Transportation Systems Management and Transportation Demand Management, the SR-91 Build Alternatives include and are supportive of alternative travel modes including transit and ride sharing, specifically associated with the HOV/tolled express lanes in those alternatives. Transit improvements independent of the SR-91 CIP are planned in the SR-91 corridor between Riverside and Orange Counties as shown in Table 2.40. As described in Table 2.37, the Build Alternatives best meet the defined project purpose. Transit only improvements would not meet the project purpose. For those reasons, a transit only alternative was not evaluated in detail in the EIR/EIS.

O-7-13

Section 15126.6(f)(3) of the CEQA Guidelines specifies that EIRs do not need to evaluate speculative alternatives, as follows: "An EIR need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative. As a result, CEQA specifically allows the rejection of alternatives or analyses that are speculative. Any alternative that depends on substantive changes in land use densities and distributions is well outside the authority of RCTC or the Department to implement. Specifically, changes in land use densities and distributions would be the responsibility of the individual local agencies, and would likely include substantial modifications to the adopted General Plans in those local jurisdictions. Any local jurisdiction currently has the authority to modify its General Plan to include higher density and more centralized development, independent of any actions by RCTC, the Department, and/or any other local jurisdiction. However, there does not appear to be a trend toward higher density/more centralized land use planning in the project areas in Orange and Riverside Counties. Even if such an alternative were evaluated in this EIR/EIS, RCTC and the Department would be unable to implement that alternative and would have no authority to require local jurisdictions to amend their General Plans consistent with that alternative. As a result, this type of alternative is considered too speculative to consider as an alternative to the proposed project. For these reasons, an alternative based on substantive changes in land use densities was not considered in the EIR/EIS.

O-7-14

Refer to response to comment S-3-18, on page O-114 in this appendix, for discussion regarding reversible lanes.

As noted in the comment, imposing a toll on existing general-purpose lanes is not currently permitted. As a result, that type of alternative was not considered in the EIR/EIS.

The Council on Environmental Quality (CEQ) NEPA Regulations specifically state that an EIS shall "Rigorously explore and objectively evaluate all reasonable alternatives..." (NEPA Guidelines Section 1502.14, Alternatives including the proposed action). Federal courts have clearly stated that EISs do not have to evaluate alternatives that are of speculative feasibility (Natural Resources Defense Council v. Callaway, 524. F.2d (Second Circuit 1975)), that reasonable alternatives do not require a crystal ball inquiry, and that the alternatives must meet the rule of reason (Natural Resources Defense Council, Inc. v. Morton, 458 F.2d 827 (D.C. Circuit 1972)).

Section 15126.6 of the CEQA Guidelines specifies that an EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision-making and public participation. An EIR is not required to consider alternatives that are infeasible. Section 15126.6(f) provides that the range of alternatives considered be governed by a "rule of reason." Section 15126.6(f) (1) provides the following definition of feasibility: "Among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries..." Section 15126.6(f)(3) provides the following: "An EIR need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative."

The proposed conversion of existing free GP freeway travel lanes to toll lanes does not meet CEQA requirements for consideration as an alternative because this alternative is infeasible; current State law precludes the conversion of existing mixed-use free travel lanes to toll lanes. The imposition of tolls on existing travel lanes would require a change in state law. Because there is no current proposal to allow such conversion, the implementation of this type of alternative would be remote). Finally, the imposition of tolls on existing SR-91 travel lanes could result in additional environmental effects that have not and could not be analyzed without

speculation. Imposition of tolls could cause drivers to seek alternative routes that would minimize their toll exposure. For example, westbound motorists might seek to access SR-91 at Green River Drive (the last westbound surface street access before the point where a motorist reaches the segment between Green River Drive and SR-241 where no parallel routes exist), then exiting at Gypsum Canyon Road (where alternative routes are again available). Such an alternative would have potential indirect environmental effects, including impacts related to traffic, air quality, and noise, along the roads accessing and paralleling SR-91.

In summary, because such an alternative is inconsistent with current state law (i.e., the alternative is infeasible), the approval of such changes in State law are unlikely at this point (i.e., the alternative is remote), the requirements of any such conversion are unknown (i.e., the alternative is speculative), and that such an alternative could result in additional environmental effects that have not been considered, it was rejected from further consideration in the EIR/EIS.

O-8

SHUTE, MIHALY & WEINBERGER LLP

396 HAYES STREET, SAN FRANCISCO, CA 94102
T: 415 552-7272 F: 415 552-5816
www.smwlaw.com

GABRIEL M.B. ROSS
Attorney
ross@smwlaw.com

July 8, 2011

Mr. Aaron Burton
California Department of Transportation,
District 8
464 West Street, 6th Floor
San Bernardino, CA 92401

Re: State Route 91 Corridor Improvement Project Draft Environmental Impact Report/Environmental Impact Statement and Section 4(F) Evaluation

Dear Mr. Burton:

This firm represents Hills For Everyone on matters relating to the proposed construction of the State Route 91 Corridor Improvement Project ("SR-91 Project" or "Project"). On behalf of our clients, we respectfully submit these comments to help ensure that agency decision-makers fully comply with the California Environmental Quality Act ("CEQA"), Public Resources Code § 21000 *et seq.*, and the National Environmental Policy Act ("NEPA"), 42 U.S.C. § 4321 *et seq.*, with respect to the proposed Project. Our clients are deeply concerned about the far-ranging environmental impacts the Project may have on Chino Hills State Park ("CHSP" or "Park").

After carefully reviewing the SR-91 Draft Environmental Impact Report/Statement ("DEIR/S") for the Project, we have concluded that it fails in numerous respects to comply with the requirements of CEQA and NEPA. As described below, the DEIR/S violates these laws because it fails to adequately describe the Project and fails to analyze the significant environmental impacts of the Project or propose adequate mitigation measures to address those impacts. The Project, as described in the DEIR/S, also violates section 4(f) of the Department of Transportation Act, section 6(f) of the Land and Water Conservation Fund Act, and the California Public Parks Preservation Act.

O-8-1

The environmental impact report is "the heart of CEQA." *Laurel Heights Improvement Ass'n v. Regents of University of California*, 47 Cal. 3d 376, 392 (1988)

(citations omitted). It "is an environmental 'alarm bell' whose purpose it is to alert the public and its responsible officials to environmental changes before they have reached ecological points of no return. The EIR is also intended 'to demonstrate to an apprehensive citizenry that the agency has, in fact, analyzed and considered the ecological implications of its action.' Because the EIR must be certified or rejected by public officials, it is a document of accountability." *Id.* (citations omitted). Likewise, NEPA requires that federal agencies "consider every significant aspect of the environmental impact of a proposed action . . . [and] inform the public that [they have] indeed considered environmental concerns in [their] decision-making process[es]." *Earth Island Institute v. U.S. Forest Service*, 351 F.3d 1291, 1300 (9th Cir. 2003) (citations omitted). O-8-1

Where, as here, the environmental review document fails to fully and accurately inform decision-makers, and the public, of the environmental consequences of proposed actions, it does not satisfy the basic goals of either statute. *See* Pub. Res. Code § 21061 ("The purpose of an environmental impact report is to provide public agencies and the public in general with detailed information about the effect that a proposed project is likely to have on the environment; to list ways in which the significant effects of such a project might be minimized; and to indicate alternatives to such a project."); 40 C.F.R. § 1500.1(b) ("NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken.").

As a result of the DEIR/S' numerous and serious inadequacies, there can be no meaningful public review of the Project. The California Department of Transportation ("Caltrans") must revise and recirculate the DEIR/S in order to permit an adequate understanding of the environmental issues at stake. Further, Caltrans must develop feasible and prudent alternatives to using parklands that are protected under section 4(f) of the Department of Transportation Act, and must undertake further planning to minimize harm to any parkland that would be impacted. O-8-2 O-8-3

I. The DEIR/S' Flawed Project Description Does Not Permit Meaningful Public Review of the Project.

In order for an environmental document to adequately evaluate the environmental ramifications of a project, it must first provide a comprehensive description of the project itself. "An accurate, stable and finite project description is the *sine qua non* of an informative and legally sufficient EIR." *San Joaquin Raptor/Wildlife Rescue Center v. County of Stanislaus*, 27 Cal.App.4th 713, 730 (1994), quoting *County of Inyo v. City of Los Angeles*, 71 Cal.App.3d 185, 193 (1977). As a result, courts have found that, even if an EIR is adequate in all other respects, the use of a "truncated project concept" violates O-8-4

CEQA and mandates the conclusion that the lead agency did not proceed in a manner required by law. *San Joaquin Raptor*, 27 Cal.App.4th at 730. Furthermore, "[a]n accurate project description is necessary for an intelligent evaluation of the potential environmental effects of a proposed activity." *Id.* (citation omitted). Thus, an inaccurate or incomplete project description renders the analysis of significant environmental impacts inherently unreliable. While extensive detail is not necessary, the law mandates that EIRs should describe proposed projects with sufficient detail and accuracy to permit informed decision-making. *See* CEQA Guidelines, §15124 (requirements of an EIR). NEPA similarly requires an accurate and consistent project description in order to fulfill its purpose of facilitating informed decision-making. 43 U.S.C. § 4332(2)(C). As explained below, the SR-91 DEIR/S fails to meet this basic threshold. O-8-4

A. The DEIR/S Does Not Adequately Describe Project Components.

1. Design Standards.

Perhaps one of the most perplexing flaws in the DEIR/S' project description is the fact that the DEIR/S does not even clearly articulate the design standard for the Project itself. The document identifies the Project purpose as "[i]mprov[ing] the vehicle, person, and goods movement within the SR-91 corridor to more effectively serve existing and future travel demand between and within Riverside and Orange Counties" and "Provid[ing] improvements along the SR-91 and I-15 transportation corridors as well as to related local roads." DEIR/S at S-2. While the DEIR/S identifies the existing level of service ("LOS") for various Project segments (at 1-23), it does not identify the desirable operating condition or LOS that Caltrans intends to achieve upon implementation of the Project. In the absence of definitive, quantifiable objectives, it is not possible to measure the ability of the Project to meet its objectives or to effectively develop Project alternatives. O-8-5

2. Local Circulation and Access Projects.

According to the DEIR/S, implementation of the SR-91 Project would include some level of improvements to local roads. (*See* DEIR/S at S-5 referring to "collector-distributor roads" and "improved local connectivity."). The document does not, however, identify and describe the necessary changes in the local road system. This is a massive project spanning two separate freeways and the amount of associated local roadway work will likely be enormous. Consequently, these local roadway modifications are not trivial, speculative, or optional—they are *part of the Project*, and therefore must be included in the project description. *See San Joaquin Raptor*, 27 Cal. App 4th at 714-16 (holding EIR inadequate where project description failed to include sewer expansion which was O-8-6

"required element of the development project"). Moreover, like the Project itself, construction and operation of these roadway modifications will undoubtedly have environmental impacts. Unless the details of these roadway improvements are clearly identified and described, it is impossible to evaluate impacts from the whole of the Project.

O-8-6

Nor does the DEIR/S include the necessary details pertaining to the Project's drainage improvements. As the DEIR/S explains, the existing drainage system for SR-91 has been in place for many years, and in some places the system may be reaching the end of its expected service life. DEIR/S at 1-39. Repairing and/or replacing this system is \a part of the Project. *Id.* Despite this fact, neither Caltrans nor the Riverside County Transportation Commission ("RCTC") have identified the specific deficiencies in the existing drainage system or the structural integrity of the system. *Id.* Rather than fully investigate the locations of system failure and identify the appropriate corrective measures, the agencies propose to defer this important work to the design-build phase. *Id.*. Culvert repair or installation can result in, among other potentially significant impacts, the loss of sensitive habitat, including wetland and riparian areas. Until the DEIR/S identifies the location and nature of these important Project components, it is not possible to evaluate the associated environmental impacts.

O-8-7

B. The DEIR/S Improperly Segments the SR-91 Project From Other Related Actions.

Agencies may not improperly "segment" projects in order to avoid preparing an EIS or EIR; instead, they must consider related actions in a single document. *Thomas v. Peterson*, 753 F.2d 754, 758 (9th Cir. 1985); *Laurel Heights*, 47 Cal.3d. 376-395 (1988). "Not to require this would permit dividing a project into multiple 'actions,' each of which individually has an insignificant environmental impact, but which collectively have a substantial impact." *Thomas*, 753 F.2d at 758. The Council on Environmental Quality's NEPA regulations thus require agencies to consider "connected," "cumulative," and "similar" actions within a single EA or EIS. 40 C.F.R. § 1508.25; *Thomas*, 753 F.2d at 758-59. The use of the word "shall" in these regulations makes combined consideration of these three types of actions mandatory. These implementing regulations are mandatory and binding on federal agencies. *The Steamboaters v. FERC*, 759 F.2d 1382, 1393 n.4 (9th Cir. 1985). Similarly, CEQA regulations require that an EIR describe the entirety of a project, including reasonably foreseeable future actions that are part of a project, and must analyze those reasonably foreseeable actions. 14 Cal. Code Regs § 15378(a). As discussed below, at least five transportation projects proposed by Caltrans and/or RCTC meet the requirements for connected actions and therefore must be analyzed concurrently with the direct impacts of the SR-91 Project itself.

O-8-8

For purposes of NEPA, actions are "connected" if they are "interdependent parts of a larger action and depend on the larger action for their justification." 40 C.F.R. § 1508.25(a)(1). Where it would be "irrational, or at least unwise" to undertake one action without other actions, the actions are connected. *Save the Yaak*, 840 F.2d at 720 (holding that road construction and timber sales had "clear nexus" and were thus "connected actions," requiring expanded scope of review); *Thomas*, 753 F.2d at 759 (road and timber sales were "inextricably intertwined" where "[i]t is clear that the timber sales cannot proceed without a road, and the road would not be built but for the contemplated timber sales."). An agency should analyze the impacts from two or more similar projects together "when the best way to assess adequately the combined impacts of similar actions or reasonable alternatives to such actions is to treat them in a single impact statement." 40 C.F.R. § 1508.25(a)(3).

Under CEQA, an EIR need not include speculation about future environmental consequences of a project, but an "EIR must include an analysis of the environmental effects of future expansion or other action if: (1) it is a reasonably foreseeable consequence of the initial project; and (2) the future expansion or action will be significant in that it will likely change the scope or nature of the initial project or its environmental effect." *Laurel Heights*, 47 Cal.3d at 394-396. Under the *Laurel Heights* standard, "the facts of each case will determine whether and to what extent an EIR must analyze future expansion or other action." *Id.* at p. 396. However, there must be discussion "in at least general terms" of future activity in connection with a project, even if the project is contingent on uncertain occurrences. *Laurel Heights*, 47 Cal.3d at 398. *Laurel Heights* requires a project proponent to analyze future expansion and other such action in an EIR if there is "telling evidence" that the agency has either made decisions or formulated reasonably definite proposals as to expand a project in the future. *Id.* at 396-397.

O-8-8

From the SR-91 DEIR/S' text and maps, it is clear that several transportation projects are inextricably related to the SR-91 Project. These related projects include: (a) SR-71/SR-91 Interchange Improvement Project; (b) I-15 Corridor Improvement Project; (c) SR-241/SR-91 Direct Connectors; (d) SR-91 between SR-55 and SR-241; and (e) Future SR-91 Implementation Plan Improvements.[1] *See* DEIR/S at 2-8 and 2-101

[1] In addition, a sixth project, SR-91 Eastbound Lane Addition Project Between SR-241 and SR-71 is either under construction or construction has recently been completed (the SR-91 DEIR/S provides conflicting status reports). *See* DEIR/S at 2-8 and 2-105.

through 107. With the exception of the SR-91 between SR-55 and SR-241 project, all of these projects would be constructed within the SR-91 Project study area limits. *See Id.*, Figure 2-16 (Approved and In-Process Projects in the SR-91 CIP Area), and Appendix L2 Index. In fact, certain of the projects, including the SR-91 Eastbound Lane Addition Between SR-241 and SR-71, the I-15 Corridor Improvement Project and possibly the future SR-91 Implementation Plan Improvements, all call for increased capacity on the exact alignments as the proposed Project. *Id.* The SR-91 between SR-55 and SR-241 project would appear to be the westward continuation of the current Project. *Id.* O-8-8

Although the DEIR/S asserts that these projects would function independently (at 2-7), there is plenty of "telling evidence" regarding the intimate connection between these projects and the SR-91 Project. The DEIR/S, in fact, concedes that several of the projects "could affect the design of the [SR-91 Project]," and therefore may require design coordination. DEIR/S at 2-101. The DEIR/S further admits some of the projects would be constructed concurrently to minimize construction-related impacts to the traveling public. *Id.* at 2-7. Set forth below are the details of these related projects and their relationship to the SR-91 Project.

1. SR-71/SR-91 Interchange Improvement Project.

In November 2010, Caltrans released an initial study/mitigated negative declaration for the SR-91/SR-71 Interchange Improvement Project. *See* SR-91/SR-71 Interchange Improvement Project Initial Study and Proposed Mitigated Negative Declaration, attached as Exhibit A. This project would improve the SR-91/SR-71 interchange by constructing a new direct flyover connector from eastbound SR-91 to northbound SR-71. This interchange project is located within the boundaries of the SR-91 Project and includes, among other components, the restriping of SR-91 eastbound lanes. *Id.* at v. RCTC confirms that the interchange project is "part of a larger effort to improve mobility along the SR-91 Corridor in Riverside County and Orange County." *See* RCTC SR-91/SR-71 Interchange Improvement Project Information Sheet, attached as Exhibit B. RCTC's documentation also makes clear that the interchange project has goals almost identical to that of the SR-91 Project: "... this project is designed to reduce the congestion, enhance the safety of motorists, support the movement of goods, and improve mobility and connections between the two freeways and among the counties of Riverside, Orange and San Bernardino." *Id.*; *see also* RCTC SR-91/SR-71 Interchange Project Newsletter, attached as Exhibit C. O-8-9

2. I-15 Corridor Improvement Project.

The I-15 Corridor Improvement Project would add either high occupancy vehicle ("HOV") lanes or tolled express lanes and a general purpose lane on I-15 in each direction from SR-74 to SR-60 and from I-215 to SR-74. *See* I-15 Corridor Improvement Project Overview, attached as Exhibit D. A map of the I-15 Corridor Improvement Project confirms that the alignment of this project includes the SR-91 Project. *See* Project Map, attached as Exhibit E. RCTC's documentation also makes clear that the objectives of the I-15 Corridor Improvement Project are almost identical to the SR-91 Project objectives: to "reduce traffic delays and travel time" and to "provide capacity and congestion relief." *See* I-15 Corridor Improvement Project Overview Objectives, attached as Exhibit F. O-8-10

3. SR-241/SR-91 Direct Connectors.

The Orange County Transportation Agency ("OCTA") includes in its draft 2011 SR-91 Implementation Plan, the SR-241/SR-91 Express Lanes Connector. *See* draft 2011 SR-91 Implementation Plan, OCTA, attached as Exhibit G. This project, expected to be constructed in 2017, is located within the SR-91 Project's study area boundaries. As with the other related projects, the purpose of the Express Connector is to improve inter-county travel. O-8-11

4. SR-91 between SR-55 and SR-241.

OCTA includes in its draft 2011 SR-91 Implementation Plan, a project referred to as the "widen SR-91 Between SR-55 and SR-24." *See* Exhibit G. This project would appear to be the westward extension of the SR-91 Project. It would add a fifth general purpose lane in each direction along SR-91 and is scheduled for construction in 2013. *Id.* O-8-12

5. Future SR-91 Implementation Plan Improvements

OCTA is scheduling additional improvements to the SR-91 corridor. This project, which is likely referred to as "Ultimate CIP: Widen SR-91 by One General Plan Lane in Each Direction from SR-241 to SR-71, I-15/SR-91 Direct North Connector, Extension of Express Lanes on I-15 and SR-91 Improvements East of I-15" would be constructed along the same alignment as the current SR-91 Project. *See* Exhibit G. O-8-13

Taken together, there is clearly compelling evidence that these projects are intimately connected to the SR-91 Project. Accordingly, under CEQA and NEPA, Caltrans may not segment its study of the impacts of the other projects from the impacts of the SR-91 Project: they are actually one, single project. As such, the project described O-8-14

and analyzed in the DEIR/S should include each of these other projects, which are integral parts of the same overall project.

By omitting the other subsidiary projects, the DEIR/S vastly underestimates all of the Project's impacts. Moreover, such segmentation would unlawfully foreclose Caltrans' ability to analyze an adequate range of alternatives for the interchange and the connectors. The federal Court of Appeals for the Seventh Circuit held in *Swain v. Brinegar*, 542 F.2d 364 (7th Cir. 1976) (en banc) that the "division of a highway into segments such as here 'precludes meaningful compliance with the statutory mandate to assess in detail environmental impacts, as each segment that is approved limits the alternatives for each succeeding segment.'" (Internal citation omitted.) *See also San Joaquin Raptor/Wildlife Rescue Center*, 27 Cal. App. 4th 731-35 (two interdependent projects must be analyzed in same EIR). O-8-14

Finally, under CEQA, even if the other projects were not integral parts of the SR-91 Project, Caltrans would still be required to discuss these other projects in far more detail than it does. *Laurel Heights I*, 47 Cal.3d at 398 (requiring discussion "in at least general terms" of future activity in connection with a project, even if the project is contingent on uncertain occurrences). Under these circumstances, CEQA and NEPA requires that Caltrans' environmental review be revised to include all highway projects planned for the SR-91 and SR-15 corridors.

The DEIR/S thus fails to provide an "accurate project description" so that there can be an "intelligent evaluation of the potential environmental effects of a proposed activity." *San Joaquin Raptor*, 27 Cal.App.4th at 730.

II. The DEIR/S' Analysis of and Mitigation for the Impacts of the Proposed Project Are Inadequate.

CEQA requires that an EIR be detailed, complete, and reflect a good faith effort at full disclosure. CEQA Guidelines § 15151. The document should provide a sufficient degree of analysis to inform the public about the proposed project's adverse environmental impacts and to allow decision-makers to make intelligent judgments. *Id.* Consistent with this requirement, the information regarding the project's impacts must be "painstakingly ferreted out." *Environmental Planning and Information Council of Western El Dorado County v. County of El Dorado*, 131 Cal.App.3d 350, 357 (1982). O-8-15

Meaningful analysis of impacts effectuates one of CEQA's and NEPA's fundamental purposes: to "inform the public and responsible officials of the environmental consequences of their decisions before they are made." *Laurel Heights II*,

6 Cal.4th at 1123. Similarly, "NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken. The information must be of high quality." 40 C.F.R. § 1500.1 (b). To accomplish this purpose, an EIR must contain facts and analysis, not just an agency's bare conclusions. *Santiago County Water Dist. v. County of Orange*, 118 Cal.App.3d 818, 831 (1990). An agency may not defer its assessment of important environmental impacts until after the project is approved. *Sundstrom*, 202 Cal.App.3d at 306-07. As documented below, the DEIR/S fails to identify, analyze, or support with substantial evidence its conclusions regarding the Project's significant environmental impacts. Moreover, where impacts are identified as significant, the DEIR/S fails to evaluate how adverse these impacts will be. *Santiago County Water Dist.*, 118 Cal.App.3d at 831.

O-8-15

"Once a significant effect has been identified, the EIR must propose and describe mitigation measures that will minimize the significant environmental effects that the EIR has identified." *Napa Citizens for Honest Gov't v. Napa County Bd. of Supervisors*, 91 Cal.App.4th 342, 360 (2001); *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332 (1989) (requirement that agency discuss mitigation measures is implicit in "NEPA's demand" and CEQA regulations). CEQA requires that agencies "mitigate or avoid the significant effects on the environment of projects that it carries out or approves whenever it is feasible to do so." Pub. Resources Code § 21002.1(b). Mitigation of a project's significant environmental impacts is one of the "most important" functions of CEQA. *Sierra Club v. Gilroy City Council*, 222 Cal.App.3d 30, 41 (1990). Therefore, it is the "policy of the state that public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects." Pub. Res. Code § 21002; *Laurel Heights Improvement Ass'n v. Regents*, 47 Cal.3d 376, 400-401 (1988) (*Laurel Heights I*).

A. The DEIR/S' Analysis of and Mitigation for the Project's Impacts on Biological Resources are Inadequate.

O-8-16

The DEIR/S' treatment of impacts to biological resources suffers from substantial deficiencies and fails to meet CEQA's and NEPA's well-established standards. The document's analysis both understates the severity of the potential harm to biological resources within and adjacent to the proposed Project's right-of-way, and neglects to identify sufficient mitigation to minimize these impacts. Given that analysis and mitigation of such impacts are at the heart of CEQA and NEPA, the DEIR/S will not comply with these laws until these serious deficiencies are remedied. *See Sundstrom v. County of Mendocino*, 202 Cal.App.3d 296, 311 (1988) ("CEQA places the burden of

environmental investigation on government rather than the public."); *see also Natural Res. Defense Council v. U.S. Forest Service,* 421 F.3d 797 (9th Cir. 2005). The most egregious deficiencies in the DEIR/S' analysis of biological resources are discussed below.

O-8-16

1. The DEIR/S Fails to Adequately Describe the Project's Biological Setting.

An EIR's description of a project's environmental setting plays a critical part in all of the subsequent parts of the EIR because it provides "the baseline physical conditions by which a lead agency determines whether an impact is significant." CEQA Guidelines § 15125(a). "Knowledge of the regional setting is critical to the assessment of environmental impacts." CEQA Guidelines § 15125 (c). Similarly, under NEPA, an EIS must "describe the environment of the area(s) to be affected or created by the alternatives under consideration." 40 C.F.R. §1502.15. Here, the DEIR/S concedes that the surveys of the Project's biological survey area ("BSA") were restricted due to lack of access permission: "Where access was not available (e.g., no permission granted by property owners, inaccessibly steep slopes, or locked gate), areas were analyzed from accessible areas with the aid of binoculars." Natural Environment Study ("NES") at 35. Surveys of the BSA using binoculars rather than on-site inspection by foot are likely to provide inadequate observation of species and cannot support the DEIR/S's conclusions. Moreover, the DEIR/S identifies neither how much of the survey area was merely surveyed with binoculars, nor the specific locations that were subject ot this inadequate data-gathering procedure. As a result of these survey constraints, the DEIR/S' preparers should have erred on the side of caution when determining whether the proposed Project would adversely impact sensitive resources. In several instances, however, they failed to take this cautionary approach. For example, the United States Fish & Wildlife Service ("USFWS") has designated critical habitat for Braunton's milk-vetch, a federally endangered species, in Coal Canyon. DEIR/S at 3.21-3. In fact, a known population of Braunton's milk-vetch has been identified along SR-91 *within the BSA. Id.* at 3.21-6 and NES at 99.

O-8-17

Despite the presence of critical habitat along the Project alignment, the DEIR/S inappropriately and incorrectly assumes this endangered species is absent from the BSA, because surveys in the area were negative. *Id.* at 3.21-6, 3.21-9 and NES at 99. Yet, even the experts conducting the surveys concede that it is difficult to determine the complete distribution of Braunton's milk-vetch. *Id.* Binocular surveys cannot provide sufficient evidence of that distribution.

O-8-18

Clearly, Braunton's milk-vetch could occur within the Project's study area, yet the DEIR/S concludes that the Project would not impact this species. The document relies on the disingenuous claim that critical habitat for this species is located outside the "disturbance limits" for the Project. DEIR/S at 3.21-9. Yet, as the DEIR/S explains, the very purpose of the BSA is intended to establish the conservative boundaries of the Project areas that would be directly affected by the Project:

> The study area for this analysis is the BSA. The BSA for the proposed project was determined by incorporating electronic data provided by the design engineer into a GIS layout, which included areas of potential direct effect. The BSA is shown on Figure 3.17-1. The limits of the BSA were extended beyond the maximum extent of potential direct effect where necessary to identify sensitive biological resources within and adjacent to the project area. In general, this provided for a survey area that was larger than the area of potential direct effect. The BSA was then used as the study limit boundaries for all biological studies conducted during 2008 and 2009

DEIR/S at 3.17-1.

O-8-18

The DEIR/S cannot have it both ways. It cannot establish a study area of impact and then assume – when a species' habitat occurs in that area – that the species would not be impacted. Moreover, given the imprecise nature of the surveys, the fact that the Project will traverse habitat for an *endangered* plant species, and the unclear distribution of Braunton's milk-vetch, the DEIR/S certainly should have concluded impacts to this species would be significant.

O-8-19

This approach is consistent with CEQA's requirement that special emphasis "be placed on environmental resources that are rare or unique to that region and would be affected by the project." Guidelines § 15125(b). Here, the DEIR/S fails to place special emphasis on Braunton's milk-vetch. For the reasons described above, the Project has the potential to significantly impact this endangered species. Consequently, the DEIR/S should be revised to provide a thorough analysis of these impacts and identify mitigation if the impacts are deemed to be significant.

2. The DEIR/S' Analysis of the Project's Impacts on Numerous Sensitive Species is Incomplete and Conclusory.

Consistent with the DEIR/S's misleading approach discussed above in the context of Braunton's milk-vetch, the document repeatedly seeks to minimize other significant impacts associated with the proposed Project. For example, the DEIR/S fails to adequately analyze or mitigate impacts to the Least Bell's Vireo, a federal and state endangered species. DEIR/S at 3.21-5.[2] The document asserts that even with the implementation of avoidance and minimization measures prior to and during construction, "potential impacts to occupied habitat may occur." *Id.* at 3.21-11. The DEIR/S states that Section 7 Consultation under the Federal Endangered Species Act would be required (at 3.21-12), but it never bothers to explain what additional mitigation measures would or could be implemented within the Section 7 process that would further minimize impacts to this endangered species. O-8-20

The document then suggests that Least Bell's Vireo' impacts would be mitigated through the Project's consistency with the Western Riverside County Multiple Species Habitat Conservation Plan ("MSHCP"). *Id.* At 3.21-17. Yet the DEIR fails to describe how the Project would be consistent with the MSHCP, nor does it identify the specific mitigation measures that would be implemented in association with the MSHCP. Further, Orange County is not a signatory to the MSHCP, and the DEIR/S fails to describe how consistency with the plan will mitigate impacts to the portion of the Project in Orange County. The DEIR/S must be revised to clarify whether impacts to Least Bell's Vireo would be significant. If so, the document must identify appropriate mitigation measures or Project alternatives capable of minimizing or eliminating the impact altogether.

The DEIR/S fares no better in its analysis of indirect impacts to listed and non-listed species that may rely on habitat in areas adjacent to the Project footprint. The document vaguely references potential impacts relating to habitat loss, fragmentation and edge effects such as noise, vibration, dust, and human presence during construction could potentially impact these species. DEIR/S at 3.20-10 through 13. But, other than a passing reference to the burrowing owl, the document never specifically identifies the species that could be impacted. *Id.* Nor does it describe the actual and specific O-8-21

[2] This is particularly important, as state wildlife scientists have stated that there has been an explosion of Lease Bell's Vireos this season. Given this new information, there should be new studies as part of the DEIR/S.

consequences to each of the potentially affected species from these various effects (e.g., the number of individuals of each species that will be affected or the degree to which the populations will be impacted). Instead, the DEIR/S merely asserts, absent evidence or analysis, that "because of the limited amount of habitat involved and its relatively linear configuration, project' effects on Western Riverside County MSHCP-covered species are considered nominal and are adequately addressed by the Western Riverside County MSHCP." DEIR/S at 3.20-11. This conclusion, however, is pure speculation; there is no data or analysis accompanying it.

O-8-21

Moreover, the assertion that a linear configuration of the Project somehow eliminates the potential for biological impacts defies credulity. If this were true, no roadway project or roadway expansion project would ever impact biological resources. There are over 400 acres of Coastal sage scrub and chaparral habitats, and about 160 acres of riparian and woodland habitats in the Project's study area. NES at 50, Table 3.2. Clearly, the Project has the potential to impact habitat and species within this area. Nor can the document rely on a vague reference to the MSHCP as a justification for not analyzing the Project's impacts. The MSHCP does not excuse Caltrans from CEQA's mandate that it fully disclose the impacts to rare and common plant and animal species. CEQA Guidelines § 15065 (a)(1).

O-8-22

The DEIR/S's treatment of impacts to the Santa Ana Sucker, a federally threatened species, is equally cursory. The document explains that, due to changes in the water quality caused by the Project, this species could be impacted. DEIR/S at 3.21-4 and 3.21-15. Yet, rather than describe this impact, and the effect on this species, the DEIR/S simply looks to compliance with NPDES permit requirements for discharge. *Id.* CEQA requires more than this cursory approach to impact analysis and mitigation. When a lead agency relies on measures to find that project impacts will be reduced to a level of insignificance, there must be substantial evidence in the record demonstrating that the measures are feasible and will be effective. *Sacramento Old City Assn. v. City Council of Sacramento,* 229 Cal.App.3d 1011, 1027 (1991); *Kings County Farm Bureau v. City of Hanford,* 221 Cal.App.3d 692, 726-29 (1990). There is no such evidence in the DEIR/S. For example, a stormwater treatment measure necessary to reduce impacts to a level of insignificance may not be practicable, and thus may not be required under the regulations the EIR/S relies upon. Additionally, while the DEIR/S relies extensively on the use of best management practices ("BMP") to reduce the Project's water quality impacts (at 3.10-32 and 33), all BMPs are not created equal. *See* Exhibit H, Low Impact Development: A Literature Review, describing cutting edge stormwater treatment measures. Moreover, the DEIR/S contains no evidence that NPDES standards are

O-8-23

sufficient to protect the Santa Ana Sucker. Consequently, the DEIR/S conclusion that impacts to the Santa Ana Sucker would be less than significant cannot be sustained. O-8-23

Finally the DEIR/S acknowledges that the Project would result in the loss of 5-10 Southern California black walnut trees and 50 Coulter's matilija poppy plants. DEIR/S at 3.19-12. Each of these are covered by the MSHCP and are therefore, by the DEIR/S's own standards, a special-status species. *Id.* The DEIR/S erroneously concludes that the Project's impact on these species would be negligible because "they have no legal or regulatory protection beyond the level afforded by the Western Riverside County MSHCP or a CNPS watch list and because the few individuals potentially removed under Alternatives 1 and 2 are not in any Western Riverside County MSHCP conservation areas." DEIR/S at 3.19-12. Here too, the document provides no evidence to support its conclusion that impacts to these species would be less than significant. These species meet the definition of special-status species; impacts to them must be analyzed at the same level of detail as other special-status species. Moreover, since the species appear to be afforded limited protection under the MSHCP or CNPS, it would seem that mitigation for these impacts would be more, not less, important. O-8-24

Finally, the DEIR/S acknowledges that these species warrant special consideration under CEQA because they are considered part of coastal sage scrub natural communities (NES at 106, 107), yet the CEQA section of the DEIR/S provides no indication that these species have received this special consideration. (*See* DEIR/S at 4-12 simply repeating the language that the species are afforded no special protection under the MSHCP or CNPS). In violation of CEQA, the document fails to evaluate and mitigate the impacts on these California special plants. Guidelines § 15125(b). O-8-25

3. The DEIR/S Fails to Meet CEQA and NEPA's Requirements for Analysis of Cumulative Biological Resources Impacts.

NEPA and CEQA require agencies to prepare a cumulative impacts analysis in evaluating the impact of a proposed project. The importance of the cumulative impacts analysis has been repeatedly underscored by both federal and state courts. NEPA defines a cumulative impact as: O-8-26

> the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from

> individually minor but collectively significant actions taking place over a period of time.

40 C.F.R. § 1508.7; *see also* 40 C.F.R. §§ 1508.25(a)(2), 1508.27(b)(7). The Ninth Circuit has held that "where several actions have a cumulative or synergistic environmental effect, this consequence must be considered in an EIS." *City of Tenakee Springs v. Cough*, 915 F.2d 1308, 1312 (9th Cir. 1990). The federal courts further require the cumulative impacts analysis to be detailed and supported with empirical data. *See, e.g., Natural Resources Defense Council v. Hodel*, 865 F.2d 288, 299-300 (D.C. Cir. 1988).

Likewise, CEQA requires a discussion of the environmental impacts, both direct and indirect, of the proposed project in combination with all "closely related past, present and reasonably foreseeable probable future projects." Guidelines § 15355(b); *see also* Cal. Pub. Res. Code § 21083(b); Guidelines §§ 15021(a)(2), 15130(a), 15358. The discussion of cumulative impacts must "reflect the severity of the impacts and the likelihood of their occurrence" (Guidelines § 15130(b)), and must document its analysis with references to specific scientific and empirical evidence. *Mountain Lion Coalition v, California Fish & Game Comm'n*, 214 Cal.App.3d 1043, 1047, 1052 (1989). O-8-26

Here the DEIR/S' analysis of cumulative impacts to biological resources is entirely deficient. The document conducts the first step of the analysis: identification of the transportation, land use, and public utility projects in the vicinity of the proposed Project. *See* DEIR Chapter 3.25. Yet, it fails to conduct the second step: the actual analysis of the combined effects of these anticipated projects. It sidesteps the necessary analysis claiming that "detailed environmental analyses were not available for many of the cumulative projects." DEIR/S at 3.25-31 and Cumulative Impacts Analysis Report at 5-14 and 5-20. It then simply concludes that "[b]ecause many of those projects are in the same approximate geographic area as the SR-91 CIP, it is reasonable to assume that they could impact the same types of natural communities as the SR-91 CIP Build Alternatives." *Id.*

Caltrans cannot evade its obligation to conduct an analysis of cumulative environmental impacts. As explained by the Court in *Laurel Heights I*, 47 Cal.3d at 399 (1988) (*Laurel Heights I*), "[w]e find no authority that exempts an agency from complying with the law, environmental or otherwise, merely because the agency's task may be difficult." *Environmental Planning and Information Council of Western El Dorado County v. County of El Dorado*, 131 Cal.App.3d 350, 357 (1982) (information regarding the project's impacts must be "painstakingly ferreted out.). *Earth Island Institute v. U.S. Forest Service*, 351 F.3d 1291, 1300 (9th Cir. 2003) (citations omitted)

(federal agencies must "consider every significant aspect of the environmental impact of a proposed action . . . [and] inform the public that [they have] indeed considered environmental concerns in [their] decision-making process[es].").

O-8-26

The SR-91 Project would result in a host of significant impacts to species and habitat, yet the DEIR/S fails to address these effects under cumulative conditions. Many past and ongoing projects that have also affected, or are affecting, CHSP and other reserves of habitat in the area. For example, Metropolitan Water District recently constructed a secondary access road to its Diemer Water Filtration Plant in Yorba Linda, that goes through, and impacts, CHSP. *See* http://www.hillsforeveryone.org/projects/mwd-road.html. The Santa Ana River Flood Control Project Reach 9, Phase 2A will also impact CHSP. *See* http://smmc.ca.gov/pdf/attachment2651_Comment%20Letter.pdf. Likewise, the Santa Ana River Interceptor Relocation Project will impact the aea around the Santa Ana River Trail and Coal Canyon. *See* http://www.ocflood.com/SARI_home.aspx. In addition, there are numerous other developments and projects, including the proposed Mountain Park housing development and the Army Corps of Engineers Green River HOA bank protection project, Green River mobile home park bank protection project, Green River Golf Course bank protection, and protection of the Santa Ana River Interceptor line on the north side of Green River HOA at Aliso Creek. The cumulative impacts of these projects in conjunction with this Project must be analyzed.. *See City of Carmel-by-the-Sea v. U.S. Dept. of Transp.*, 123 F.3d 1142, 1160 (9th Cir. 1997) (EIS insufficient when it described past projects "with generalities insufficient to permit adequate review of their cumulative impact"); CEQA Guidelines § 15130, 15355.

O-8-27

Analysis of cumulative impacts to the Coal Canyon undercrossing will be particularly important. The undercrossing ids part of an essential corridor for wildlife movement through the Chino Hills region, but its ability to support such movement is increasingly tenuous. The projects discussed here, with their overlapping construction schedules, will create noise and human disturbance for the next ten years, severely reducing the corridor's ability to support wildlife movement. And after that time, the Project under review here will continue to bring noise and disturbance to Coal Canyon. The DEIR/S must be revised to take account of these cumulative impacts, along with of the other impacts of past, pending, and future projects on biological resources.

O-8-28

The DEIR/S must be revised to include a comprehensive analysis of the Project's cumulative effects on habitats and plant and animal species and identify feasible mitigation for impacts deemed to be significant.

B. The DEIR/S Fails to Adequately Analyze the Project's Impacts on Parks.

Chapter 3.1, section 3.1.3 of the DEIR/S analyzes the Project's impacts on parks and recreational facilities. It also analyzes the Project's compliance with applicable federal laws that protect parklands, including section 4(f) of the Department of Transportation Act of 1966 and section 6(f) of the Land and Water Conservation Fund Act. The Project must comply with the procedural and substantive mandates of sections 4(f) and 6(f). In addition, CEQA and NEPA require that the DEIR/S contain an accurate analysis of the Project's consistency with every "applicable land use plan, policy, or regulation of an agency with jurisdiction over the project." CEQA Guidelines Appx. G § X(b); *See also Senville v. Peters*, 327 F. Supp. 2d 335, 350 (D. VT 2004) (EIS that contained insufficient 4(f) evaluation was inadequate). Under CEQA, any inconsistency between the project and such plans must be disclosed as a significant impact on the environment, and mitigation to reduce or avoid that impact must be identified. *See, e.g., Pocket Protectors v. City of Sacramento* (2004) 124 Cal.App.4th 903, 930, 934. Under NEPA, a failure to properly analyze inconsistencies render the EIS inadequate as a matter of law. *Senville,* 327 F. Supp. 2d at 350. O-8-29

Here, the DEIR/S incorrectly analyzes the impacts of the Project on parkland. In addition, although sections 4(f) and 6(f) constitute applicable policies or regulations of an agency with jurisdiction over the Project, the DEIR/S fails to fully analyze the Project's consistency with the sections. For example, the document incorrectly analyzes the applicability of section 4(f)'s "de minimis" provision and fails entirely to analyze whether the taking of land in CHSP is consistent with the California Outdoor Recreation Plan, a land use plan made applicable to the project by the Conservation Fund Act. Moreover, Caltrans has failed to comply with procedural and substantive mandates of the Department of Transportation Act and Land and Water Conservation Fund Act, as described more fully below.

1. The DEIR/S Underestimates the Amount of Parkland That Will Be Impacted by the Project and Fails to Disclose the Severity of Those Impacts. O-8-30

The DEIR/S acknowledges that the Project will directly impact land that is a part of the Park. For example, it states that the Project will directly use .06 acres for footings related to an aerial freeway ramp (the Green River Road off-ramp), and would also require a .73 acre aerial easement for the ramp. DEIR/S at 3.1-63. However, the DEIR/S fails to analyze other probable impacts of the Project on CHSP. For example, given that there will be three columns for the freeway ramp located on Park land (DEIR/S at 3.1-

72), presumably Caltrans will also need an easement that would allow it to traverse Park land for maintenance of the ramp and columns. However, the DEIR/S is silent about this likely use of Park land, even though such an easement would preclude other uses of the land. Caltrans must factor this use of Park land into its calculation of feasible minimization and mitigation of impacts. To be a legally adequate informational document, the DEIR/S also must disclose the necessity of any such easement.

Moreover, the EIR inconsistently describes the Project's impacts on CHSP. In most places, it asserts that the Project will only directly impact .06 acres of land. *See, e.g.*, DEIR/S at 3.1-61, 3.1-62, 3.1-77, B-8. Indeed, it only provides measures to mitigate the taking of that amount. DEIR/S at 3.1-77. But this small number is misleading, as it accounts for only the actual footprint of the three columns that will support the Green River Road off-ramp. In addition to these columns, and as described above, there may well be other direct impacts to the Park over time if Caltrans needs to access and maintain the ramp and footings/columns. Also, there will undoubtedly be direct impacts to Park land associated with the .73 acre aerial easement. As the DEIR/S admits, "there may be some restrictions on future uses in the area under the aerial easement, at the ground surface, to avoid adverse impacts to the bridge and to ensure that rail and surface vehicles can continue to safely pass under the bridge." DEIR/S at 4-38. Thus, the actual, direct impacts to the Park include not merely the .06 acres from the ramp footings, but also include "[t]he 0.73 ac area under the aerial easement and the 0.28 ac area in CHSP south of that easement[, which] result[s] in a total 1.01 ac used by Alternatives 1 and 2." DEIR/S at 4-38. The DEIR/S' failure to accurately and consistently describe the full range of impacts from the off-ramp renders it inadequate to carry out its purpose as an informational document.[3]

O-8-30

Moreover, the DEIR/S fails to analyze the feasibility of using the planned temporary construction easements and permanent subsurface easement in the Park. For example, just west of Coal Canyon Road on the south side of SR-91, Caltrans plans a permanent subsurface easement with an intrusion into the Park of 1.88 acres. But the DEIR/S fails to disclose that there is a conservation easement on this land and fails to analyze whether that easement allows the subsurface easement for the Project. Likewise,

[3] Regardless of the DEIR/S inaccuracies regarding the magnitude of impacts to parks, many such impacts, as well as impacts to biological resources, would be reduced if not avoided by elevating the off-ramp now proposed for Coal Canyon and shifting it to a less-sensitive location. Moreoaver, the alternatives discussed in the comments submitted by the Center for Biological Diversity would similarly reduce or avoid these impacts.

Caltrans wants two temporary construction easements of .57 acres in the Park on the north side of SR-91 but fails to disclose the existence of, or the Project's consistency with, a conservation easement on that land.

To be legally complete, the DEIR/S must (1) analyze whether Caltrans will require a maintenance easement and how that easement would limit use of Park land, (2) disclose whether the existence of the ramp and aerial easement will render the portion of the Park beneath the ramp essentially useless for all park purposes, and (3) disclose the conservation easements on Park land and analyze whether those easements allow Caltrans to use Park land for construction work or subsurface improvements. In particular, the DEIR/S must analyze what uses will still be allowed beneath the ramp and what uses will be prohibited or limited. Will the ramp preclude the Park from constructing any buildings in the area, improving its access road, or allowing certain other types of uses? Will the public still be allowed to use the area under the freeway ramp? As described in more detail below, Caltrans must also propose mitigation for the entire impacts, not just the .06 acres directly impacted by the footings. O-8-30

2. The DEIR/S Fails to Analyze the Impacts of Increased Noise, Lighting and Fire Ignition Risk on Parks.

Increased noise from freeways can negatively affect park users and wildlife. For recreational users of parks, increased noise detracts from the peaceful atmosphere and serenity of a park. For wildlife, noise and lights can deter animals from using areas of habitat that they might otherwise use, thereby decreasing the range of available land for the animals. Of particular concern, the Coal Canyon area serves as a critical wildlife corridor, connecting CHSP on the north with the vast, undeveloped Santa Ana mountains on the south. The recently established wildlife undercrossing at the old Coal Canyon Road exit forms a critical link for wildlife to cross the freeway. *See* Janet Wilson, *Wildlife Highway Links Vital Habitats*, Los Angeles Times, April 19, 2004, attached as Ex. L. O-8-31

Although the Project includes a sound barrier in certain areas in order to reduce noise impacts to residences and other human-related sensitive receptors, the DEIR/S appears to ignore the potential impacts of noise to wildlife in parks or other areas. Indeed, the document bluntly admits that "[n]oise abatement is only considered for areas of frequent human use that would benefit from a lowered noise level." .DEIR/S at 3.15-6; *see also id.* at 3.15-28 – 39 (analyzing feasibility of sound walls only in locations

where residences would be impacted).[4] The DEIR/S' failure to analyze the potential impacts of noise on wildlife, and in particular on the Coal Canyon Road wildlife undercrossing, renders its analysis legally deficient. O-8-31

In addition, the DEIR/S fails to analyze the effect of increased lighting along the freeway. Although the DEIR/S states that virtually no new lighting is planned due to the expansion, DEIR/S at 3.7-13, it does not analyze the increased lighting due to headlights from the increased traffic at night, which could deter wildlife from using the undercrossing or other areas near the freeway. O-8-32

The DEIR/S also ignores the increased risk of fire ignition from the expanded freeway. Given the recent fire history (e.g., the Freeway Complex Fire) in the area, as well as the fire that is burning in Carbon Canyon as of July 7, 2011, this issue is of particular concern. In fact, the DEIR/S asserts, counterintuitively, that "the project would have a beneficial effect related to wildland fire hazards" because it will widen the freeway, creating a wider fire break so that fires will not spread as easily. DEIR/S at 4-5. Even assuming this is accurate, the DEIR/S ignores the fact that fires often begin on roadways. This has historically been true of SR-91, which has been the source of numerous area fires.[5] Given that the freeway will now carry even more vehicles, there is a greater likelihood of fire ignition from the road. The DEIR/S must analyze this impact. O-8-33

3. The DEIR/S Fails to Analyze Cumulative Impacts to Parks.

The DEIR/S entirely fails to analyze any impacts to CHSP or other public parks or recreation areas that the Project would cause in conjunction with other past, present or

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[4] The EIR shows that noise barriers are reasonable and feasible along Coal Canyon Road. DEIR/S at Figure 3.15-1, Sheet 2. However, it appears to not actually require noise barriers in that location. DEIR/S at 4-35. Further, the map showing feasible noise barriers at Coal Canyon Road shows that they would be adjacent to open space; yet this contradicts the earlier statement that sound barriers were only considered for areas where residences would be impacted. The DEIR/S' confusing and contradictory noise analysis makes it nearly impossible to tell what was actually analyzed. This flaw is, in itself, a violation of CEQA because the document fails to actually inform the public and decisionmakers of the Project's impacts in a comprehensible fashion. O-8-34

[5] Hills For Everyone is presently completing a fire study that shows that this stretch of the 91 freeway is a frequent source of ignition for fires that eventually spread to the Park; we will submit the study to Caltrans when it is complete.

reasonably foreseeable future projects.[6] Instead, the DEIR/S states that: "[b]ecause Alternatives 1 and 2 (LPA) and their design variations would not result in direct impacts on Section 4(f) properties after mitigation, the potential for the SR-91 CIP to contribute to cumulative impacts related to these resources was not further evaluated in this analysis." DEIR/S at 3.25-61. First, the fact that there might not be any project-specific impacts, even if true, does not mean that there are no cumulative impacts. *Kings County Farm Bureau*, 221 Cal.App.3d at 719-21. Moreover, the DEIR/S' assertion that the Project will "not result in direct impacts" on protected properties is demonstrably false. As the DEIR/S freely admits in other sections, the Project *does* directly impact CHSP on a permanent basis and other parks on a temporary basis. *See, e.g.*, DEIR/S at 3.1-63 (the Project would result in the "permanent use" of land in CHSP and temporary use of other parks).

Because the Project would admittedly result in some impacts to park lands, the DEIR/S must analyze these impacts in a cumulative setting. The fact that the Project's impacts to parks may be small individually is irrelevant to a cumulatives analysis. CEQA Guidelines § 15355(b) ("Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time."); *Kings County Farm Bureau*, 221 Cal.App.3d at 719-21. Indeed, in a rapidly developing area such as Riverside County, parks and open space are a finite and shrinking resource, and any individually minor impact must be assessed in conjunction with the myriad other impacts occurring due to other projects. O-8-34

Here, it appears that other highway widening projects in the area may affect CHSP and other parks.[7] Although it is impossible to tell from the DEIR/S the extent or certainty of any such impacts, the DEIR/S describes numerous other highway projects near the parks affected by this Project. For example, the SR 241/91 interchange project may have impacts on Featherly Regional Park and Canyon RV Park. Also, the SR 91/SR 71 Interchange Improvement Project will impact CHSP, and if the western section of the Mid-County Parkway is constructed, it would impact El Cerrito Sports Park. Similarly, the many projects discussed in section I.A.3, above, would each impact CHSP and other area parks and recreational resources. The DEIR/S must analyze the cumulative impacts of these and other known development and highway projects on CHSP and other area parks.

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[6] *See* discussion of the standard for cumulative analysis, *infra*.

[7] Indeed, as described in section I.A.2, above, some other highway "projects" are actually part of this Project and should be analyzed together in this EIR/S.

4. The DEIR/S' Mitigation for Park Impacts Is Inadequate.

The DEIR/S admits that impacts to parks constitute a significant impact for CEQA purposes (DEIR/S at 4-18, 3-36 – 37), thus triggering CEQA's requirement that the EIR identify all feasible mitigation that could minimize or avoid these impacts. CEQA Guidelines § 15126.4(a)(l)(A) (discussion of mitigation "shall identify mitigation measures for each significant environmental effect identified in the EIR"). The DEIR/S does propose some mitigation for purposes of meeting requirements of the Land and Water Conservation Act and the Department of Transportation Act. DEIR/S at 3.1-77 – 3.1-78. However, nowhere does the DEIR/S analyze whether the mitigation proposed under these requirements also meets Caltrans' separate obligation to mitigate impacts to parklands under CEQA. *See* DEIR/S at 3.1-76 – 77 (discussing mitigation "to address project impacts under Sections 4(f) and 6(f) . . ." but not CEQA). California courts have long rejected Caltrans' implicit approach of relying on compliance with other legal requirements to satisfy CEQA's mitigation requirements. *See Kings County Farm Bureau v. City of Hanford*, 221 Cal.App.3d 692, 716 (1990) (compliance with agency regulations does not conclusively indicate that a proposed project would not have a significant and adverse impacts requiring mitigation). O-8-35

In any event, the proposed mitigation is inadequate for any purpose. First, the DEIR/S indicates that Caltrans does not even yet know whether it will replace the parkland taken by the Project. Instead, it states that, during public circulation of the DEIR/S, it "will continue to consult with State Parks" on the issue of compensation for the use of land in CHSP. DEIR/S at 3.1-77. Likewise, it states that, in the future, it will "coordinate with State Parks on the identification" of other mitigation measures to improve the existing trailhead near the Green River Road off-ramp. *Id.* This means that the public has no assurance that any particular mitigation will occur, or knowledge of what the final mitigation will be. Although the document contains a handful of mitigation ideas, it contains no performance standards to ensure that mitigation measures will serve their intended purposes and will adequately reduce impacts. This standard-less deferral of mitigation until after project approval is unacceptable under CEQA. *See Sundstrom v. County of Mendocino* (1988) 202 Cal.App.3d 296, 309 (deferral of mitigation until after project approval is inadequate); *see also San Joaquin Raptor Rescue Ctr.*, 149 Cal.App.4th at 671.

More importantly, the DEIR/S fails to propose mitigation that addresses all of the Project's impacts on parklands. Rather, it merely proposes mitigation for the .06 acres of land directly impacted by the freeway ramp columns. DEIR/S at 3.1-77. Given that the aerial easement will also significantly impact the Park, and that the Project will actually

"result in a total of 1.01 ac used" in the Park, the DEIR/S must propose mitigation for all of these impacts. DEIR/S at 4-38. O-8-35

5. The DEIR/S Fails to Satisfy the Procedural and Substantive Mandates of Section 4(f) of the Department of Transportation Act and Fails to Analyze the Project's Consistency with the Act.

In enacting section 4(f) of the Department of Transportation Act of 1966, Congress declared that "special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands [and] wildlife and waterfowl refuges . . . ." 49 U.S.C. § 303. As a means of realizing these broad goals, Congress specified two fundamental substantive mandates: (1) prohibiting federal agencies from approving transportation projects that require use of a public park, recreation area or wildlife refuge unless there are no feasible and prudent alternatives to using such land; and (2) requiring transportation projects that use a public park, recreation area or wildlife refuge to use *all possible planning* to minimize harm to the land. 49 U.S.C. § 303(c) (emphasis added). O-8-36

The Transportation Act thus codified the requirement that federal agencies consider alternatives to environmentally damaging proposals even before this principle was enshrined as a core provision in NEPA. Indeed, the Act's provisions are even more stringent than NEPA's, as they include the substantive requirement that an agency *actually select* a feasible and prudent alternative to proposed highway routes that would otherwise damage these protected areas. Further, as the DEIR/S recognizes, agencies often seek to comply with section 4(f) by purchasing or paying for replacement park land. *See* DEIR/S at 3.1-77 (recognizing Caltrans' obligation to provide replacement land for property protected under section 4(f) that is taken as part of the Project).

a. The DEIR/S Improperly Concludes that Impacts On Parkland are "De Minimis."

Recent amendments to the Department of Transportation Act allow agencies to find that a project's impacts to protected resources are only "de minimis," and that section 4(f) protections therefore do not apply. In order to properly make de minimis findings, an agency must show that the "impact is one that will not adversely affect the features, attributes, or activities qualifying the property for protection under Section 4(f)." 23 C.F.R. § 774.17. The Federal Highway Administration states that: O-8-37

> The purpose of the language [regarding de minimis findings] is to clarify that the portions of the resource important to protect, such as playground equipment at a public park, should be distinguished from areas such as

> parking facilities. While a minor but adverse effect on the use of playground equipment should not be considered a *de minimis* impact under section 4(f), encroachment on the parking lot may be deemed *de minimis*, as long as the public's ability to access and use the site is not reduced.[8]

Thus, for purposes of public parks such as CHSP, a de minimis finding is not proper if a project, together with mitigation measures, would adversely affect the natural setting, views of hikers, accessibility for hiking and other recreation, habitat for wildlife, or other features or attributes that qualify the area for protection under section 4(f). Here, with regard to CHSP, the Project would unquestionably adversely "affect the features, attributes, or activities qualifying the property for protection under Section 4(f)." The Project will not merely encroach on a parking lot or impact unimportant or fungible features of the Park. Rather, it will place a *freeway entrance ramp* over ¾ of an acre of parkland *immediately adjacent* to a trailhead and that provides access to a rare natural stretch of the Santa Ana River. DEIR/S at 3.1-72. It will also make it so that "[u]sers of that trail in CHSP would have very close views of a large retaining wall on the north side of SR-91." *Id.* Although the DEIR/S does not state how large the retaining wall would be in this location, it may be up to 40 feet high. DEIR/S at 5.25-18 (retaining walls will be anywhere from 3 ft high to 40 ft high). O-8-37

Despite this unequivocal evidence of direct adverse impacts to key Park attributes, the DEIR/S concludes, inexplicably, that a de minimis finding is justified because "[t]he changes to CHSP as a result of the project would be minimal [and t]here would be *no interference* with the features, activities, attributes, or purposes of CHSP, on either a temporary or permanent basis." DEIR/S at 3.1-75 (emphasis added). As described above, the Project unequivocally has *some* interference with important features of CHSP. Thus, the DEIR/S' conclusion regarding the de minimis finding is baseless.

Though Caltrans fails to explain its reasoning for finding "no interference," there are two possible explanations, neither of which is valid. First, earlier in DEIR/S, the document states that "[t]here are no park amenities in the part of CHSP adjacent to the project segment of SR-91. The user amenities (trails, etc.) are located farther in CHSP so park patrons are not directly adjacent to the freeway and do not have views of SR-91." DEIR/S at 3.1-55. If this were true, Caltrans might have a non-frivolous argument that

[8] Federal Highway Administration, *Questions and Answers on the Application of the Section 4(f) De Minimis Impact Criteria*, http://www.fhwa.dot.gov/hep/qasdeminimus.htm, last accessed June 22, 2011.

the Project did not impact important features of the Park. However, this assertion is directly contradicted by other statements in the DEIR/S, which clearly indicate that there is a "trailhead located immediately north of the area where the columns [of the new off-ramp] would be located" and that "[u]sers of that trail in CHSP would have very close views of a large retaining wall" in that area. DEIR at 3.1-72. Thus, the DEIR/S' finding of de minimis impacts cannot be justified by an allegation that important Park amenities are not near the Project site. Moreover, because the DEIR/S contains internal contradictions regarding whether there is a trailhead at the part of the Park impacted by the Project, it is legally deficient as an informative public document under CEQA and NEPA. *See San Joaquin Raptor,* 27 Cal.App.4th at 730 ("[a]n accurate project description is necessary for an intelligent evaluation of the potential environmental effects of a proposed activity."). O-8-37

Second, Caltrans may be relying on possible mitigation to the Project's impacts on the Park to make its de minimis finding. For instance, the DEIR/S states that various mitigation measures will be undertaken in order to address the taking of .06 acres of CHSP and the "visual impacts of the retaining wall and the elevated [] off-ramp." DEIR/S at 3.1-77. However, the DEIR/S' findings regarding de minimis impacts do not appear to take this mitigation into account; rather, they state that there "would be *no interference* with the features, activities, attributes, or purposes of CHSP." DEIR/S at 3.1-75 (emphasis added). Moreover, the DEIR/S admits that the impacts to trail users of their views due to the retaining wall would only be "*partially* mitigated with visual/aesthetics treatments." DEIR/S at 3.1-75 (emphasis added). Moreover, as described above, to fully mitigate the Project's impacts to parks, Caltrans would need to mitigate not just for the .06 acres of land taken due to the ramp footings, but also for the land impacted by the aerial easement. Thus, the de minimis finding could not be justified even with current mitigation. O-8-38

The improper analysis of the de minimis standard renders the DEIR/S' analysis of the Project's consistency with section 4(f) inaccurate, in violation of CEQA and NEPA. *See Senville,* 327 F. Supp. 2d at 350 (EIS that contained insufficient 4(f) evaluation was inadequate). Further, because the de minimis findings are not justified, Caltrans must comply with section 4(f)'s substantive mandate to avoid using any part of CHSP for the Project unless there are no feasible and prudent alternatives, and to use all possible planning to minimize harm to the Park. 49 U.S.C. § 303(c). O-8-39

b. The DEIR/S Fails to Accurately Analyze Consistency With Section 4(f) Because Its Constructive Use Analysis is Improper. O-8-40

Section 4(f) protects park lands not only from direct uses, but also from "constructive uses." A "constructive use" of 4(f) lands occurs when:

> [A] transportation project does not incorporate land from a section 4(f) resource, but the project's proximity impacts are so severe that the protected activities, features, or attributes that qualify a resource for protection under section 4(f) are substantially impaired. Substantial impairment occurs only when the protected activities, features, or attributes of the resource are substantially diminished.

23 C.F.R. § 771.135(p)(2). Examples of constructive uses include noise increases, substantial aesthetic impairment, restriction of access, vibration impacts, and ecological intrusions, among others. *See* 23 C.F.R. § 771.135(p)(4).

The application of section 4(f) to constructive use has been recognized by the courts in a wide variety of circumstances. The Ninth Circuit was the first to recognize such circumstances and has continued to do so. In *Brooks v. Volpe*, 460 F.2d 1193, 1194 (9th Cir. 1972), for example, the court found that a highway encircling a campground was subject to section 4(f) despite the fact that there was no direct use of protected lands. Since then, federal courts have found constructive use of section 4(f) lands resulting from such impairments as increased noise, unsightliness, and impaired access. *See, e.g., Citizens Against Burlington, Inc. v. Busey*, 938 F.2d 190, 202 (D.C. Cir. 1991) (holding noise from airport expansion would impact nearby park); *Citizen Advocates for Responsible Expansion, Inc. v. Dole*, 770 F.2d 423, 439 (5th Cir. 1985) (holding highway project would cause aesthetic and visual intrusion on protected park and historic buildings); *Monroe County Conservation Council v. Adams*, 566 F.2d 419, 424 (2d Cir. 1977) (holding highway would restrict access to park because nearby residents would have to cross four lanes of heavy traffic). O-8-40

Here, the DEIR/S fails to analyze or describe whether the Project would result in constructive use of protected lands due to increased noise, runoff, vibration or other impacts. Although Appendix B contains some information regarding constructive use of parks, courts have held that an agency's analysis must be contained in the EIR, not "scattered here and there in EIR appendices." *Santa Clarita Organization for Planning the Environment v. County of L.A.*, 106 Cal. App. 4th 715, 722 (2003).

Moreover, the DEIR/S (including Appendix B) fails to analyze "constructive uses" for all relevant protected areas, including CHSP, the Santa Ana River Trail, and the Featherly Regional Park, among other areas. Appendix B at B-5 – B-8. Because the

Project will be constructed adjacent to all three protected areas, the DEIR/S must analyze potential constructive use of these areas. Given that the Project would result in construction of 2-4 lanes of new freeway adjacent to these areas, which will result in aesthetic, noise, runoff and other impacts, the Project will undoubtedly substantially impair the visual and recreational attributes in portions of all three protected areas.

In particular, the Project's noise will impact park areas significantly. The DEIR/S discloses that the Project will result in a 10 decibel increase from existing conditions in either nine or twelve different locations along the length of the Project, depending whether Alternative 1 or 2 is selected. DEIR/S at 3.15-19 – 3.15-24. However, the DEIR/S does not disclose whether this level of noise increase is expected in protected park areas. *Id.* In particular, it does not disclose whether there would be a high level of noise increase at Canyon RV park in Featherly Regional Park. O-8-40

Courts have found "constructive use" where a freeway project will result in a 10 decibel increase in noise levels in parks. *Davis v. Mineta*, 302 F.3d 1104 (10th Cir. 2002). Moreover, noise increases are particularly impactful in areas such as campgrounds. *See Brooks,* 460 F.2d 1193 (9th Cir. 1972) (noise increase in campground due to highway project resulted in constructive use). Thus, the DEIR/S must analyze whether the Project will result in significant noise increases in protected areas, thereby causing a constructive use. If so, Caltrans must also undertake all possible planning to reduce the impacts, as required by section 4(f).

6. The DEIR/S Fails to Abide by the Requirements of Section 6(f) of the Land and Water Conservation Fund Act and to Adequately Analyze the Project's Consistency with Section 6(f).

When local governments receive federal funding through the Land and Water Conservation Fund Act program, they agree to comply with 36 CFR § 800, Executive Order 11593, § 106 of the National Historic Preservation Act of 1966 and Section 6(f)(3) of the Land and Water Conservation Fund Act ("Conservation Fund Act"), which states: "No property acquired or developed with assistance under this section shall, without the approval of the National Secretary of the Interior, be converted to other than public outdoor recreation uses." 16 U.S.C. § 460l–8(f). The Secretary of the Interior may approve conversions only if the local agency complies with the terms of the conversion provisions of the Conservation Fund Act and provides replacement parkland that satisfies the requirement that the public recreation estate remain undiminished. *Id.* O-8-41

CHSP received funds through the Conservation Fund Act. DEIR/S at 3.1-54. Thus, Caltrans must abide by the various provisions of federal law outlined above,

including the obligation to provide replacement parkland to ensure that the Park's attributes remain undiminished. As explained above, the DEIR/S also must fully analyze the Project's consistency with section 6(f). However, the DEIR/S fails to meet the requirements of CEQA and NEPA, and Caltrans fails to show that it will comply with the various substantive requirements of federal law before approving the Project. O-8-41

First, although Caltrans has apparently consulted with State Parks regarding its obligations under section 6(f), there is no indication that it has received approval of the Department of the Interior or National Park Service, or that it intends to seek such approval. *See* DEIR/S at 3.1-76 (stating that "[c]onsultation with State Parks has been ongoing" but not mentioning consultation with the National Park Service). Yet consultation with the National Park Service is required, as "The NPS Regional Director has the authority to disapprove conversion requests and/or to reject proposed property substitutions." *See* Exhibit K, Land and Water Conservation Fund State Assistance Program Manual, Chapter 8 p. 8-4 (2008). Without approval from National Park Service, there is no assurance that the federal government will allow Caltrans' proposed conversion of recreational land in CHSP or its proposed substitution of land. Given that the Green River Road off-ramp, with its footings in CHSP, is an integral part of the Project, and that the DEIR/S contains no alternative that avoids use of Park land, Caltrans must obtain the approval of the National Park Service in order to proceed with the Project. Caltrans' failure to obtain or seek this approval is a glaring omission that must be remedied. O-8-42

Second, Caltrans improperly relies on the Conservation Fund Act's streamlined provisions for "small conversions" that amount to less than 10% of a property's area. DEIR/S at 3.1-76. In order to satisfy the criteria for a "small conversion," Caltrans must demonstrate that the proposed conversion is not controversial and that the replacement property is contiguous to the original Section 6(f) area. *See* Ex. K, p. 8-10. But here, as demonstrated by this letter, the conversion *is* controversial. Riverside County and Caltrans should not be taking more precious parkland to build ever-larger freeways. SR 91 is already 10 lanes, and this Project would widen it to 12 or even *14 lanes*. What next? 18 lanes? 20? We simply cannot build ourselves out of traffic jams, and taking more parkland as part of Caltrans' misguided attempt to pave over the rest of southern California should be, and is, controversial. Moreover, the DEIR/S does not assure that replacement parkland would be contiguous to CHSP. Indeed, it does not even ensure that replacement parkland will be provided; rather, it states that Caltrans will *either* provide contiguous, replacement parkland *or* monetary compensation to address the conversion of parkland under section 6(f). DEIR/S at 3.1-77. However, section 6(f) contemplates that O-8-43

an agency will provide replacement parkland, not monetary compensation. 16 U.S.C. § 460l-8(f)(3). O-8-43

Lastly, The DEIR/S fails to make any mention of the California Outdoor Recreation Plan in Chapter 3.1, Land Use, which purports to identify and evaluate all of the Project's "impacts related to land use." DEIR/S at 3.1-1. Furthermore, the California Outdoor Recreation Plan and its consistency with the Project are not discussed in any other section of the DEIR/S. The complete failure to evaluate and disclose the Project's consistency with this state-wide plan is a failure to comply with CEQA, and renders the DEIR/S inadequate.

7. The DEIR/S Fails To Discuss Caltrans' Obligations Under the Public Park Preservation Act.

The DEIR/S also fails entirely to acknowledge the Public Park Preservation Act of 1971, Pub. Res. Code § 5400 *et seq.*, and its relevance to the Project. The Public Park Preservation Act, which applies to any park operated by a public agency, provides in part: O-8-44

> No city, city and county, county, public district, or agency of the state, including any division, department or agency of the state government, or public utility, shall acquire (by purchase, exchange, condemnation, or otherwise) any real property, which property is in use as a public park at the time of such acquisition, for the purpose of utilizing such property for any nonpark purpose, unless the acquiring entity pays or transfers to the legislative body of the entity operating the park sufficient compensation or land, or both, as required by the provisions of this chapter to enable the operating entity to replace the park land and the facilities thereon.

Pub. Res. Code § 5401. The replacement land or compensation must be sufficient to provide substitute park land of comparable characteristics, substantially equal size, and capable of being used by generally the same persons as use the existing park. Pub. Res. Code § 5405.

Caltrans' obligations under the Park Preservation Act extend at a minimum to CHSP. The DEIR/S must discuss Caltrans' obligation to replace any park land it acquires with similar park land elsewhere and how it intends to comply with this requirement. *See, e.g., City of Fremont v. San Francisco Bay Area Transit Dist.*, 34 Cal.App.4th 1780, 1790 (legally adequate EIR where BART fully discussed obligation

under the Public Park Preservation Act). Though the DEIR/S discusses similar obligations under federal law, *see* DEIR at 3.1-77, Caltrans' obligations under the state Park Preservation Act are not necessarily identical. For example, where, as here, the amount of land acquired from a public park is less than 10% of the park's area, the acquiring entity may opt to improve the remaining park instead of acquiring new, replacement park land. Pub. Res. Code § 5404. Although the DEIR/S indicates that, for purposes of federal law, Caltrans intends to replace the acquired parkland and also to improve the existing parkland (*see* DEIR/S at 3.1-77), the DEIR/S should address whether Caltrans intends to use the same method to comply with the Park Preservation Act. If so, as discussed above, Caltrans may not rely on uncertain, possible plans to mitigate taken parkland, but must commit to a definite course of action that will fully mitigate the land in CHSP that will be taken under the proposed Project.

O-8-44

III. The DEIR/S Reaches the Bizarre and Unsupportable Conclusion that the Project Has No Potential to Induce Growth.

In one of the DEIR/S' most blatant shortcomings, it concludes that the Project will have no growth-inducing impacts whatsoever. DEIR/S at S-30 (Chapter 4), 3.2-9. There is no credible evidence to support this conclusion, which is contrary to established research regarding the likelihood of freeway projects to induce growth.[9] The conclusion is also contrary to Caltrans' own guidance documents, and common sense. The DEIR/S must be recirculated after Caltrans undertakes a new analysis of growth inducing impacts.

O-8-45

Both NEPA and CEQA require analysis of the growth-inducing impacts of a proposed project. Pub. Res. Code § 21100(b)(5); 40 C.F.R. § 1508.8(b). CEQA requires that an EIR include a "detailed statement" setting forth the growth-inducing impacts of a proposed project. Pub. Res. Code § 21100(b)(5); *City of Antioch v. City Council of Pittsburg,* 187 Cal.App.3d 1325, 1337 (1986). The statement must "[d]iscuss the ways in which the proposed project could foster economic growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment." CEQA Guidelines § 15126.2(d). It must also discuss how projects "may encourage and facilitate

[9] "Research has shown that . . . changes in accessibility can influence the direction of growth in a region and the rate of growth in local areas." Caltrans, "Guidance for Preparers of Growth-related, Indirect Impact Analyses," p. 3-4, attached as Exhibit I; *see also Sierra Club, Ill. Chapter v. US Dept. of Transp.*, 962 F. Supp. 1037, 1043 (N.D. Ill 1997) ("Highways create demand for travel and expansion by their very existence.") (citing *Swain v. Brinegar*, 517 F.2d 766, 777 (7th Cir.1975)).

other activities that could significantly affect the environment, either individually or cumulatively" or "remove obstacles to population growth." *Id.*

According to NEPA, an EIS must consider "growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems." 40 C.F.R. § 1508.8(b). "Induced growth consists not only of growth that would not have occurred absent the project, however, but of relocated or redirected growth due to changes in accessibility." *Senville v. Peters*, 327 F. Supp. 2d 335, 368 (D. VT 2004). The purpose of this analysis is "to evaluate the possibilities [for new growth induced by the project] in light of current and contemplated plans and to produce an informed estimate of the environmental consequences." *City of Davis v. Coleman*, 521 F.2d 661, 676 (9th Cir. 1975). In conducting this analysis, "an agency must use its best efforts to find out all it reasonably can." *Id.* Applying this standard, the Ninth Circuit in *City of Davis* found "totally inadequate" the government agency's conclusion that a proposed freeway interchange would not have significant growth-inducing effects. *Id.* Indeed, the court found the interchange an "indispensable prerequisite" and "essential catalyst" for future development. *Id.* at 674.

O-8-45

A. The DEIR/S' Analysis of Growth Inducing Impacts is Woefully Inadequate.

The DEIR/S purports to use a "first cut screening analysis" to determine the Project's potential for inducing or affecting growth. DEIR/S at 3.2-9. This type of analysis is described in detail in Caltrans' 2008 guidance document entitled "Guidance for Preparers of Growth-related, Indirect Impact Analyses." *See* Exhibit I. Yet in the DEIR/S, Caltrans fails to follow its own guidance regarding how to undertake this screening analysis, and it flatly ignores most of the factors listed in its guidance regarding how to determine if a highway project will induce growth. For example, in its guidance, Caltrans states that "screening factors to consider include accessibility, project type, project location, and growth pressures in the area. *Id.* at 5-4. According to the guidance, a project may have growth-related impacts due to increased accessibility to the area if:

O-8-46

- Development that would have occurred anyway could be arranged in a different pattern. For example, new commercial activities might choose sites that the proposed project makes more accessible rather than other sites in the study area.
- The proposed project could cause some businesses or households to locate in the study area instead of other places in the region. For example, if access is improved

to land on the urban fringe, developers may capitalize on the improved access and build homes in these areas instead of elsewhere in the region.

- The proposed project could stimulate new real estate development that changes existing land uses and increases intensities in already developed areas. For example, residential properties near a new interchange might be redeveloped into commercial buildings because the changes in accessibility will make the land more attractive to commercial users who will offer higher prices for the land.

O-8-46

Ex. I at 5-4.

Here, the DEIR/S admits that the Project will cause "improved travel times" and will improve interchanges and widen freeways. DEIR/S at 3.2-10 – 3.2-11. Yet the DEIR/S fails to analyze whether developers may capitalize on the improved access, whether development that may have occurred anyway may be arranged in a different pattern, or whether residential property near a newly improved interchange might be redeveloped. In short, the DEIR/S fails to analyze the very factors that its own guidance document declare to be essential factors in determining the growth-inducing potential of a highway project.

O-8-47

Similarly, Caltrans' own guidance states that projects such as this, which are in an urban/suburban fringe, and which add HOV or HOT lanes, are precisely the types of projects that may have growth-inducing impacts:

> Adding high occupancy vehicle (HOV) lanes or mixed-flow lanes are examples of projects that could cause growth-related impacts because they add capacity to an existing facility. (Ex. I at 5-5).
>
> **Urban/Suburban Fringe.** Undeveloped parcels adjacent to an expanding urban/suburban area can be prime growth areas. Fringe areas generally have high land availability and lower land prices. *Transportation projects in these areas have a high potential to cause growth-related impacts*, particularly if the land is suitable, development regulations are favorable, and the area is in the path of an expanding urban/suburban core. (Ex. I at 5-6 (emphasis added)).

O-8-48

Overall, Caltrans' own guidance states that a first-cut screening analysis is generally insufficient to measure growth-related impacts when a project (1) adds new capacity on an existing roadway, (2) is located in an urban/suburban fringe area, and (3) is located in an area with lots of growth pressure. Ex. I at 5-8. All of these factors are

present here,[10] yet Caltrans undertook only the most cursory first-cut screening analysis, and no follow-up analysis. Indeed, its "analysis" consists of nothing more than bare assertions and unsupported conclusions, which cannot provide the substantial evidence necessary to support its conclusion that the Project will have no growth inducing impacts. O-8-48

As an example of its shoddy analysis, the DEIR/S admits that the Project will improve accessibility in the Project area, yet concludes, with no analysis, that the Project would not induce growth because it allegedly "would not substantially modify local, intra-regional or inter-regional accessibility to and/or from SR-91 and I-15." DEIR/S at 3.2-10. In other words, many more people will be able to use the freeways to reach distant jobs, thereby making commute times shorter and living in Riverside County more appealing. However, because the Project does not create more *entrances* to the freeways, the Project does not modify freeway accessibility; thus, the Project cannot possibly change development patterns. O-8-49

This cramped analysis of accessibility fails to account for the fact that accessibility to an area is measured not just by the number of entrances to roads, but also "reflects both the attractiveness of potential destinations and ease of reaching them." Ex. I at 3-3. Indeed, as Caltrans' guidance states, "Transportation projects may reduce the time-cost of travel, thereby enhancing the attractiveness of surrounding land to developers and consumers." *Id.* Here, this is precisely what the Project would do, making commute times from Riverside County to Orange County shorter and thereby making surrounding land more attractive to consumers and developers. Yet the EIR fails to even acknowledge, much less analyze, this critical component of accessibility. This failure renders the DEIR/S inadequate under CEQA and NEPA.

Moreover, the DEIR/S is even internally inconsistent regarding the potential for growth in the area. On the one hand, it states that the Project "area is projected to continue to experience growth in population and jobs even in jurisdictions relatively constrained by limited land available for development." DEIR/S at 3.2-11. It also states that "On average, the [Project] study area is about 50 percent built out." DEIR/S at 3.1-1. Yet on the other hand, the DEIR/S states that "The project area includes highly urbanized areas (City of Corona, the part of Riverside County within the project limits) with little remaining development capacity." DEIR/S at 3.2-11. Caltrans uses this second "fact" to O-8-50

[10] *See* DEIR/S at 1-3 (showing Project in regional context, on the fringe between urban parts of Orange and Riverside Counties, and suburban/rural parts of Riverside County).

conclude that, because there is little developable land left, the Project cannot be expected to induce growth. *Id.* However, there is no evidence to support the DEIR/S' conclusion that the area is built out, and that growth therefore will not occur. On the contrary, the DEIR/S repeatedly discusses the continuing growth expected in the Project area. *See, e.g.*, DEIR/S at 3.1-1 ("The study area is forecast to continue to grow rapidly over the next 20 years"). O-8-50

The DEIR/S also meekly attempts to support its conclusion that the Project will not impact growth by stating that "SR-91 is also constrained on the south by the C[leveland] N[ational] F[orest] and New O[range] C[ounty] Park [], and constrained on the north by CHSP, the Santa Ana River, and Featherly Regional Park." DEIR/S at 3.2-11. But these parks constrain development along only a small percentage of the Project corridor. *See* DEIR/S at Figure B-1 (showing that parks only abut Project for small percentage of corridor length, and that lots of developable land remain in vicinity of Project). Besides, the Project includes widening a significant section of the I-15, yet the DEIR/S does not even attempt to explain whether or to what extent growth is constrained along this section of freeway. O-8-51

In sum, the DEIR/S relies on unsupported assumptions to dismiss the idea that a massive widening of two freeways could induce growth at all. This reasoning flies in the face of current research, which shows that such roadway expansions do induce development. *See* Reid Ewing & Allan Lichtenstein, *Induced Traffic and Induced Development*, October 2002, attached as Exhibit J.[11] If Caltrans and FHWA have contrary data–and there is no indication in the DEIR/S that they do–they must reference it in the DEIR/S. 40 CFR § 1502.24 (agencies must "identify any methodologies used and shall make explicit reference by footnote to the scientific and other sources relied upon for conclusions relied upon in the [EIS]."). However, they cannot rely on unsupported assumptions to summarily conclude that the "proposed project is not expected to influence the amount, timing, or location of growth in the project area." DEIR/S at 3.2-11. O-8-52

[11] This study, in its summary on the first page, states that "research that has been done on induced development suggests it is a real phenomenon. While the cause and effect between road construction and development is not totally clear, the studies suggest that some level of development is likely to occur specifically as a result of the additional road capacity."

B. The DEIR/S Fails to Analyze Cumulative Growth Inducing Impacts.

It is undisputed that this Project is an integral part of dozens of other planned highway expansions in the region, all of which will affect the movement of goods and people–and induce further growth–in the region. *See* DEIR/S at 3.25-41 – 3.25-51 (listing cumulative projects). The DEIR/S' wholesale failure to analyze the cumulative growth-inducing impacts of these inter-connected projects violates CEQA and NEPA. CEQA Guidelines § 15130(a) (stating requirements for cumulative impacts); *San Joaquin Raptor*, 27 Cal.App.4th at 732-33; 40 C.F.R. § 1508.25(a), (c). The DEIR/S must be revised to include this critical analysis. O-8-53

IV. CONCLUSION

In order to cure the panoply of defects identified in this letter, the DEIR/S must be revised to fully and accurately describe all components of the proposed Project. Substantial new information must be obtained to adequately assess the environmental impacts of the whole of the Project, and to identify effective mitigation measures and alternatives capable of alleviating these impacts. Both CEQA and NEPA require that the public have a meaningful opportunity to review and comment upon this significant new information, which should be presented in the form of a recirculated draft EIR/S. In addition, more analysis needs to be conducted to ensure that Caltrans has considered all feasible and prudent alternatives to using section 4(f) parkland and has undertaken all possible planning to minimize harm to such protected lands. O-8-54

Very truly yours,

SHUTE, MIHALY & WEINBERGER LLP

Gabriel M.B. Ross
Erin B. Chalmers
Laurel L. Impett

Note: Exhibits A to L are provided in Attachment 4, Hills for Everyone Comment Letter Attachments

Exhibits:

Exhibit A: SR-91/SR-71 Interchange Improvement Project Initial Study and Proposed Mitigated Negative Declaration, Caltrans, November 2010

Exhibit B: RCTC SR-91/SR-71 Interchange Improvement Project Information Sheet, RCTC

Exhibit C: RCTC SR-91/SR-71 Interchange Project Newsletter, RCTC

Exhibit D: I-15 Corridor Improvement Project Overview, RCTC

Exhibit E: I-15 Corridor Improvement Project Map, RCTC

Exhibit F: I-15 Corridor Improvement Project Objectives, RCTC

Exhibit G: Draft 2011 SR-91 Implementation Plan, OCTA

Exhibit H: Low Impact Development: A Literature Review, U.S. EPA, 2000

Exhibit I: *Guidance for Preparers of Growth-related, Indirect Impact Analyses*, Caltrans, 2006

Exhibit J: *Induced Traffic and Induced Development*, Reid Ewing & Allan Lichtenstein, October 2002

Exhibit K: *Federal Financial Assistance Manual*, National Park Service, Land And Water Conservation Fund State Assistance Program, 2008

Exhibit L: *Wildlife Highway Links Vital Habitats*, Janet Wilson, Los Angeles Times, April 19, 2004

cc: Claire Schlotterbeck; Hills For Everyone
Jonathan Snyder; United State Fish and Wildlife Service
Judi Tamasi; Wildlife Corridor Conservation Authority
Jay Chamberlain; Chief Resources Division, Department of Parks and Recreation
Ron Krueper; Superintendent Los Lagos District, Department of Parks and Recreation
Cara Allen; Habitat Conservation Branch, CA Department of Fish and Game

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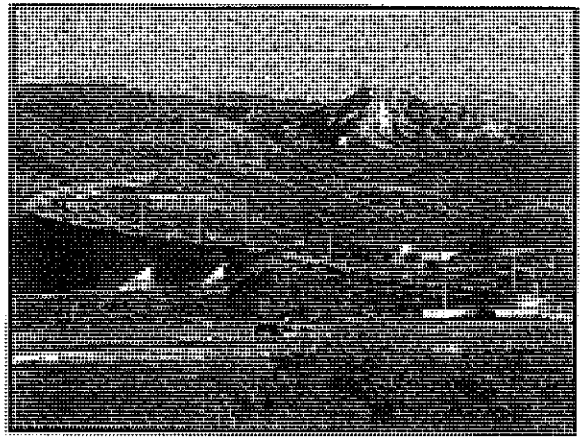
State Route 91/State Route 71 Interchange Improvement Project

State Routes 91 and 71
Riverside County
08-Riv-91 PM R0.6/R2.6
08-Riv-71 PM 1.6/3.0
EA 0F5410/PN 0800000137



Initial Study and Proposed Mitigated Negative Declaration

Prepared by the State of California Department of Transportation

The environmental review, consultation, and any other action required in accordance with applicable Federal laws for this project is being, or has been, carried out by Caltrans under its assumption of responsibility pursuant to 23 U.S.C. 327.

Caltrans

November 2010

State Route 91/State Route 71 Interchange Improvement Project,
(SR 91 PM R0.6/R2.6; SR 71 PM 1.6/3.0)
in the City of Corona, Riverside County

INITIAL STUDY with Proposed Mitigated Negative Declaration

Submitted Pursuant to: (State) Division 13, California Public Resources Code and 49USC 303

THE STATE OF CALIFORNIA
Department of Transportation

Riverside County Transportation Commission

11/19/10
Date of Approval

David Bricker
Deputy District Director
District 8 Division of Environmental Planning
California Department of Transportation

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GENERAL INFORMATION ABOUT THIS DOCUMENT

What's in this document:

The California Department of Transportation-District 8 (Department), in cooperation with the Riverside County Transportation Commission (RCTC), have prepared this Initial Study (IS), which examines the potential environmental impacts of the alternatives being considered for the proposed project located at the State Route 91/State Route 71 interchange within the limits of the City of Corona in Riverside County, California. The document describes why the project is being proposed, alternatives for the project, the existing environment that could be affected by the project, the potential impacts from each of the alternatives, and the proposed avoidance, minimization, and/or mitigation measures.

What you should do:

Please read the IS. Additional copies of this document, as well as the technical studies, are available for review at:

Riverside County Transportation Commission	*Corona Public Library*	*Caltrans, District 08*
4080 Lemon Street, 3rd Floor	*650 S. Main Street*	*464 W. 4th Street, 6th Floor*
Riverside, CA 92502-2208.	*Corona, CA 92882*	*San Bernardino, CA 92401-1400*
M-F: 8:00 a.m. to 5:00 p.m.	*M-Tue: 12:00 p.m. to 9:00 p.m.*	
	Wed-Thurs: 10:00 a.m. to 6:00 p.m.	*Please call (909) 383-4445*
	Sat: 10:00 a.m. to 5:00 p.m.	*for an appointment*

- We invite you to attend a public information meeting regarding the proposed project at the Corona City Hall on December 9, 2010, from 5:00 p.m. to 8:00 p.m.
- We welcome your comments. If you have any comments regarding the proposed project, please send them to the Department by the deadline indicated below.

Submit comments via postal mail to:

Attention: Aaron Burton
Environmental Branch Chief
Environmental Studies "B"
California Department of Transportation
464 West 4th Street, 6th Floor, MS 1163
San Bernardino, CA 92401-1400

Submit comments via e-mail to: Aaron_Burton@dot.ca.gov or at the project Web site http://www.sr91-sr71project.info/comments.asp

- *Please submit comments by December 21, 2010.*

What happens next:

After comments are received from the public and reviewing agencies, the Department may: (1) give environmental approval to the proposed project, (2) do additional environmental studies, or (3) abandon the project. If the project is given environmental approval and funding is appropriated, the Department could design and construct all or part of the project.

For individuals with sensory disabilities, this document can be made available in Braille, large print, on audiocassette, or on computer disk. To obtain a copy in one of these alternate formats, please call (951) 787-7151 or write RCTC, 3850 Vine Street, Suite 201, Riverside, CA 92504, Attn.: Mr. Khalid Bazmi or use California Relay Service 1 (800) 735-2929 (TTY), 1 (800) 735-2929 (Voice) or 711.

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SCH #

Proposed Mitigated Negative Declaration

Pursuant to: Division 13, Public Resources Code

Project Description

The California Department of Transportation (Department), in cooperation with the Riverside County Transportation Commission (RCTC), proposes to improve the State Route (SR) 91/SR 71 interchange by constructing a new direct flyover connector from eastbound SR 91 (post mile [PM] R0.6/R2.6) to northbound SR 71 (PM 1.6/3.0). The proposed project includes the following project components: flyover connector ramp, bridge widening, restriping of SR 91 eastbound lanes, modification or construction of new drainage facilities, retaining walls, and relocation of access roads. The proposed project would improve the current and future operational efficiency and enhance the capacity of the eastbound SR 91 to northbound SR 71 connector.

Determination

This proposed Mitigated Negative Declaration (MND) is included to give notice to interested agencies and the public that it is the Department's intent to adopt an MND for this project. This does not mean that the Department's decision regarding the project is final. This MND is subject to modification based on comments received by interested agencies and the public.

The Department has prepared an Initial Study (IS) for this project and, pending public review, expects to determine from this study that the proposed project would not have a significant effect on the environment for the following reasons:

The proposed project would have no effect related to the following resources:

- Agricultural Resources
- Mineral Resources

In addition, the proposed project would have no significant effects related to the following resources:

- Land Use and Planning
- Community Impacts
- Utilities and Emergency Services
- Growth
- Cultural Resources
- Relocations/Real Estate Acquisition
- Utilities and Service Systems
- Parks and Recreation
- Paleontological Resources

STATE ROUTE 91/STATE ROUTE 71 INTERCHANGE IMPROVEMENT PROJECT

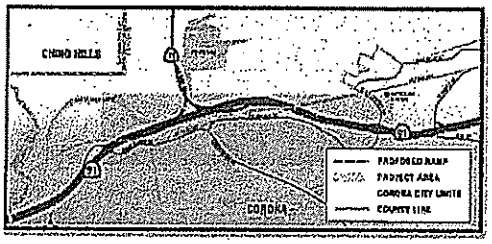
RCTC

new Initial Study and Proposed Mitigated Negative Declaration

Click here to download the Initial Study and Proposed Mitigated Negative Declaration.

Click here to find out how to comment on this project or attend a meeting.

State Route 91/State Route 71 Interchange Improvement Project



RCTC has begun the Project Report and Environmental Document process to improve the connection between State Route 91 and State Route 71 in and near the City of Corona. This project is part of a larger effort to improve mobility along the State Route 91 Corridor in Riverside County and Orange County.

The State Route 91/State Route 71 (SR-91/SR-71) interchange is a significant source of traffic congestion in the area, and this project is designed to reduce this congestion, enhance the safety of motorists, support the movement of goods, and improve mobility and connections between the two freeways and among the counties of Riverside, Orange and San Bernardino. Work on the preliminary engineering and environmental document began in spring 2008 and is expected to continue until early 2011.

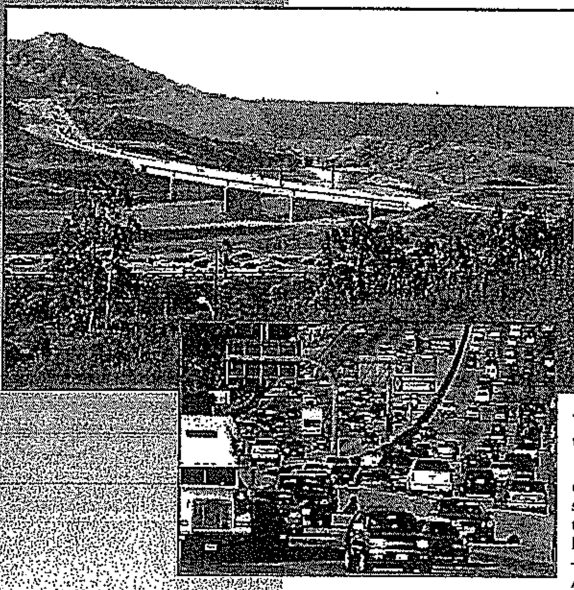
This interchange falls within one of four freeway corridors that RCTC has designated as high priorities to receive $2 billion in funding during the next 10 years. These four corridors – SR-91, Interstate 10, Interstate 15, and Interstate 215 – will receive priority funding from Measure A, the half-cent sales tax for transportation improvements in Riverside County. Schedules have been set to fund and deliver major transportation projects along these corridors during the coming decade.

A project of the Riverside County Transportation Commission
RCTC • 4080 Lemon Street, 3rd Floor, P.O. Box 12008 • Riverside, CA 92502-2208 • 951-787-7141 • www.rctc.org

Q&A SR-91/SR-71 INTERCHANGE PROJECT

A project of the Riverside County Transportation Commission

WHAT IS THE SR-91/SR-71 INTERCHANGE IMPROVEMENT PROJECT?



Improving mobility on State Route 91 is one of the top priorities of the Riverside County Transportation Commission (RCTC). The connection between State Route 91 and State Route 71 in and near the City of Corona is critical to reduced traffic congestion in this area. RCTC is proposing a set of improvements to the State Route 91/ State Route 71 (SR-91/SR-71) Interchange, which provides a vital link between the counties of Riverside, Orange and San Bernardino.

The proposed interchange improvements will reduce daily traffic delays. Drivers currently experience about one hour of delay during peak travel times on this section of SR-91, partially due to congestion at this interchange. The project also will enhance driver safety, boost inter-county connections, support the movement of goods, and facilitate mobility throughout Southern California. The total cost of the improvements is estimated to be $100 million.

The SR-91/SR-71 interchange falls within one of four freeway corridors that RCTC has selected to receive $2 billion in funding during the next 10 years. These four corridors – SR-91, Interstate 10, Interstate 15, and Interstate 215 – will receive priority funding from Measure A, the half-cent sales tax for transportation improvements in Riverside County. Schedules have been set to fund and deliver major transportation projects along these corridors during the coming decade.

Work is underway on the Project Report and Environmental Document phase of this interchange improvement effort. This phase of work is expected to continue until early 2011. Construction could start as early as 2013 and be complete by 2016.

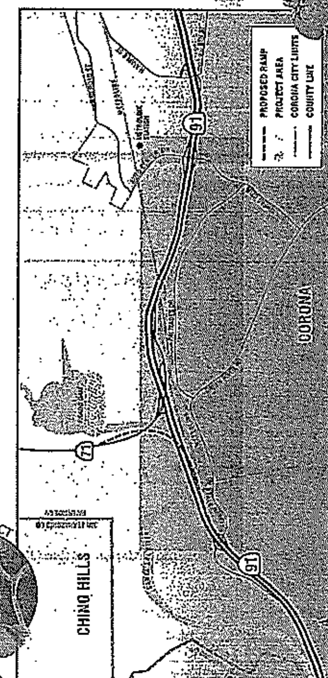
WHO ARE THE PROJECT PARTNERS?

The Riverside County Transportation Commission has teamed with the following agencies to plan and deliver this project:

- The California Department of Transportation
- The County of Riverside
- The City of Corona

RCTC
Riverside County Transportation Commission
www.rctc.org
November 2010

SR-91/SR-71 INTERCHANGE PROJECT



WHAT ARE THE PROJECT FEATURES?

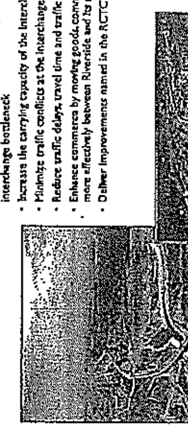
Two main improvements are being developed for the SR-91/SR-71 Interchange between Green River Road and Serfas Club Drive/Auto Center Drive in the Corona area. These improvements include:

- Building a proposed new two-lane direct flyover ramp between eastbound SR-91 and northbound SR-71 to replace the existing loop ramp
- Building a new separate eastbound road just south and parallel to SR-91 to provide improved access between the Green River Road Interchange and the SR-91/SR-71 Interchange

HOW WILL THIS PROJECT BENEFIT THIS CORRIDOR?

Commuters, residents and business operators will benefit from the SR-91/SR-71 Interchange project, which is designed to:

- Improve travel times for commuters by reducing the current interchange bottleneck
- Increase the carrying capacity of the interchange and freeway lanes
- Minimize traffic conflicts at the interchange through improved vehicle merging
- Reduce traffic delays, travel time and traffic diversion in the local area
- Enhance commerce by moving goods, commuters and recreational travelers more effectively between Riverside and its neighboring counties
- Deliver improvements named in the RCTC Measure A Delivery Plan



WHAT IS THE PROJECT SCHEDULE?

Transportation projects must complete a number of steps before they can be delivered. For the first step, the California Department of Transportation prepared an initial planning document – called a Project Study Report – in December 2006. Work is underway on the preliminary engineering and environmental studies, which will be used to develop a Project Report and Environmental Document. This step may take up to three years to complete. If the project receives environmental approval, final engineering, design and right-of-way acquisition should take about two years, followed by three years for construction. Please see table below for the estimated schedule.

SCHEDULE

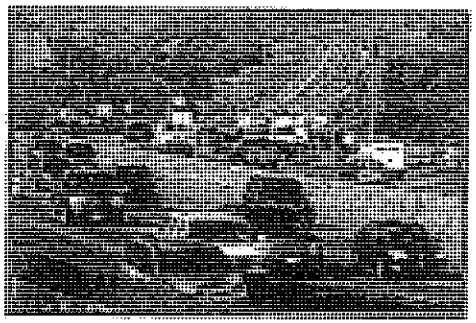
2006	2008-2011	2011-2013	2013-2016
Complete Project Study Report	Complete Project Report and Environmental Document	Final Engineering Design and Right-of-Way Acquisition	Project Construction and Completion

WHAT STUDIES ARE NEEDED FOR THIS PROJECT?

RCTC and Caltrans are preparing a Project Report and an Environmental Document for the SR-91/SR-71 interchange project. These documents will summarize the results of the following studies:

- Current and future traffic
- Preliminary engineering design
- Possible effects on air, water, noise, utilities and sensitive plants and wildlife
- Potential impacts to area residents and businesses, parks and recreational areas, cultural and historic resources, and public services
- Consistency with city and county general plans and compliance with Riverside County's Multi-Species Habitat Conservation Plan
- Project cost estimates

These reports are necessary to meet requirements of the California Environmental Quality Act and to obtain state approvals. If state approvals are obtained, final engineering design, environmental permitting, and right-of-way acquisitions will be conducted. Once these activities are completed, construction can begin.



HOW CAN YOU BE PART OF THIS PROCESS?

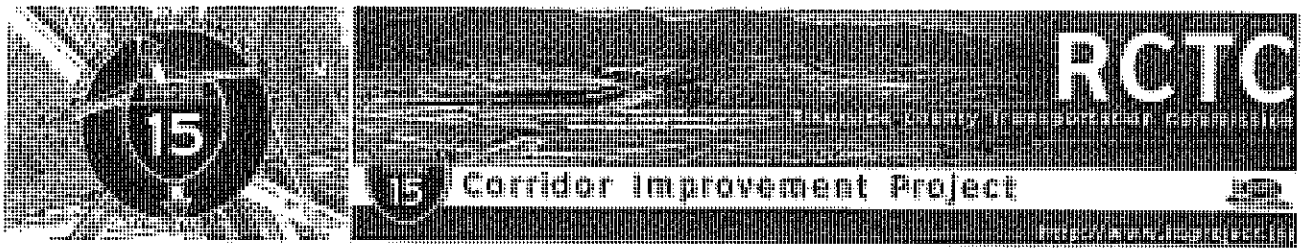
Public participation is a very important part of the environmental approval process. To learn more or to comment on the proposed improvements, please:

- Watch for notices and attend public meetings about the project
- Ask to be placed on the project mailing list
- Visit the project website at www.SR91-SR71project.info
- Visit the District 8 website of the California Department of Transportation: www.caltrans8.info
- Call RCTC at (951) 787-7141
- Write to the Riverside County Transportation Commission, P.O. Box 12008, Riverside, CA 92502-2208

ADDRESS SERVICE REQUESTED

SR-91/SR-71
INTERCHANGE PROJECT
Riverside County
Transportation Commission
P.O. Box 12008
Riverside, CA 92502

PRSRT
U S POSTAGE
PAID



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Project Oveview

Working to improve traffic capacity and operations on interstate 15 (I-15), the Riverside County Transportation Commission (RCTC) and California Department of Transportation (Caltrans) District 8 are exploring widening the highway from just north of the I-15/ I-215 separation near Murrieta, northward to State Route 60 (SR-60) near Ontario.

The project includes the study of two build alternatives and a no build alternative. Build Alternative 1 proposes to add one Carpool (HOV) lane and one regular or general purpose lane in each direction from SR-74 to SR-60 and one HOV Lane from I-215 to SR-74. The widening of this facility will occur by utilizing the unpaved center median whenever possible. Build Alternative 2 will add two Tolled Express lanes and one general purpose lane in each direction from SR-74 to SR-60 and one HOV Lane from I-215 to SR-74.

The proposed I-15 Corridor Improvement Project (CIP) stretches approximately 44 miles in length, traveling through Murrieta, Wildomar, Lake Elsinore, Corona, Norco and portions of unincorporated Riverside County. As an element of RCTC's 10-year western county highway delivery plan, the project currently has an estimated construction cost of $1.7 to $2.5 billion.

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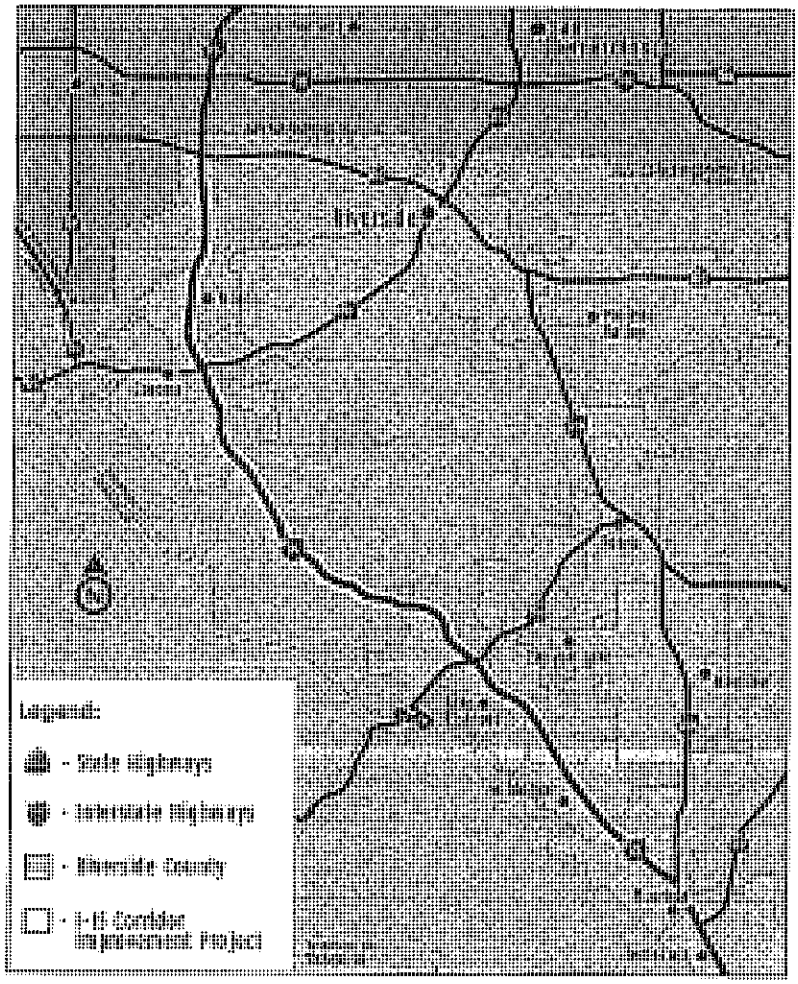
Project Map

RCTC and Caltrans District 8 propose to improve traffic capacity and operations on I-15 from just north of the I-15/I-215 separation in the City of Murrieta, northward to State Route 60 (SR-60).



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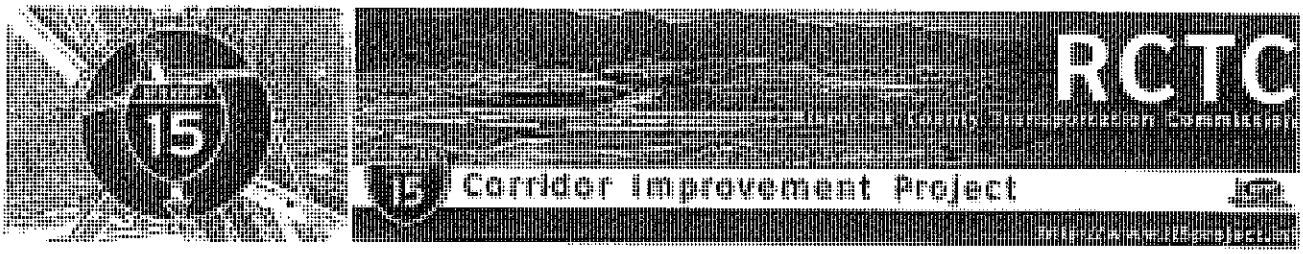

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Objectives

- Reduce traffic delays and travel time.
- Provide selected interchange ramp improvements.
- Implement improvements consistent with the RCTC 2009 Measure A 10-Year Delivery Plan.
- Reduce air pollution from stop-and-go traffic.
- Accommodate the Surface Transportation Assistance Act (STAA) National Network for trucks.
- Providing capacity and congestion relief.

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OCTA

ORANGE COUNTY TRANSPORTATION AUTHORITY

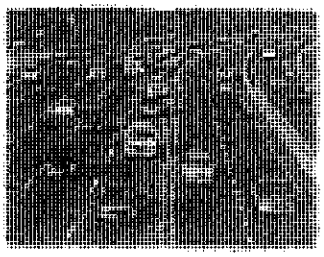
Draft 2011 State Route 91 Implementation Plan

PowerPoint

OCTA

Background

- AB 1010 (Chapter 688, Statutes 2002)
  - Enabled OCTA purchase of 91 Express Lanes
  - Eliminated non-compete clause
  - Required annual plan submittal to legislature
- SB 1316 (Chapter 714, Statutes 2008)
  - Authorizes OCTA transfer of express lanes rights within Riverside County
  - Allows for additional capital and transit projects
  - Extends OCTA/RCTC toll operation window to 2065



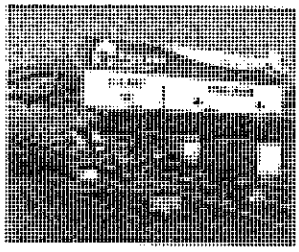
OCTA – Orange County Transportation Authority
RCTC – Riverside County Transportation Commission

Plan Background

- Emerged from 2005 major investment study and state legislation
- Comprehensive plan to improve inter-county travel
- Many projects now in development phase
- Updated annually
- Organized by project readiness

Overview

- 2011 plan update incorporates:
  - SB 1316
  - OCTA Measure M2
  - RCTC 10-year delivery plan
  - RCTC Measure A
  - Recent project development activities
- Projects are grouped by implementation year
- Traffic analysis
- Next steps



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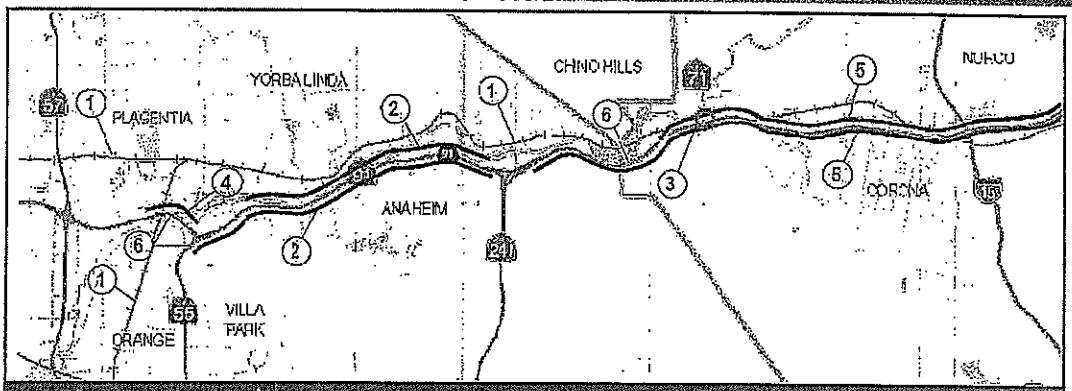
Projects By Year 2016

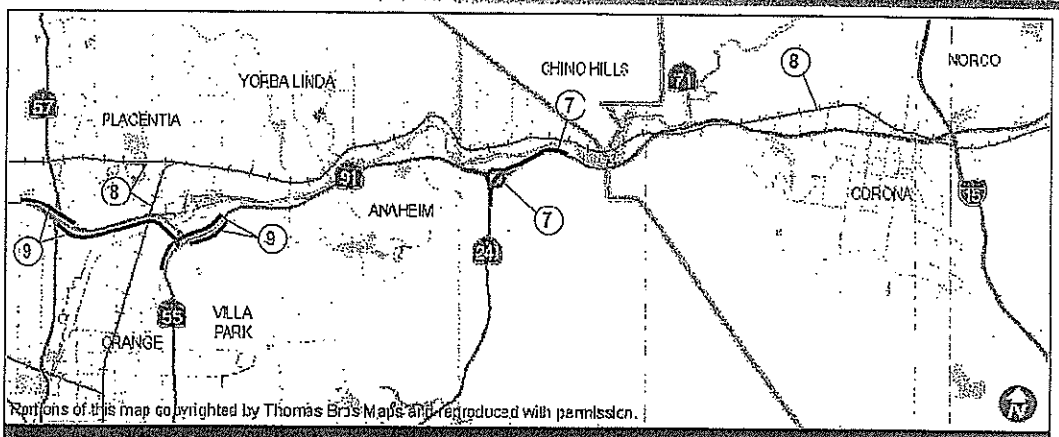


Project No.	Project Summary - Implementation Year 2016	Cost ($M)
1	Metrolink Short-Term Expansion Plan (2013)	35.4
2	Widen SR-91 Between SR-55 and SR-241 by Adding a 5th General Purpose (GP) Lane in Each Direction (2013)	71.0
3	SR-71/SR-91 Interchange Improvements (2015)	120.2
4	SR-91 Westbound Lane at Tustin Avenue (2015)	38.3
5	Initial CIP: Widen SR-91 by One GP Lane in Each Direction East of County Line, Collector-Distributor Roads and I-15/ SR-91 Direct South Connector, Extension of Express Lanes to I-15 and System/Local Interchange Improvements (2016)	1,300
6	Express Bus Improvements Orange County to Riverside County (2016)	9.5
	SUBTOTAL	1,574

OCTA

SR-91 – Riverside Freeway (State Route 91)
SR-55 – Costa Mesa Freeway (State Route 55)
SR-241 – Foothill Transportation Corridor (State Route 241)
SR-71 – Corona Expressway (State Route 71)
CIP – Corridor Improvement Project
I-15 – Ontario Freeway (Interstate 15)

Projects Between Years 2017 and 2025



Project No.	Project Summary - Implementation Year 2025	Cost ($M)
7	SR-241/SR-91 Express Lanes Connector (2017)	180
8	Metrolink Service and Station Improvements (2020)	335
9	SR-91 Between SR-57 and SR-55 (2025)	425
	SUBTOTAL	940

SR-57 – Orange Freeway (State Route 57)

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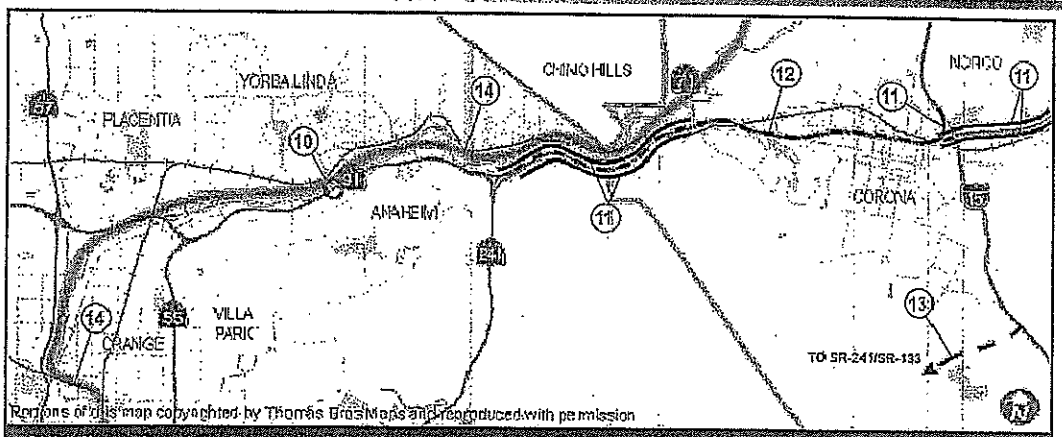
Projects Between Years 2026 and 2035



Project No.	Project Summary - Implementation Year 2035	Cost ($M)
10	Fairmont Boulevard Improvements (Post-2025)	76.8
11	Ultimate CIP: Widen SR-91 by One GP Lane in Each Direction from SR-241 to SR-71, I-15/SR-91 Direct North Connector, Extension of Express Lanes on I-15 and SR-91 Improvements East of I-15 (Post-2025)	TBD
12	Elevated Four-Lane Facility (Major Investment Corridor A) from SR-241 to I-15 (TBD)	2,720
13	Irvine Corona Expressway Four-Lane Facility from SR-241/SR-133 to I-15/Cajalco Road (TBD)	8,855
14	Anaheim to Ontario International Airport High-Speed Rail (Post-2030)	TBD
	SUBTOTAL	11,650+

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TBD – To be determined

Traffic Analysis

- Operations model focused on freeway congestion
- Shows benefits of major projects
- Results presented for existing, interim, and horizon years

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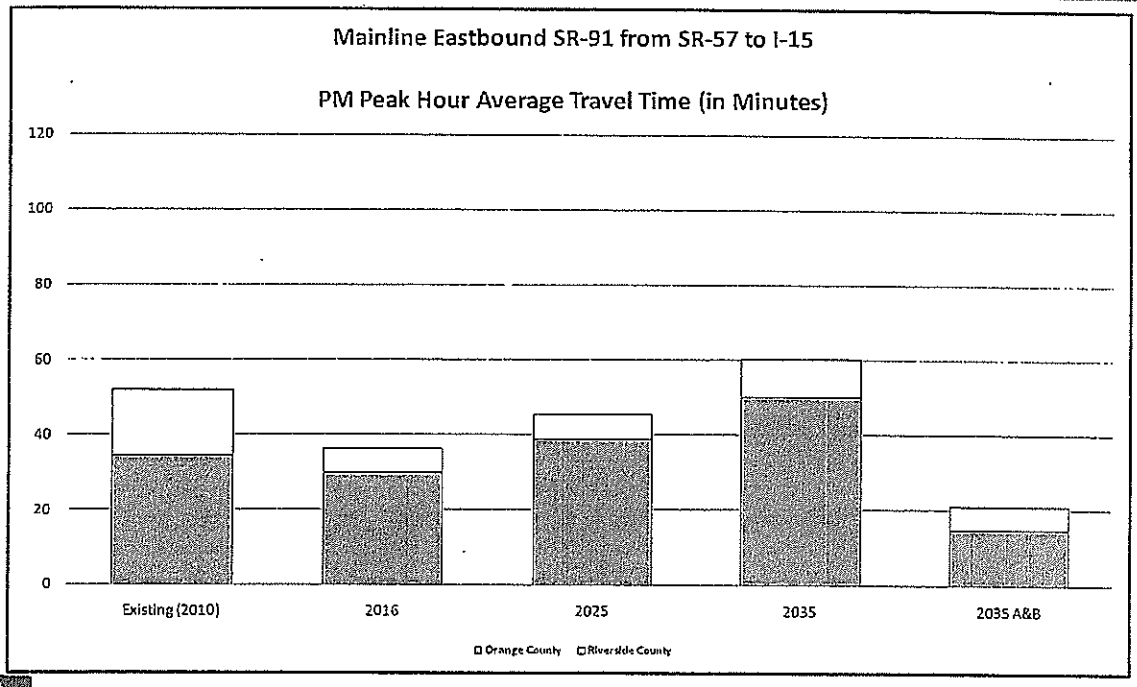
Traffic Summary (PM, eastbound)



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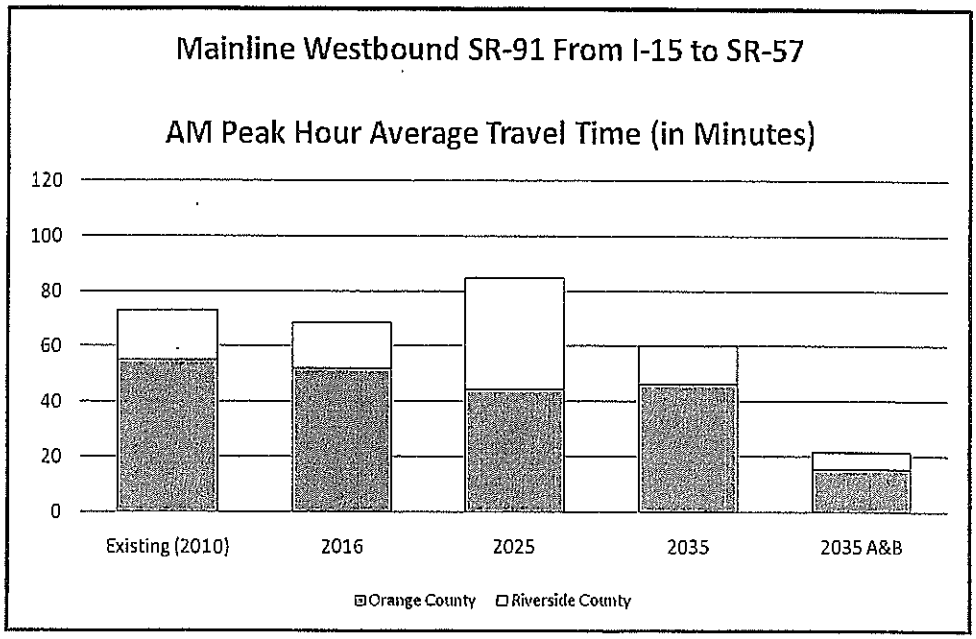
Traffic Summary (AM, westbound)



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Recommendations/Next Steps

- Approve draft plan
- Provide to OCTA Board of Directors and RCTC in mid-June and July
- Forward approved plan to state legislature
- Continue project implementation efforts
- Continue to seek funding opportunities

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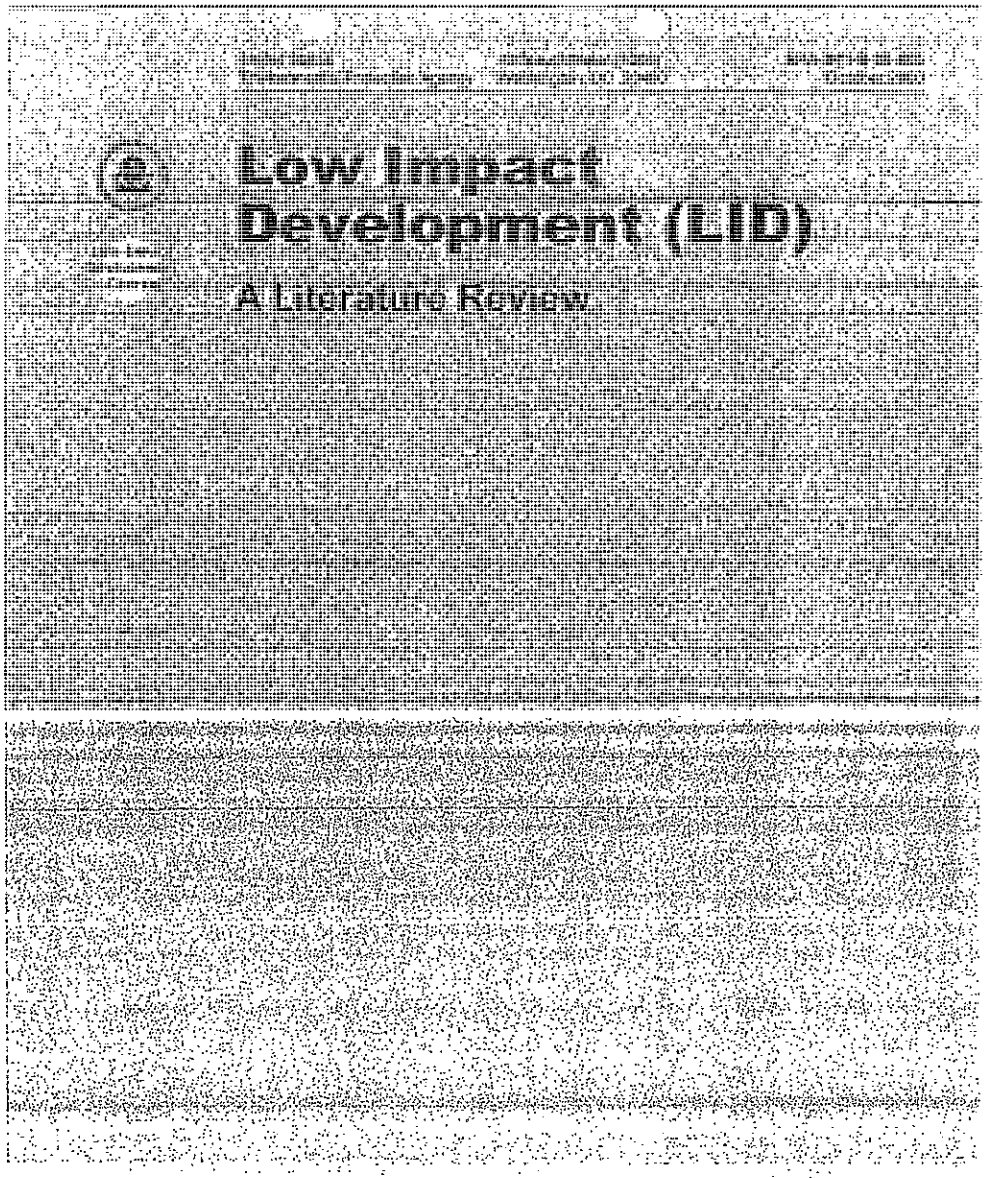

EXECUTIVE SUMMARY

A literature review was conducted to determine the availability and reliability of data to assess the effectiveness of low impact development (LID) practices for controlling stormwater runoff volume and reducing pollutant loadings to receiving waters.

Background information concerning the uses, ownership and associated costs for LID measures was also compiled. In general LID measures are more cost effective and lower in maintenance than conventional, structural stormwater controls. Not all sites are suitable for LID. Considerations such as soil permeablility, depth of water table and slope must be considered, in addition to other factors. Further, the use of LID may not completely replace the need for conventional stormwater controls.

Maintenance issues can be more complicated than for conventional stormwater controls because the LID measures reside on private property. In most instances, homeowners agree to only the first year of maintenance. Homeowner associations could be a mechanism for providing long-term maintenance to these areas. Generally, bioretention facilities require replacement of dead or diseased vegetation, remulching as needed, and replacement of soils after 5–10 years. Grass swales require periodic mowing and removal of sediments. Maintenance of permeable pavements requires annual high-powered vacuuming of the area to remove sediments.

Several studies have been conducted to analyze the effectiveness of various LID practices based on hydrology and pollutant removal capabilities. Bioretention areas, grass swales, permeable pavements and vegetated roof tops were the most common practices studied. These techniques reduce the amount of Effective Impervious Area (EIA) in a watershed. EIA is the directly connected impervious area to the storm drain system and contributes to increased watershed volumes and runoff rates. There are documented case studies that conclusively link urbanization and increased watershed imperviousness to hydrologic impacts on streams. Existing reports and case studies provide strong evidence that urbanization negatively affects streams and results in water quality problems such as loss of habitat, increased temperatures, sedimentation and loss of fish populations (USEPA, 1997)

In general bioretention areas were found to be effective in reducing runoff volume and in treating the first flush (first ½ inch) of stormwater. Results from three different studies indicate that removal efficiencies were quite good for both metals and nutrients. Removal rates for metals were more consistent than for nutrients. Removal rates for metals ranged from 70–97% for lead, 43–97% for copper and 64–98% for zinc. Nutrient removal was more variable and ranged from 0–87% for phosphorus, 37–80% for Total Kjeldahl Nitrogen, <0–92% for ammonium and for nitrate <0–26%. Effluent volumes were lower than influent volumes. These studies were conducted by means of simulated rainfall events. Analysis of actual long-term rainfall events would produce more reliable data.

The effectiveness of grass swales was also quite good for both pollutant removal and runoff volume reduction. A study of three different sites in the United States reveal similar results despite the differences in location. In general, performance of swales is

dependant on not only channel length, but also longitudinal slope and the use of check dams to slow flows and allow for greater infiltration. Further, the removal of metals was found to be directly related to the removal rate of total suspended solids, and the removal rate of metals was greater than removal of nutrients.

Reduction of impervious surfaces can greatly reduce the volume of runoff generated by rainfall. Several methods can be employed to reduce total impervious surface area. Permeable pavements and vegetated rooftops are two methods to accomplish this goal. Vegetated rooftops have been used extensively in Germany for more than 25 years and results show up to 50% reduction in annual runoff in temperate climates. Many opportunities exist to retrofit these systems into older highly urbanized areas of the United States. The Philadelphia project case study provides an example of this practice.

Permeable pavements can also reduce impervious surfaces. However, they are more expensive to construct than traditional asphalt pavements. Costs of these systems may be off set by the reduction of traditional curb and gutter systems to convey stormwater. Benefits of these alternate pavement types include better infiltration, ground water recharge, reduction in runoff volume and treatment of stormwater for pollutants. The study conducted in Tampa, Florida outlines these benefits as well as the opportunity to retrofit permeable pavements into existing parking lots with little or no loss of parking space. Less than 20% of rainfall was converted to runoff when using permeable pavements. Study results from the University of Washington, compare several different treatments of varying permeability. The study shows that the higher the amount of perviousness of the treatment, the greater the reduction of runoff volume and pollutant loadings.

The use of LID is relatively new and not widespread. Most of the available data are from Prince George's County, Maryland, which pioneered the use of LID. The data available for bioretention analysis were from single simulated storm events in actual bioretention facilities or from laboratory constructed and tested bioretention systems. The data for grass swales were for only a few storm events, collected over a short period of time. The only available data for a long-term study came from the Aquarium parking lot in Tampa, Florida and the Washington permeable pavement project. More long-term analysis is required to more accurately assess the effectiveness of LID and to determine long term trends.

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1 LOW IMPACT DEVELOPMENT

1.1. Introduction

Low impact development (LID) is a relatively new concept in stormwater management. LID techniques were pioneered by Prince George's County, Maryland, in the early 1990's, and several projects have been implemented within the state. Some LID principles are now being applied in other parts of the country, however, the use of LID is infrequent and opportunities are often not investigated. The purpose of this report is to conduct a literature review to determine existing information about the application of LID in new development and existing urbanized areas, including ownership, operation and maintenance issues. A related objective was to locate relevant studies of LID projects, which would provide evidence of the effectiveness of LID in retaining predevelopment hydrology and as a mechanism for pollutant removal for stormwater. The data from the studies were analyzed for usefulness and validity and the findings are summarized.

LID is a site design strategy with a goal of maintaining or replicating the pre-development hydrologic regime through the use of design techniques to create a functionally equivalent hydrologic landscape. Hydrologic functions of storage, infiltration, and ground water recharge, as well as the volume and frequency of discharges are maintained through the use of integrated and distributed micro-scale stormwater retention and detention areas, reduction of impervious surfaces, and the lengthening of flow paths and runoff time (Coffman, 2000). Other strategies include the preservation/protection of environmentally sensitive site features such as riparian buffers, wetlands, steep slopes, valuable (mature) trees, flood plains, woodlands and highly permeable soils.

LID principles are based on controlling stormwater at the source by the use of micro-scale controls that are distributed throughout the site. This is unlike conventional approaches that typically convey and manage runoff in large facilities located at the base of drainage areas. These multifunctional site designs incorporate alternative stormwater management practices such as functional landscape that act as stormwater facilities, flatter grades, depression storage and open drainage swales. This system of controls can reduce or eliminate the need for a centralized best management practice (BMP) facility for the control of stormwater runoff. Although traditional stormwater control measures have been documented to effectively remove pollutants, the natural hydrology is still negatively affected (inadequate base flow, thermal fluxes or flashy hydrology), which can have detrimental effects on ecosystems, even when water quality is not compromised (Coffman, 2000). LID practices offer an additional benefit in that they can be integrated into the infrastructure and are more cost effective and aesthetically pleasing than traditional, structural stormwater conveyance systems.

Conventional stormwater conveyance systems are designed to collect, convey and discharge runoff as efficiently as possible. The intent is to create a highly efficient drainage system, which will prevent on lot flooding, promote good drainage and quickly convey runoff to a BMP or stream. This runoff control system decreases groundwater

recharge, increases runoff volume and changes the timing, frequency and rate of discharge. These changes can cause flooding, water quality degradation, stream erosion and the need to construct end of pipe BMPs. Discharge rates using traditional BMPs may be set only to match the predevelopment peak rate for a specific design year. This approach only controls the rate of runoff allowing significant increases in runoff volume, frequency and duration of runoff from the predevelopment conditions and provides the mechanisms for further degradation of receiving waters (Figure 1).

LID has often been compared to other innovative practices, such as Conservation Design, which uses similar approaches in reducing the impacts of development, such as reduction of impervious surfaces and conservation of natural features. Although the goals of Conservation Design protect natural flow paths and existing vegetative features, stormwater is not treated directly at the source. Conservation Design protects large areas adjacent to the development site and stormwater is directed to these common areas.

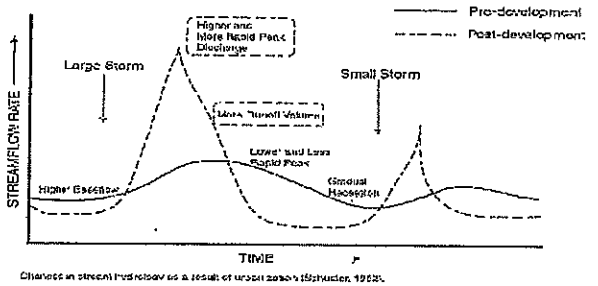

Figure 1: Changes in Stormwater Hydrology as a Result of Urbanization

Although this approach protects trees and does reduce runoff, there is still potentially a significant amount of connected impervious area and centralized stormwater facilities that may contribute to stream degradation through stormwater volume, frequency and thermal impacts. Therefore, the hydrologic and hydraulic impacts of this approach on receiving waters may still be significant, although the volume and flows will be less than without the conservation design. The stormwater control measures used in Conservation Design are off-site and therefore not the individual property owner's responsibility. However, maintenance is generally provided by the homeowners association and financed through association fees.

1.2 Benefits and Limitations

The use of LID practices offers both economical and environmental benefits. LID measures result in less disturbance of the development area, conservation of natural features and can be less cost intensive than traditional stormwater control mechanisms. Cost savings for control mechanisms are not only for construction, but also for long-term

maintenance and life cycle cost considerations. For example, an alternative LID stormwater control design for a new 270 unit apartment complex in Aberdeen, NC will save the developer approximately 72% or $175,000 of the stormwater construction costs. On this project, almost all of the subsurface collection systems associated with curb and gutter projects have been eliminated. Strategically located bioretention areas, compact weir outfalls, depressions, grass channels, wetland swales and specially designed storm water basins are some of the LID techniques used. These design features allow for longer flow paths, reduce the amount of polluted runoff and filter pollutants from stormwater runoff (Blue Land, Water and Infrastructure, 2000).

Today many states are facing the issue of urban sprawl, a form of development that consumes green space, promotes auto dependency and widens urban fringes, which puts pressure on environmentally sensitive areas. "Smart growth" strategies are designed to reconfigure development in a more eco-efficient and community oriented style. LID addresses many of the environmental practices that are essential to smart growth strategies including the conservation of open green space. LID does not address the subject of availability of public transportation.

LID provides many opportunities to retrofit existing highly urbanized areas with pollution controls, as well as address environmental issues in newly developed areas. LID techniques such as rooftop retention, permeable pavements, bioretention and disconnecting rooftop rain gutter spouts are valuable tools that can be used in urban areas. For example, stormwater flows can easily be directed into rain barrels, cisterns or across vegetated areas in high-density urban areas. Further, opportunities exist to implement bioretention systems in parking lots with little or no reduction in parking space. The use of vegetated rooftops and permeable pavements are 2 ways to reduce impervious surfaces in highly urbanized areas.

LID techniques can be applied to a range of lot sizes. The use of LID, however, may necessitate the use of structural BMPs in conjunction with LID techniques in order to achieve watershed objectives. The appropriateness of LID practices is dependent on site conditions, and is not based strictly on spatial limitations. Evaluation of soil permeability, slope and water table depth must be considered in order to effectively use LID practices. Another obstacle is that many communities have development rules that may restrict innovative practices that would reduce impervious cover. These "rules" refer to a mix of subdivision codes, zoning regulations, parking and street standards and other local ordinances that determine how development happens (Center for Watershed Protection, 1998). These rules are responsible for wide streets, expansive parking lots and large-lot subdivisions that reduce open space and natural features. These obstacles are often difficult to overcome.

Additionally, community perception of LID may prevent its implementation. Many homeowners want large-lots and wide streets and view reduction of these features as undesirable and even unsafe. Furthermore, many people believe that without conventional controls, such as curbs and gutters and end of pipe BMPs, they will be required to contend with basement flooding and subsurface structural damage.

2 LOW IMPACT DEVELOPMENT PRACTICES

LID measures provide a means to address both pollutant removal and the protection of predevelopment hydrological functions. Some basic LID principles include conservation of natural features, minimization of impervious surfaces, hydraulic disconnects, disbursement of runoff and phytoremediation. LID practices such as bioretention facilities or rain gardens, grass swales and channels, vegetated rooftops, rain barrels, cisterns, vegetated filter strips and permeable pavements perform both runoff volume reduction and pollutant filtering functions.

2.1 Bioretention

Bioretention systems are designed based on soil types, site conditions and land uses. A bioretention area can be composed of a mix of functional components, each performing different functions in the removal of pollutants and attenuation of stormwater runoff (Figure 2).

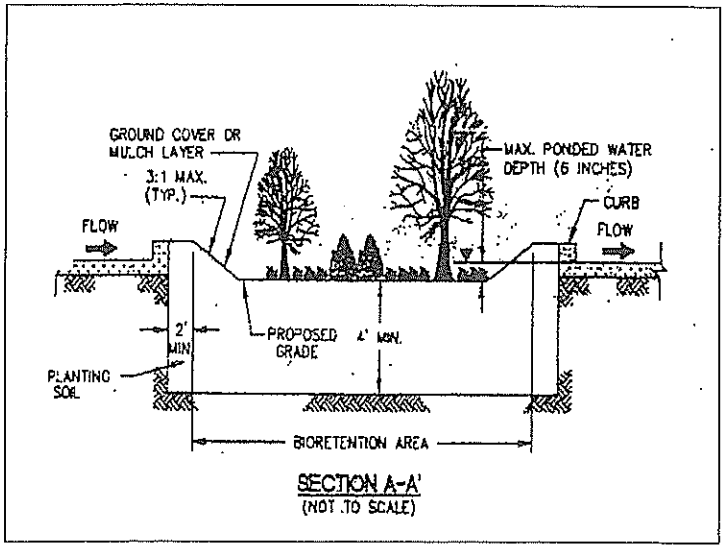

Figure 2: Typical Bioretention System (Prince George's County Department of Environmental Resources, 1993)

Six typical components found in bioretention cells:

- Grass buffer strips reduce runoff velocity and filter particulate matter.
- Sand bed provides aeration and drainage of the planting soil and assists in the flushing of pollutants from soil materials.
- Ponding area provides storage of excess runoff and facilitates the settling of particulates and evaporation of excess water.
- Organic layer performs the function of decomposition of organic material by providing a medium for biological growth (such as microorganisms) to degrade petroleum-based pollutants. It also filters pollutants and prevents soil erosion.
- Planting soil provides the area for stormwater storage and nutrient uptake by plants. The planting soils contain some clays which adsorb pollutants such as hydrocarbons, heavy metals and nutrients.
- Vegetation (plants) functions in the removal of water through evapotranspiration and pollutant removal through nutrient cycling.

Bioretention facilities are less cost intensive than traditional structural stormwater conveyance systems. Construction of a typical bioretention area in Prince George's County, Maryland is between $5,000 and $10,000 per acre drained, depending on soil type (Weinstein, 2000). Other sources estimate the costs for developing bioretention sites at between $3 and $15 per square foot of bioretention area. Design guidelines recommend that bioretention systems occupy 5-7% of the drainage basin. Additional savings can be realized in reduced construction costs for storm drainpipe. For example, bioretention practices reduced the amount of storm drain pipe at a Medical Office building in Prince George's County, Maryland from 800 to 230 feet, which resulted in a cost savings of $24,000 or 50% of the overall drainage cost for the site (Dept. of Env. Resources, 1993).

Components of the bioretention area should meet required guidelines in order to provide the most productive system possible. The mulch layer should be approximately 2-3 inches thick and replaced annually. Soil should be tested for several criteria before being used.

- pH range 5.5–6.5
- Organic matter 1.5–3.0%
- Magnesium (Mg) 35lbs/acre
- Phosphorus (P2O5) 100lbs/acre
- Potassium (K2O) 85lbs/acre
- Soluble salts < 500 ppm

Plant material should be obtained from certified nurseries that have been inspected by state or federal agencies (Dept. of Env. Resources, 1993). Native species should be used and selected according to their moisture regime, morphology, susceptibility to pests and diseases and tolerance to pollutants. Selection of plant species should be based on site conditions and ecological factors. A minimum of three species of trees and three species of shrubs should be selected to insure diversity, differing rates of transpiration and ensure a more constant rate of evapotransportation and nutrient and pollutant uptake throughout the growing season (Dept. of Env. Resources, 1993). Species that require regular maintenance should be avoided or restricted. Prince George's County recommends a warranty be established with the nursery as part of the plant installation, and should include care and 80% replacement of plants for the first year.

Table 1: Example Maintenance Schedule for Bioretention Areas (Prince George's County, Department of Environmental Resources, 1993)

Description	Method	Frequency	Time of Year
Soil			
Inspect and Repair Erosion	Visual	Monthly	Monthly
Organic Layer			
Remulch void areas	By Hand	As Needed	As Needed
Remove previous mulch layer before applying new layer (optional)	By Hand	Once a Year	Spring
Additional mulch added (optional)	By Hand	Once a Year	Spring
Plants			
Remove and replace all dead and diseased vegetation that cannot be treated	See Planting Specifications	Twice a Year	Mar 15–Apr 30 and Oct 1–Nov 30
Treat all diseased trees and shrubs	Mechanical or by Hand	N/A	Varies, depends on insect or disease infestation
Water of plant materials, at the end of the day for 14 consecutive days after planting	By Hand	Immediately after Completion of Projects	N/A
Replace stakes after one year	By Hand	Once a Year	Remove only in the Spring
Replace deficient stakes or wires	By Hand	N/A	As Needed

Annual maintenance is required for the overall success of bioretention systems. This includes maintenance of plant material, soil layer and the mulch layer. A maintenance schedule outlining methods, frequency and time of year for bioretention maintenance should be developed. Table 1 is a typical maintenance checklist. Plants will provide enhanced environmental benefit over time as root systems and leaf canopies increase in size and pollutant uptake and removal efficiencies. Soils, however, begin filtering pollutants immediately and can lose their ability to function in this capacity over time. Therefore, evaluation of soil fertility is important in maintaining an effective bioretention system. Substances in runoff such as nutrients and metals eventually disrupt normal soil

functions by lowering the cation exchange capacity (CEC) (Dept. of Env. Resources, 1993). CEC is the soil's ability to adsorb pollutant particles through ion attraction and will decrease over time. It is recommended that soils be tested annually and replaced when soil fertility is lost. Depending on environmental factors, this usually occurs within 5-10 years of construction. Replacement of soil can be accomplished in 1-2 days for approximately $1,000-$2,000 for a typical system which will drain one acre in the northeastern U.S. (Weinstein, 2000).

2.2 Grass Swales

Grass swales or channels are adaptable to a variety of site conditions, are flexible in design and layout, and are relatively inexpensive (USDOT, 1996). Generally open channel systems are most appropriate for smaller drainage areas with mildly sloping topography (Center for Watershed Protection, 1998). Their application is primarily along residential streets and highways. They function as a mechanism to reduce runoff velocity and as filtration/infiltration devices. Sedimentation is the primary pollutant removal mechanism, with additional secondary mechanisms of infiltration and adsorption. In general grass channels are most effective when the flow depth is minimized and detention time is maximized. The stability of the channel or overland flow is dependant on the erodibility of the soils in which the channel is constructed (USDOT, 1996). Decreasing the slope or providing dense cover will aid in both stability and pollutant removal effectiveness.

Engineered swales are less costly than installing curb and gutter/storm drain inlet and storm drain pipe systems. The cost for traditional structural conveyance systems ranges from $40–$50 per running foot. This is two to three times more expensive than an engineered grass swale (Center for Watershed Protection, 1998). Concerns that open channels are potential nuisance problems, present maintenance problems, or impact pavement stability can be alleviated by proper design. Periodic removal of sediments and mowing are the most significant maintenance requirements.

2.3 Vegetated Roof Covers

Vegetative roof covers or green roofs are an effective means of reducing urban stormwater runoff by reducing the percentage of impervious surfaces in urban areas. They are especially effective in older urban areas with chronic combined sewer overflow (CSO) problems, due to the high level of imperviousness. The green roof is a multilayered constructed material consisting of a vegetative layer, media, a geotextile layer and a synthetic drain layer. Vegetated roof covers in urban areas offer a variety of benefits, such as extending the life of roofs, reducing energy costs and conserving valuable land that would otherwise be required for stormwater runoff controls. Green roofs have been used extensively in Europe to accomplish these objectives. Many opportunities are available to apply this LID measure in older U.S. cities with stormwater infrastructures that have reached their capacities.

Green roofs are highly effective in reducing total runoff volume. Simple vegetated roof covers, with approximately 3 inches of substrate can reduce annual runoff by more than 50 percent in temperate climates (Miller, 2000). Research in Germany shows that the 3-inch design offers the highest benefit to cost ratio. Properly designed systems not only reduce runoff flows, but also can be added to existing rooftops without additional reinforcement or structural design requirements. The value of green roofs for reducing runoff is directly linked to the design rainfall event considered. Design should be developed for the storm events that most significantly contribute to CSOs, hydraulic overloads and runoff problems for a given area.

2.4 Permeable Pavements

The use of permeable pavements is an effective means of reducing the percent of imperviousness in a drainage basin. More than thirty different studies have documented that stream, lake and wetland quality is reduced sharply when impervious cover in an upstream watershed is greater than 10%. Porous pavements are best suited for low traffic areas, such as parking lots and sidewalks. The most successful installations of alternative pavements are found in coastal areas with sandy soils and flatter slopes (Center for Watershed Protection, 1998). Permeable pavements allow stormwater to infiltrate into underlying soils promoting pollutant treatment and recharge, as opposed to producing large volumes of rainfall runoff requiring conveyance and treatment. Costs for paving blocks and stones range from $2 to $4, whereas asphalt costs $0.50 to $1 (Center for Watershed Protection, 1998).

2.5 Other LID Strategies

Another strategy to minimize the impacts of development is the implementation of rain gutter disconnects. This practice involves redirecting rooftop runoff conveyed in rain gutters out of storm sewers, and into grass swales, bioretention systems and other functional landscape devices. Redirecting runoff from rooftops into functional landscape areas can significantly reduce runoff flow to surface waters and reduce the number of CSO events in urban areas. As long as the stormwater is transported well away from foundations, concerns of structural damage and basement flooding can be alleviated. As an alternative to redirection of stormwater to functional landscape, rain gutter flows can be directed into rain barrels or cisterns for later use in irrigating lawns and gardens. Disconnections of rain gutters can effectively be implemented on existing properties with little change to present site designs.

Many strategies exist to reduce the amount of impervious surface in development areas. Designing residential streets for the minimum required width needed to support traffic, on-street parking and emergency service vehicles, can reduce imperviousness. Other practices include shared driveways and parking lots, alternative pavements for overflow parking areas, center islands in cul-de-sacs, alternative street designs rather than traditional grid patterns and reduced setbacks and frontages for homes.

3 EVALUATION OF LID EFFECTIVENESS

3.1 Hydrological Measures

Enhancements in site drainage from traditional stormwater control measures, such as curbs and gutters that eliminate potential on-site flooding, often result in an increase in surface runoff. These alterations can cause an increase in volume, frequency and velocity of runoff flows, resulting in flooding, high erosion and a reduction in groundwater infiltration, as well as a reduction in water quality and habitat degradation. Four hydrological functions should be considered when investigating the effectiveness of LID practices. The runoff curve number (CN), time of concentration, retention and detention. LID techniques and the hydrological design and analysis components are represented in (Table 2).

Table 2: Low Impact Hydrologic Design and Analysis Components (Coffman, 2000)

	Low Impact Hydrologic Design and Analysis Components			
LID Practice	Lower Post-Development CN	Increase Tc	Retention	Detention
Flatten Slopes		X		
Increase Flow Path		X		
Increase Roughness		X		
Minimize Disturbances	X			
Flatten Slopes on Swale		X		X
Infiltration Swales	X		X	
Vegetative Filter Strips	X	X	X	
Disconnected Impervious Areas	X	X		
Reduce Curb and Gutter	X	X		
Rain Barrels		X	X	X
Rooftop Storage		X	X	X
Bioretention	X	X	X	
Revegetation	X	X	X	
Vegetation Presentation	X	X	X	

The runoff potential for a site is characterized by the runoff curve number or CN. One method of measuring hydrological function on a developed site is to compare the pre and post developed curve number. The CN method is used extensively in the analysis of environmental impact and design rainfall-runoff hydrology. The curve number measures a watershed or subwatershed's hydrological response and is determined based on soil type, land cover and amount of impervious surfaces (Hawkins 1998). A detailed evaluation of both proposed and existing land cover is the basis for determining the low-impact development CN, which is a calculation of the potential for runoff at a development site. One of the goals of LID is to design a system so that the post-developed CN is as close as possible to the predevelopment CN for the site. Limiting the percent of imperviousness is one technique to accomplishing this. The runoff coefficient, which can be derived from the CN, calculates the percent of rainfall converted to runoff.

The time of concentration (Tc) refers to the amount of time it takes for water to travel from the most distant point to the watershed outlet. By retaining predevelopment Tc, negative impacts associated with development can be reduced. Retention and detention of rainfall are the key components of increases in Tc. As the amount of impervious surface increases within a site, altering drainage paths, the contribution of total land area to excess rainfall increases, causing the time for stormwater to reach downstream outlets to decrease. This decrease in Tc reduces the pollutant removal capabilities of the site as well as resulting in an increase in the peak runoff rate. Maintaining Tc can be achieved by:

- Maintaining flow path lengths
- Increasing surface roughness
- Detaining flows
- Minimizing disturbances at the site
- Flattening grades in impact areas
- Disconnecting impervious surfaces
- Connecting pervious surfaces

3.2 Pollutant Removal Measures

Changes in site runoff characteristics can contribute to a reduction in water quality and degradation of aquatic and terrestrial habitats. LID practices provide a high level of water quality treatment controls due to runoff volume control of the "first flush" (first ½ inch) of runoff, which contains the highest pollutant loadings. Often LID practices control up to the first 2 inches of runoff and therefore treat a much greater volume of annual runoff (Coffman, 2000). By increasing the Tc and decreasing the flow velocity, LID practices result in a reduction in pollutant transport capacity and overall pollutant loading. Further, LID practices support pollution prevention by modifying human activities, which lower the introduction of pollutants into the environment.

LID practices such as bioretention facilities or rain gardens can be used as a mechanism for infiltration and pollutant removal, which is performed through physical and biological treatment processes occurring in the plant and soil complex. These processes include filtration, decomposition, ion exchange, adsorption and volatilization (Dept. of Env. Resources, 1993). Pollutant loadings are concentrated in the "first flush" of runoff from impervious surfaces and contain grease and oil, nutrients (nitrogen and phosphorous), sediments and heavy metals. Pollutant loadings and water quality impacts from development have been well documented in numerous studies. Concentrations of pollutants are appropriate to look at bio affects, but pollutant loads are better for assessing impacts to downstream habitats when cumulative effects are considered (Rushton, 1999). Studies should consider investigating both total metals and dissolved metals, when analyzing LID practice's effectiveness.

4 CASE STUDIES

The LID "functional landscape" is designed to mimic the predevelopment hydrological conditions through runoff volume control, peak runoff rate control, flow frequency/duration control and water quality control. Determining effectiveness of LID practices can be achieved by evaluating hydrological function and pollutant removal capabilities. Little investigation has been done to prove the actual effectiveness of LID in retaining predevelopment hydrology and preventing or reducing pollutant loadings caused by stormwater runoff on developed sites. LID is a relatively new concept in stormwater management and not widely implemented in all areas and climates in the United States. Limited research and analysis has been conducted on the various practices, due to this limited application.

The following case studies, though limited, represent the best examples of projects that use LID concepts for stormwater management. Both hydrologic and pollutant removal effectiveness are investigated. The most significant source for data is Prince George's County, Maryland where many of the LID practices were developed and first implemented. The Low-Impact Development Center, also located in Maryland, has done significant work in design and planning of LID sites. First year data from a two-year study of a Tampa, Florida, retrofit parking lot and an on-going permeable pavement project in Washington state provide the only long term analysis for the effectiveness of LID concepts (permeable pavements and swales) currently available.

4.1 Bioretention Facility
Laboratory and Field Study
Beltway Plaza Mall Parking Lot, Greenbelt, MD

Introduction

Land development results in increased stormwater runoff at the expense of infiltration. Additionally, surface runoff contains a broad range of pollutants and has been identified as one of the major sources for pollution of natural waters. Detention basins are commonly used for stormwater quality improvement and to optimize the infiltration of stormwater for recharge. A simple, yet effective method to control stormwater is through the use of bioretention areas or rain gardens.

Bioretention systems generally require less space, are more economical to build and require less maintenance than large-scale detention ponds. In addition these landscaped areas have aesthetic value. The design capacity for the system is generally for a typical storm event (0.5-0.7 inches per hour of rainfall over six hours) and to handle runoff from a small development area. The goal of this study is to compare field results with baseline data obtained through a laboratory constructed and tested bioretention systems.

Study Site

This study was conducted in two phases. The first phase took place at the University of Maryland, Department of Civil Engineering, Stormwater Lab in College Park, Maryland. Two different-sized bioretention prototypes were constructed and fitted with ports at varying depths in order to collect and analyze water quality and infiltration data. The small prototype was 2.5 ft wide and 3.5 ft long with a depth of 24 inches of material. The small bioretention system was fitted with two port depths. The large prototype was 10 ft long, 5 ft wide with a depth of 36 inches, and was fitted with three ports at various depth levels. Both systems had a freeboard of 6 inches, to allow water to accumulate if necessary. The soil, organic mulch layer and vegetation, were analyzed prior to construction to assure that the system was constructed according to design recommendations. Simulated runoff was applied to both systems at a rate of 1.6 inches per hour for six hours. A total of 16 simulations were tested on the small box, and four on the large prototype. The total volume of runoff applied to the small system was 200 L, and 1,000 L for the large system. These volumes represent the bioretention prototypes occupying 5% of a drainage area.

The second phase, a field study, took place at an existing bioretention facility located in the parking lot of Beltway Plaza in Greenbelt, Maryland. The depth of the system is 42" and is designed so that runoff infiltrates through the system and is collected by a 6-inch diameter perforated pipe underdrain, which feeds into the main storm drain system. A 7.5-ft x 7.5-ft area of the bioretention facility was used to conduct the study. Approximately 1,000 L of synthetic runoff, with characteristics similar to those used in the laboratory, were applied to the system over a 6-hour period. Effluent samples were collected from the main storm drain at 25-30 minutes intervals.

Study Results Summary

The laboratory results for the smaller prototype showed overall that the removal of heavy metals by the system was good. Cooper, lead and zinc levels in both upper and lower effluents had removal of more than 90%. Copper removal from samples taken from both ports was 94%. Lead removal was more effective from lower ports at 98%, but still good from upper ports at 94%. The average zinc removal from upper and lower ports was >96% (Table 3). No major variation of removal of metals occurred over time and all samples were less than EPA standards for freshwater. Nutrient removal for phosphorous was 65-75% from lower ports and approximately 40% from upper ports. The Total Kjeldahl Nitrogen (TKN) removal is 45-60% for the upper ports and 65-80% for the lower ports. Ammonium and nitrate removal followed no pattern and ranged from zero to 90%.

Table 3: Summary of Results for Smaller System—Standard Conditions

	Cu	Pb	Zn	P	TKN	NH_4^+	NO_3^-	Tn
Removal Upper	94%	94%	97%	25%	55%	60%	11%	60%
Removal Lower	94%	98%	98%	83%	80%	83%	26%	75%

Results from the large prototype correlated with those of the smaller constructed system. Experimental results indicated that removal of metals in most cases was more than 90%. Average copper removal for upper ports was 90% and 93% for middle and lower ports. Lead removal from upper ports was 93%, and >97% for middle and lower ports. The removal of zinc was 87% for upper ports and >96% for middle and lower ports. The data showed a trend of greater metal removal with depth. Nutrient removal was better from lower ports in most cases compared to removal of middle and upper ports. Phosphorous removal for lower ports was about 70-80% and 50-60% for middle ports. The upper ports showed a 10-15% increase in phosphorous levels above the influent amounts. The TKN removal was 50-75% for the lower and middle ports and a 45-30% increase was noted for upper ports. Removal of ammonium was 54% at upper ports, 86% for middle ports and 79% at lower ports (Table 4). Doubling or halving the influent pollutant levels during the laboratory testing had little effect on the effluent pollutant levels. Higher levels of phosphorous and TKN in effluent at the upper ports can be attributed to the vegetation.

Table 4: Summary of Results for Large System—Standard Conditions

	Cu	Pb	Zn	P	TKN	NH_4^+	NO_3^-	TN
Removal Upper	90%	93%	87%	0%	37%	54%	(-97%)	(-29%)
Removal Middle	93%	>97%	>96%	73%	60%	86%	(-194%)	0%
Removal Lower	93%	>97%	>96%	81%	68%	79%	23%	43%

During the field test at Beltway Plaza, a total of 1,000 L of synthetic runoff were applied to the bioretention area over a 6 hour period at a rate of approximately 0.5 inches per hour. Of the 1,000 L of influent, only 39% left the system. The remaining water leaked through cracks into the manhole, was held in the facility, or infiltrated. Effluent samples were analyzed for removal of nutrients and heavy metals (copper, lead and zinc).

The TKN removal was about 50% and the phosphorous removal was observed at approximately 65%. Nitrate concentrations were below input levels, with a removal of about 17%. The removal for ammonia was very good at >95%. Removal of metals was very good and was consistent with the laboratory results. The removal of copper was 97% and for lead, and zinc, the removal was >95% (Table 5).

Table 5: Summary of Results for Field Bioretention Study

	Cu	Pb	Zn	P	TKN	NH_4^+	NO_3^-	TN
Removal	97%	>95%	>95%	65%	52%	92%	16%	49%

Removal rates for the field study corresponded with the rates observed for the two laboratory constructed bioretention systems. In all cases pollutant removal rates approached 100% for the metals copper, zinc and lead. Doubling or halving the concentration levels of the influent had no effect on removal efficiencies and were statistically equivalent in nearly all cases. Pollutant removal rates for all systems are compared in the above graph (Figure 3). The negative removal rate for nitrate in the large prototype, upper and middle ports, was attributed to the release of previously captured nitrated or nitrate from nitrification processes.

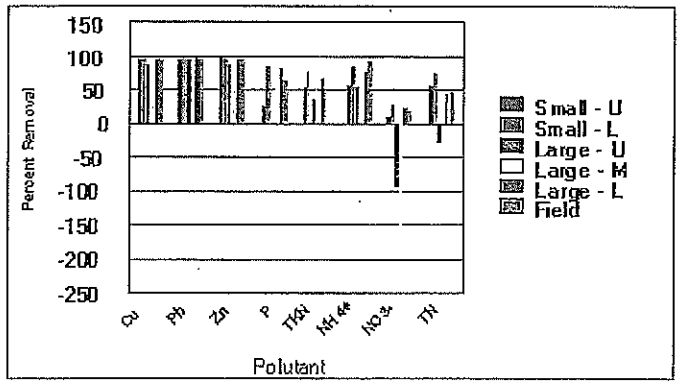

Figure 3: Pollutant Removal Rates for All Systems

4.2 Bioretention Facility
Field Study
Peppercorn Plaza Parking Lot at Inglewood Center, Landover, MD

Introduction

Impervious surfaces, such as parking lots, are a major contributor to pollutant loads in receiving waters in urban areas. These surfaces provide a place for pollutants to accumulate and later wash-off in the first flush of rainfall events. Parking lots are good site locations for bioretention systems, since they can be retrofit into existing lots with little or no loss of parking space. In addition, patrons have expressed appreciation of green space within parking areas. Bioretention areas are a natural means of controlling pollutants from entering urban water bodies. The hydrologically functional landscape, can be used as a mechanism for pollutant removal, through physical and biological treatment processes occurring in the plant and soil complex. The bioretention area in the Inglewood Center Parking lot, was analyzed for pollutant removal efficiency during a simulated rainfall event.

Study Site

The study was conducted at one of the two bioretention areas in the Inglewood Plaza parking lot. An area of 50 ft^2 was used in the south facility for the simulated rainfall event. The bioretention facility contains a T-shaped under drain that runs the entire length of the system and is located 32.5 inches below the surface (Figure 4). The under drain directly connects with the storm drainage system. Samples were collected from a pool of water in the storm drain observation area. Output samples were collected every 30 minutes. The soil was dry at the onset of the experiment, due to lack of rainfall for a period of several days prior to the experiment. The synthetic rainfall was applied at a rate of 1.6 inches per hour for a duration of six hours. A total of 300 gallons (1100L) was applied over the course of the experiment.

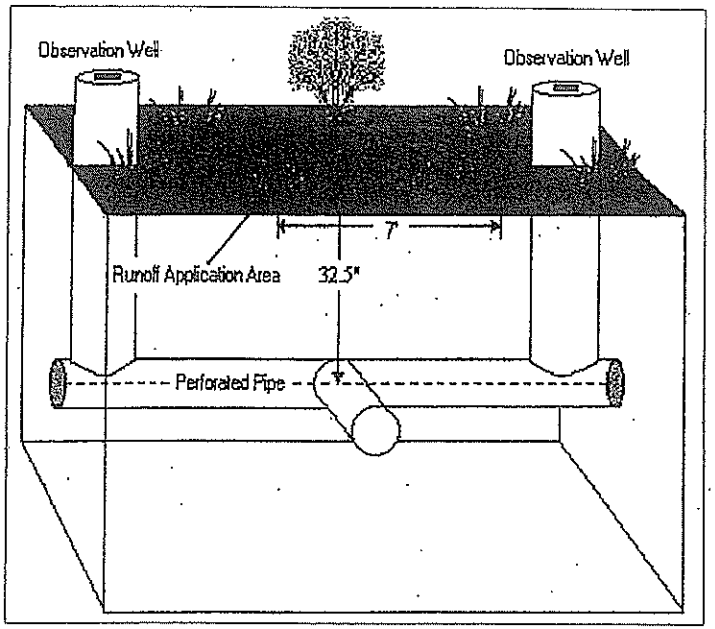

Figure 4: Bioretention System at Peppercorn Place, Inglewood Plaza (Davis, 1999)

Project Results Summary

Effluent concentrations for metals were fairly constant over the sampling period, with zinc being the exception by showing improved removal over time. Average removals for total copper was 43%, total lead was 70% and total zinc 64%. The removals were 5–14% better for dissolved metals. Nutrient concentrations were all below input levels. Removal of phosphorous was very good at 87%. Removal of TKN was observed at 67% and nitrate averaged 15% (Table 6). Ammonium was not detected in either the influent or the effluent. In addition, the bioretention facility removed some calcium, however chloride concentrations were higher in the effluent than in the influent, which is attributed to salting of the parking lot in the winter. Also, temperature variations during the experiment showed evidence of the system cooling the runoff water temperature.

Table 6: Summary of Pollutant Removal Results of Bioretention System at Inglewood Place

	Cu	Pb	Zn	Ca	P	TKN	NO_3^-
Removal	43%	70%	64%	27%	87%	67%	15%

By using synthetic runoff, the concentrations of applied pollutants could be controlled and accurately measured and compared to levels found in the effluent. However, testing has not been done on an actual rainfall event to determine effectiveness of the system for reducing runoff volume and pollutant loads.

4.3 Permeable Pavements and Swales
Field Study
Stormwater Management, Florida Aquarium Parking Lot, Tampa, FL

Introduction

Impervious surfaces are responsible for more stormwater runoff than any other type of land use. Paved surfaces that often replace vegetated areas increase the volume and frequency of rainfall runoff. In addition, these surfaces provide a place for pollutants to accumulate between rainfall events, and are later washed off into receiving waters. Keeping runoff on-site to allow for infiltration as well as chemical, physical and biological processes to take place is the most effective means of reducing pollutant loadings. This study quantifies how much runoff and pollutant loadings can be reduced by using swales and landscaped depressions in parking lots. In additional to investigating basins with and without swales, three paving surfaces were compared. The research is designed to determine pollutant load reductions measured from three different treatments within the parking lot; different paving materials in the parking lot, a planted strand with native trees and a small pond used for final treatment. Pollutant concentrations and infiltration were measured and analyzed for the various control methods. First year data collected in the parking lot between August 1998 and August 1999 were evaluated for this study. Also, sediment samples were collected from each of the swales, two locations in the strand and two locations in the pond.

Project Area

The study site is a parking lot at the Florida Aquarium in Tampa, Florida. The study uses the entire parking area, 4.65 ha, to define the drainage basin. The parking lot was modified for the study by reducing the length of each parking space by 61 centimeters, which allows for a 122-cm wide grass swale between rows. The vehicle front end now hangs over a grass swale instead of pavement, which prevented any reduction in the number of parking spaces within the parking area. Four different scenarios were investigated to determine the most efficient method of runoff reduction and pollutant removal. Eight basins, two of each type, were constructed and fitted with instrumentation to collect flow weighted water quality samples and measure discharge amounts during storm events (Figure 5). The four treatment types are:

- Asphalt paving with no swale
- Asphalt paving with a swale
- Cement paving with a swale
- Permeable pavement with a swale

Rainfall quality and volume were compared to runoff quality and volume to determine the effectiveness of each treatment type.

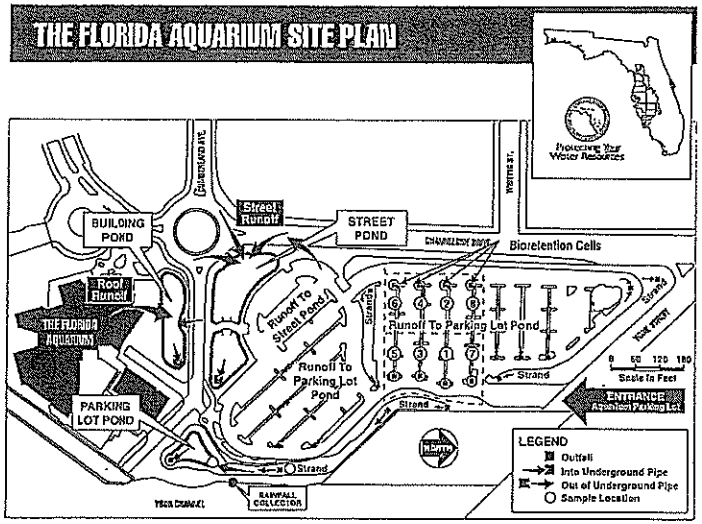

Figure 5: Florida Parking Lot Study Site (Rushton, 1999)

Project Results Summary

The larger garden areas (approximately the size of one parking space) account for a runoff coefficient calculation reduction of 40-50 percent for the smaller basins. The runoff coefficient is a value that ranges from zero to one and expresses the fraction of rainfall volume that is actually converted into storm runoff volume. The runoff coefficient closely tracks percent impervious cover. For rainfall events less than 2 cm, basins with swales and permeable pavement have 80-90% less runoff than basins without swales, and 60-80% less runoff than basins with the other pavement types and swales. The percent of rainfall converted to runoff for each treatment type is shown in Figure 6.

Larger rainfall amounts show fewer differences in runoff amounts between the different pavement types, but basins with swales have approximately 40% less runoff than the basins without swales. Soil analysis at the site shows a higher than average gravel content (8.9%) which may account for the good infiltration rates. Comparisons of rainfall with storm runoff amounts showed that swales reduced runoff for all rainfall events and paving types.

Water quality analysis shows that average concentrations varied by paving and depression storage types. Rainfall has been identified in other studies as a significant source of nitrogen in runoff. This site displayed the same correlation between

concentrations of ammonia and nitrate in rainfall and their concentrations in runoff. Phosphorous concentrations displayed the inverse, since concentrations were higher in effluent samples than in the initial rainfall. The levels were somewhat higher in the runoff of basins without planted swales and the highest concentrations of phosphorous were noted in basins where runoff traveled through grassed swales.

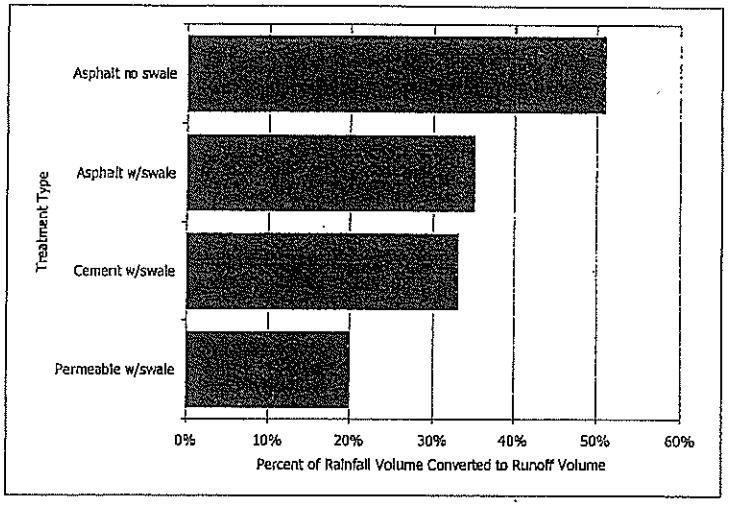

Figure 6: Percent of Rainfall Volume Converted to Runoff Volume for Events Less Than 2cm

Paving material showed an effect on the concentration of metals in runoff. Basins paved with asphalt showed higher concentrations of iron, manganese, lead, copper and zinc than those paved with cement or permeable paving. Many of the major ions also showed a correlation with the paving material. Potassium, sodium, sulfate and calcium concentration were much higher in the basins paved with cement, which is made from limestone, although these levels were still well below levels considered detrimental to the environment. No consistent pattern was discernable for suspended solids, but generally measurements were low when compared to similar stormwater studies.

Water quality loads were examined because they provide a more realistic measure for understanding the impacts of stormwater on receiving waters. Pollutant loads include both the volume of water discharged and the concentration of pollutants measured. Higher loads for all constituents, except phosphorous, were noted for basins without swales, since more water was discharged from these basins. Although phosphorous concentrations were much lower in basins without swales, loads were about the same.

Removal for Ammonia was 45% for asphalt with swale, 73% for cement with swale and 85% for permeable pavement with swale. Total nitrogen removal was 42% for permeable pavement with swale, 16% for cement with swale and 9% for asphalt with swale. TSS removal varied from 91% for permeable pavement with swales to 46% for asphalt with swales.

Table 7 summarizes the constituent load efficiency of the various treatments. The concentrations and loads measured during this study were compared to other stormwater studies conducted in Florida, and the values were much lower than measured values at other sites. Metal removal was good for the permeable pavement with swale treatment, with copper at 81%, iron 92%, lead 85%, manganese 92% and zinc 75%. The removals for the cement with swale treatment were somewhat lower, with the asphalt with swale treatment showing the poorest performance of the three treatments with swales.

Table 7: Summary of Pollutant Removal Efficiency for the Various Treatment Types

Constituent	Asphalt with swale	Cement with swale	Permeable with swale
Ammonia	45%	73%	85%
Nitrate	44%	41%	66%
Total Nitrogen	9%	16%	42%
Ortho Phosphorus	-180%	-180%	-74%
Total Phosphorus	-94%	-62%	3%
Suspended Solids	46%	78%	91%
Copper	23%	72%	81%
Iron	52%	84%	92%
Lead	59%	78%	85%
Manganese	40%	68%	92%
Zinc	46%	62%	75%

The concentrations of metals in sediment samples collected in swales were consistent with concentrations measured in stormwater runoff. Higher concentrations of metals were found in swales paved with asphalt than those of grass. None of the metals measured in the sediments exceed the level where toxicity to organisms is probable when compared to the Environmental Protection Agency (EPA) and the National Oceanic and Atmospheric Administration (NOAA) chemical toxicity guidelines for marine environments. However, copper and zinc concentrations were above the level where toxicity is possible.

Nutrient concentrations measured in sediment samples for TKN and total phosphorus were lower in the basins without grassed swales. Sediment samples taken from locations in the strand and the wet-detention pond were compared to swale samples. The comparison showed that most of the metals are being settled out in the swales or

deposited in the drop boxes. Sediment samples at the site were tested for 100 organic pollutants, but only 16 were detected at the site. The high concentrations found in this and similar studies indicate that atmospheric deposition is the source for most of the 16 detected organic pollutants.

4.4 Vegetated Roof Covers
Field Study
Green Rooftop, Philadelphia, PA

Introduction

Many older American cities are plagued with nuisance flooding on roads and walkways and chronic overflows of combined sewer systems. In highly impervious cities, vegetated rooftops offer a practical solution for controlling runoff at the source. A vegetated roof cover is a veneer of living vegetation installed on top of a conventional roof. By mimicking natural hydrologic processes, they can achieve runoff characteristics similar to open space conditions. Green roofs are comprised of three components; subsurface drainage, growth media and vegetation. Specific hydraulic performance objectives are achieved through the appropriate selection of these components. Vegetated roof covers have been used extensively in Germany for 25 years.

Project Area

A 3,000-ft^2 rooftop in Philadelphia was fitted with a demonstration vegetated rooftop. The performance objective was the restoration of predevelopment runoff peak rates for a 24-hour, 2-year return-frequency storm. Although in the Philadelphia area, 90% of all rainfall is contributed by storms with volumes of 2 inches or less over a 24-hour period. The "green roof" used is only 3.4 inches (8.6cm) thick, including the drain layer (Figure 7). Its maximum saturated weight is less than 17 lb/ft^2 and it weighs less than 5lb/ft^2 when dry. No additional structural support was necessary for installation. The saturated infiltration capacity is 3.5 inches per hour. The key features of this system are a synthetic under drain layer which promotes rapid water drainage from the roof surface, thin, lightweight growth media suitable for installation on existing roof surfaces and a meadow-like setting of perennial *Sedum* varieties selected for hardiness and the ability to withstand seasonal conditions typical of the area.

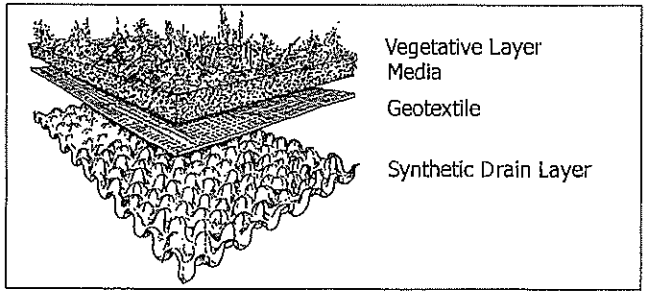

Figure 7: Structure of the Philadelphia Vegetated Roof Cover (Miller, 1998)

Project Results Summary

Currently too few storms have been observed to permit quantitative assessment of the vegetative covered roof. Data are available from one intense storm monitored during a 0.4 inch, 20-minute rainfall event (Figure 8). Supplemental data from a pilot-scale experimental station were used in this study. Test data show that for storms with less than 0.6 inches, runoff is negligible. During a 9-month period, 44 inches of rainfall was recorded at the pilot-scale test station, with only 15.5 inches of runoff generated. Runoff occurred for precipitation events between 0.6 and 1.0 inches, but lagged rainfall significantly. Attenuation was lower for the pilot-scale experiment than the anticipated modeled value (40% vs. 48%), which has been attributed to differing drain conditions and a steeper slope at the test site. Additional benefits of this project include extended life of the underlying roof materials, reduction of energy costs by improving effectiveness of insulation and restoration of ecological aesthetic value of open space in densely populated areas.

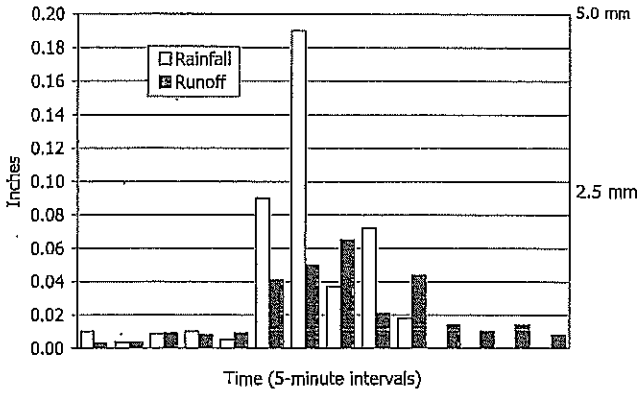

Figure 8: A Rainfall Event of 0.4 Inches with Media Completely Saturated (Miller, 1998)

4.5 Permeable Pavements
Field Study
Permeable Pavements for Stormwater Management, Olympia, WA

Introduction

This study demonstrates the use of permeable surfaces for reducing runoff volume, improving infiltration and reducing pollutant loadings in an urban parking area. Numerous problems associated with urbanization, such as flooding, channel erosion and destruction of aquatic habitats are directly linked to the loss of water-retaining function of soil in urban landscape. As imperviousness increases, a stormwater runoff reservoir of tremendous volume is removed. Water that may have lingered in this reservoir for anywhere from a few hours to many weeks now flows rapidly across land surfaces and arrives at stream channels in short, concentrated bursts. The scope of this project was to review existing information on types and characteristics of permeable pavements, construct and monitor a full-scale test site and evaluate long-term performance of these systems. This study of permeable pavements evolved from a growing recognition of the limitations of traditional stormwater management in keeping water in the soil by allowing excess of water to the soil over large areas of landscape.

Study Site

The study site is an employee parking lot on the southeast corner of the King County Public Works facility in Renton, Washington. The permeable pavement sections of the lot were constructed for the purpose of this study. A total of eight stalls using four different pavement types were constructed. In addition a ninth stall of traditional asphalt was used as a control. The parking stalls are fitted with pipe, gutters and gauges to collect and measure the quantity and quality of storm runoff from each pavement type. Subsurface troughs were constructed down the middle of each stall and imbedded into the subgrade six to 8 inches below the surface. This allows for the collection of only a fraction of the infiltrated water (about 1.8%). The permeable pavement types studied were:

- A plastic network with grass infilling (<5% impervious)
- An equivalent plastic network with gravel infilling (<5% impervious)
- Impervious blocks with grass infilling (~60% impervious)
- Impervious blocks with gravel infilling (~90% impervious)

Project Results Summary

Data used to monitor the various permeable pavements were from three different storm events during the autumn of 1996. The volume of runoff generated from cement blocks with 60% impervious surface stalls and runoff from traditional asphalt are compared (Figure 9). The storm had a fairly uniform distribution of rainfall (4mm per hour) throughout the duration of the event. Rain falling on the asphalt yielded sharp hydrograph

peaks and a high total volume of runoff water. Only about one peak per hour (0.03mm per hour of runoff) was recorded for the cement blocks with 60% impervious surface. These data are representative of data gathered at the other stalls and reflect little or no runoff from the permeable pavement stalls.

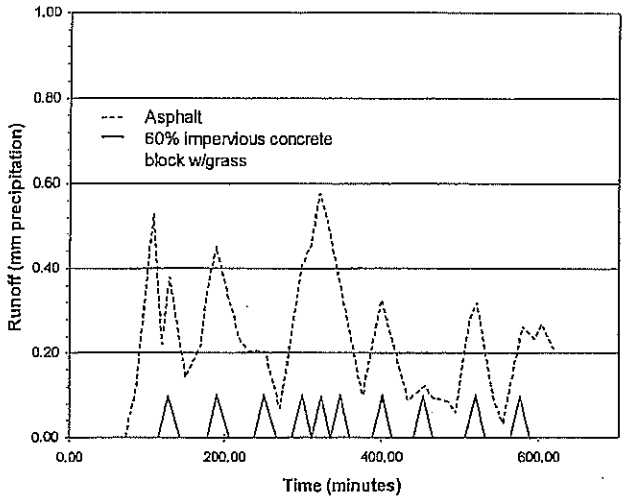

Figure 9: Surface Runoff from 60% Impervious Pavement vs. Asphalt (Booth, 1996)

In contrast to surface runoff, subsurface flow generally responds more slowly and more uniformly. The data for a storm of short duration and moderate intensity are represented in the following graph (Figure 10). Individual peaks on the bar graph indicate rainfall rates as high as 14mm per hour, lasting for short durations (15-minute intervals). Runoff gauges on all four systems showed virtually no surface runoff (on average 0.03 mm). It displays a characteristically attenuated discharge peak and lagged response to the rainfall inputs. All pervious surfaces responded similarly. For the asphalt surface, the volume of water running off the asphalt responded quickly to changes in the rate of rainfall. This is indicated by high peak flows corresponding with precipitation amounts, with little lag time noted (Figure 11).

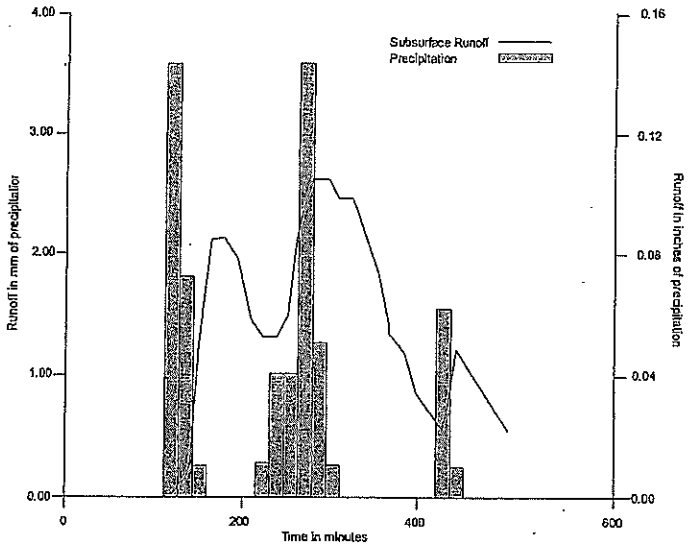

Figure 10: Subsurface Runoff From Pavement Less Than 5% Impervious Compared to Precipitation (Booth, 1996)

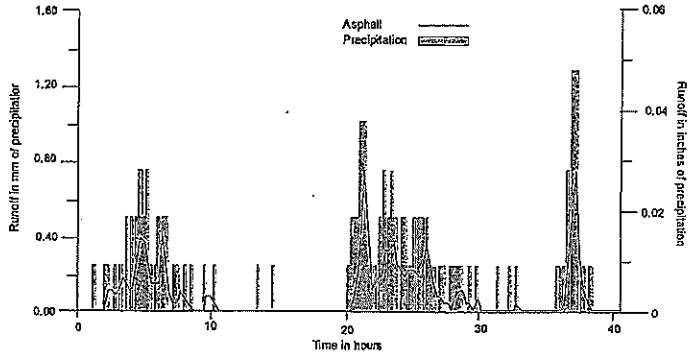

Figure 11: Surface Runoff From Asphalt Compared to Precipitation (Booth, 1996)

Water quality results were obtained from samples collected directly from tipping bucket gauges. Only five samples from the four subsurface collection troughs and the asphalt surface runoff were analyzed. Chemical analysis of the subsurface samples showed sub-detection levels for many of the constituents and relatively low levels for all tested compounds. Measured concentrations of common metals (copper, lead, zinc aluminum and iron) were substantially below the reported national averages. Subsurface samples did show slightly higher concentrations than runoff, which can be attributed to the troughs collecting the "dirtiest" 2 percent of runoff, from directly under where vehicles park. Still, these concentrations were below typical values seen in urban runoff.

4.6 Grass Swales
Field Study
Highway Grass Channels, Northern Virginia, Maryland, and Florida

Introduction

The U.S. Department of Transportation, Federal Highway Administration conducted a field study to determine the pollutant removal efficiencies of grassed channels and swales along highways in Northern Virginia, Maryland and Florida. Sampling was conducted at the inflow and outflow areas of the channels, which provided data for quantity and quality of waters entering and leaving the channels. The samples were analyzed for the following pollutants:

- Total Suspended Solids (TSS)
- Heavy Metals (cadmium, copper, lead and zinc)
- Nitrogen (Total Kjeldahl Nitrogen and nitrite/nitrate)
- Total Phosphorus
- Total Organic Carbon

Twelve rainfall events were monitored, including both frequent and infrequent rainfall periods, most involving discrete stormwater runoff events following a minimum of two days of dry weather. In addition continuous rainfall periods of seven to 14 days were included to determine overall removal efficiencies.

Project Area

The test area in northern Virginia is located along I-66. The channel has an average slope of 4.7% with a total drainage area of 1.27 acres (0.51 ha). Stormwater enters the channel indirectly, by means of overland flow. Stormwater data were collected from June 13, 1987 through November 12, 1987. The test site in Maryland is a grass channel located alongside I-270. This channel has a slope of 3.2% and a total drainage area of 1 acre (0.40 ha) with stormwater entering by means of overland flow. Data were collected for the period beginning June 18, 1987 and ending mid-September 1987. The Florida test site is a grass channel median located between the East and West lanes of I-4. The Florida grass channel has a lower slope than the other two test sites with a drainage area of 0.56 acres (0.23 ha). Data collection began at this site on February 25, 1988 and ended on October 31, 1988.

Project Results Summary

All three locations showed some effectiveness with regard to pollutant removals, although results varied depending on the method of analysis and the location. The results for all three locations are represented in Table 8. Sediment core samples were obtained from the channels and compared to samples from adjacent, upland areas, to determine

pollutant removal effectiveness of the grass channels. Based on the data from the analysis the following conclusions were made. Removal of metals appears to be directly related to the removal of TSS, whereas nutrient removal is not. Removal of TSS can be estimated using flow depth and travel time relationships. Relatively low nutrient removal may be observed in channels that are effective in removing other pollutants. The controlling factors in pollutants removal of grass channels are length, channel geometry, channel slope and average flow. Both metals and nutrients are removed in grass channels, but metal removal is more reliable.

Table 8: Long Term Pollutant Removal Estimates for Grassed Swales

	TSS	TOC	TKN	NO_2/NO_3	TP	Cd	Cr	Cu	Pb	Zn
VA	65%	76%	17%	11%	41%	12-98%	12-16%	28%	41-55%	49%
MD	-85%	23%	9%	-143%	40%	85-91%	22-72%	14%	18-92%	47%
FL	98%	64%	48%	45%	18%	29-45%	51-61%	62-67%	67-94%	81%

5 CONCLUSION

Pollutant loading reduction data for bioretention systems are promising in that removal percentages for heavy metals and nutrients seem quite high. Generally, the experimental data show a fairly consistent removal rate for all of the tested bioretention systems for heavy metals and most nutrients (Table 9). Field study results support the laboratory baseline data collected by the University of Maryland, College Park. However, the field studies provide data for single, simulated rainfall events using synthetic rainfall. A larger number of sampled events would be required for statistical validity of the results.

Table 9: Pollutant Removal Efficiencies for Laboratory and Field Bioretention Studies

Pollutant	Laboratory (small)	Laboratory (large)	Beltway Plaza	Inglewood Plaza
Pb	93–97%	93–97%	>95%	70%
Cu	91–97%	90–93%	97%	43%
Zn	93–98%	87–96%	>95%	64%
P	16–83%	0–81%	65%	87%
TKN	55–80%	37–68%	52%	67%
NH_4^+	<0 -83%	54 -86%	92%	N/A
NO_3^-	11–26%	<0–23%	16%	15%
TN	60–75%	<0–43%	49%	N/A

The use of synthetic runoff during the bioretention experiments, both in the lab and field, allowed the concentrations of applied pollutants to be controlled and accurately measured, so that influent and effluent levels could be compared. In addition, infiltration could be determined based on the volume of runoff verses volume input. The statistical analysis applied for the mass loadings was sound. However, testing for these studies has not been conducted for any actual rainfall events to determine effectiveness of the system for reducing runoff volume and pollutant loads. A comparison of average pollutant removal efficiencies is shown in Figure 12.

The grass swale data from the Federal Highway study show trends in removal of metals as they relate to TSS removal for three different areas in the United States. However a short study period, using data from only a few storm events, is used to quantify the results. Additional data from numerous storm events would be required to provide statistical validity to the analysis. The data from additional, less extensive studies conducted by the University of Virginia help to validate the highway data, as pollutant loading removal rates and runoff volume reduction rates were fairly consistent between the two studies. Conclusions drawn from both studies indicate that not only length, but also longitudinal slope and the presence of check dams increase the pollutant removal capabilities (Kuo, 1999).

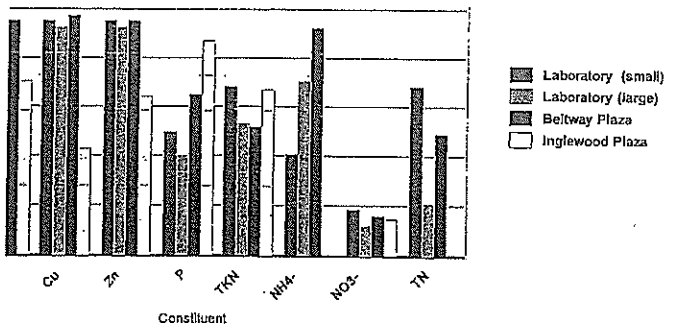

Figure 12: Pollutant Removal Rates for Laboratory and Field Experiments of Bioretention Systems

In addition, a study conducted in Ontario, Canada concluded that no evidence existed to show that nutrient or metal concentrations in soils increased with age in grass swales, as concentrations varied regardless of age. Also, the Canadian study determined that no degradation in vegetative quality resulted from continuous exposure to stormwater runoff. It was shown that vegetation quality was similar to what would be found along conventional systems (Sabourin, 1999). The Canadian study also showed that total runoff volumes from grassed swales were 6-30% less than conventional systems and that a loading comparison revealed that the system released significantly less pollutants than conventional systems.

Permeable pavements can reduce the percent imperviousness for urban areas, which allows for greater infiltration rates and reduced runoff volumes. In addition these alternate pavement types function as stormwater pollutant removal mechanisms. Preliminary data from the Washington project show effectiveness, but too few storms have been analyzed. Only the Florida Aquarium parking lot data represent an analysis of a significant number of actual storm events. As the study continues, and second year data become available, more compelling proof of the pollutant removal effectiveness and runoff volume reduction can be realized. The methodology for testing runoff volume reduction and mass pollutant loadings in the Florida study provided reliable data.

Extensive data exist that show runoff volume reduction using vegetated roof covers in Europe, especially Germany. The data are specific to temperate climates and results may vary considerably for other areas in the United States. However, the Philadelphia project shows the benefits of this application in reducing runoff volume by reducing the level of imperviousness in urbanized areas. Further, it demonstrates the capacity for retrofit of green roofs in highly impervious, older, urbanized U.S. cities experiencing chronic CSO problems. Little data are available from this demonstration project. However, with continued monitoring, evidence of the suitability of green roofs in the United States may become more apparent.

6 RECOMMENDATIONS

A detailed comparison of pre- and post-development conditions and an analysis of adjacent areas using traditional stormwater controls and LID practices side-by-side, would provide the best possible assessment of LID effectiveness hydrologically and as a mechanism for reducing pollutant loadings. The Jordan Cove Urban Watershed project in Waterford, Connecticut, is currently under construction for a side-by-side analysis, however, no data are available at this time. Baseline predevelopment hydrological data are currently being collected for comparison once the development is completed and monitoring begins.

Most of the current field data available for bioretention facilities are for single, simulated rainfall events. Fitting the existing, tested bioretention areas in Prince George's County with monitoring equipment and running a significant number of tests on actual rainfall events over 9 months to 1 year, would provide higher quality data. Long term studies would prove or disprove the long-term effectiveness of bioretention systems, as well as provide information on trends in soil fertility lifetimes and trends in reduced capabilities over time. The two-year Florida Aquarium study is currently the best possible source for these data.

The majority of case studies cited above are ongoing investigations, and reported data represent preliminary findings. Follow-up on these studies will provide better support for proof of effectiveness of LID practices. Additional studies testing LID practices should be identified as the use of these practices grows. Preliminary findings should be viewed as a starting point, and not the empirical proof of effectiveness for the various LID practices studied. The development of a database for entry and storage of LID study data could provide a useful tool for future investigation of LID effectiveness.

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Guidance for Preparers of Growth-related, Indirect Impact Analyses

Chapter 1. Introduction

1.1 Purpose and Background

What

This guidance for preparers of growth-related, indirect impact analyses includes the introductory information below and five additional chapters:

- Regulatory Framework and Definitions
- Land Use, Transportation and Growth
- Key Concepts for Growth-related Impact Analyses
- Making the First Cut
- Performing the Analysis

The guidance focuses on growth-related, indirect impact analyses for Caltrans' surface transportation projects in California that are subject to the National Environmental Policy Act (NEPA) and/or the California Environmental Quality Act (CEQA). NEPA and CEQA require that the direct, indirect, and cumulative effects of proposed actions be assessed and disclosed. Indirect effects are generally defined as those that are caused by a project, but unlike direct effects, occur later in time or are farther removed in distance. Indirect effects can range from physical environmental effects, such as downstream sedimentation resulting from project construction, to growth-related effects resulting from changes in accessibility to a previously undeveloped area or a redistribution of growth.

The guidance specifically deals with the subset of indirect effects associated with highway projects that encourage or facilitate land use or development that changes the location, rate, type, or amount of growth—and are referred to in the guidance as "growth-related impacts." Not every project will need a growth-related impact analysis; such an analysis typically will be needed in the environmental document for those highway projects that are built along a new alignment and/or provide new access.

Growth-related impacts and the need for analysis should be considered early in project development. Where such impacts are identified, appropriate and reasonable steps to avoid or minimize such impacts also should be considered early and incorporated into the project and the environmental document. A growth-related impact analysis assists with

complying with the requirements of NEPA and CEQA, which include (1) considering environmental consequences of project actions in the planning process as early as possible; and (2) providing a well-documented and sound basis for government decision making.

Who

The Federal Highway Administration (FHWA), the California Department of Transportation (Caltrans), and the U.S. Environmental Protection Agency (USEPA) recognize the importance of thoroughly considering indirect impacts during the preparation of environmental documents. An interagency Work Group representing FHWA, Caltrans, and USEPA[1] developed this guidance to assist Caltrans' practitioners (environmental staff, project managers, and consultants) responsible for preparing environmental documents pursuant to NEPA and CEQA. While FHWA, USEPA, and other agencies nationwide have prepared other guidance papers on this subject, this document was prepared to address growth-related impact analyses expressly for highway projects in California.

Why

This guidance will help practitioners identify whether a growth-related impact analysis is needed for a proposed transportation project. It also will help practitioners prepare an analysis that is sound and well documented. Further, the data developed during the analysis can be used to support other project-related analytical requirements, such as compliance with USEPA's Section 404(b)(1) Guidelines.

When

If the lead agency determines it is needed, a growth-related impact analysis would be developed concurrently with the direct, indirect, and cumulative impact analyses for the proposed transportation project's environmental document.

How

The Work Group intends for this guidance to be practical and flexible, and recognizes that the need for and scope of a growth-related impact analysis will vary according to type and scale of the project proposed, the area where the project is located, and the resources of concern potentially affected (e.g., wetlands, vernal pools, threatened/endangered species, prime farmland, Section 4(f) property, etc). The guidance provides several tools and approaches that can be applied, based on the potential

[1] In June 2000, FHWA, Caltrans, and USEPA entered into a partnership agreement, the "Mare Island Accord," to support concerted, cooperative, effective and collaborative work among the three agencies in the transportation and environmental planning processes. This guidance is a project of the Mare Island Accord.

effects of the proposed project, the type or condition of resources under consideration, and the professional judgment of the practitioner performing the analysis. The guidance is presented in the following chapters:

- **Chapter 1 - Introduction:** Provides background about the guidance, its intended audience, and purpose.
- **Chapter 2 - Regulatory Framework and Definitions:** Provides definitions and discusses the regulatory and policy framework regarding indirect impacts.
- **Chapter 3 - Land Use, Transportation and Growth:** Explores the complex relationship between land use, growth, and transportation projects in a California context.
- **Chapter 4 - Key Concepts for Growth-related Impact Analyses:** Discusses the concepts of "reasonably foreseeable" and "causality" as related to assessing growth-related impacts.
- **Chapter 5 - Making the First Cut:** Provides a screening approach for identifying the need for, and extent of, a growth-related impact analysis.
- **Chapter 6 - Performing the Analysis:** Identifies the suggested steps for conducting a growth-related impact analysis, and some tools that could be used to perform the analysis. It also emphasizes the need to consider avoidance and minimization opportunities for identified resource impacts.

A hypothetical, illustrative example of a growth-related impact analysis, the Canyon City Transportation Improvement Project, follows Chapter 6 of the guidance. The guidance also provides highlighted links to more detailed references, manuals, and policy guidance documents related to growth-related impacts, and to more detailed discussions on specific topics.

1.2 Additional Reference Materials

On September 18, 2002, President George W. Bush signed Executive Order (EO) 13274, *Environmental Stewardship and Transportation Infrastructure Project Reviews.* This EO established an Interagency Task Force to advance environmental stewardship and streamlining efforts, to coordinate expedited transportation decision making, and to address priority projects. The Task Force established an interagency Work Group on indirect and cumulative impacts to evaluate this topic and identify opportunities where greater interagency coordination and collaboration could lead to improvements in the decision-making process for projects. The Task Force Work Group released its Draft Baseline Report on March 15, 2005. The appendices of the Draft Baseline Report include a comprehensive annotated bibliography and links to guidance documents, annotations on case law, and other helpful materials.

1.3 Summary

The Work Group prepared this guidance for environmental professionals with varying degrees of expertise. The modular structure of the guidance provides flexibility so that practitioners can refer to specific topics. To build a foundation for growth-related impact analysis, this guidance provides the following:

- Definitions of terms fundamental to growth-related impact analysis.
- A suggested approach to help determine whether an analysis is needed.
- A suggested step-by-step approach for performing the analysis.
- Examples of best practices and tools to use in the analysis.

The guidance was prepared to address California's specific challenges. The guidance will help practitioners to: (1) identify when an analysis should be performed; (2) identify the appropriate resources to analyze; (3) define the geographic and temporal parameters of the analysis; (4) analyze growth in relation to the project; (5) select the appropriate methods to assess resource impacts; and (6) make supportable impact findings. The guidance emphasizes that early communication, coordination, and involvement among federal, state, and local agencies helps avoid conflict and delay, and allows for the early consideration of avoidance and minimization opportunities to reduce resource impacts.

The material presented in this guidance is meant to be used in conjunction with—but not substituted for—agency policies, regulations, and legal requirements. Each agency contributing to the guidance recognizes that the approach to growth-related impact analysis may vary widely depending on the nature and context of the project proposed, the affected resources, the extent of available data, and other factors. The agencies also recognize that the guidance may be updated to reflect new issues or challenges as they arise. Notwithstanding the project-appropriate variations in method and procedure, FHWA, Caltrans, and USEPA Region IX agree with the advice presented in this guidance document concerning content, methods, analytical approach, and growth-related impact analysis formats.

The agencies that developed this guidance are interested in your views. If you have comments or suggestions, please contact:

Ms. Kelly Dunlap, Chief
Environmental Management Office
Caltrans
P.O. Box 942874, Mail Station 27
Sacramento CA 94274-0001
Phone: (916) 651-8164
FAX: (916) 653-7757
Email: Kelly_Dunlap@dot.ca.gov

Chapter 2. Regulatory Framework and Definitions

What are Indirect Effects?

Those effects caused by an action and occurring later in time or farther removed in distance, but still reasonably foreseeable. Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems (40 CFR 1508.8).

According to the Council on Environmental Quality (CEQ) regulations implementing the National Environmental Policy Act (NEPA; 40 CFR 1500-1508), indirect effects may include growth-inducing effects and other effects related to changes in the pattern of land use, population density or growth rate, and related effects on natural systems (40 CFR 1508.8). This guidance refers to a specific type of indirect effect—the effects of growth that can be linked to the development of a Caltrans' transportation project.

NEPA and the California Environmental Quality Act (CEQA) require that direct, indirect, and cumulative effects of proposed actions be assessed and disclosed, but NEPA and CEQA define the term "indirect effects" slightly differently. Section 404 of the Clean Water Act (CWA), as implemented by the Section 404(b)(1) Guidelines (40 CFR 230 subpart B), also provides a framework for identifying indirect effects.

2.1 NEPA Regulatory Framework

Although the NEPA statute does not distinguish among types of environmental effects (42 U.S.C. 4331), its implementing regulations (40 CFR 1500-1508) define environmental effects as having three components: direct, indirect, and cumulative effects.[2]

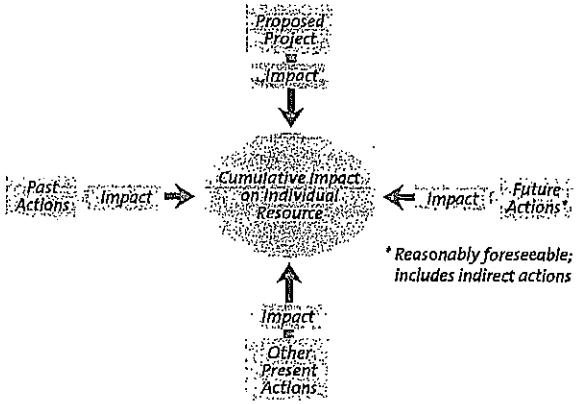
- **Direct Effects.** Those effects caused by the action and occurring at the same time and place (40 CFR 1508.8).
- **Indirect Effects.** Those effects caused by the action and occurring later in time or farther removed in distance, but still reasonably foreseeable. Indirect effects may include growth-inducing effects and other effects related to changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems (40 CFR 1508.8).
- **Cumulative Effects.** Those impacts on the environment that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7; also see Caltrans Guidance for Preparers of Cumulative Impact Analyses). Cumulative impacts encompass the direct and indirect effects attributable to the proposed project along with the environmental effects of other past, present, and reasonably foreseeable future actions.

[2] The terms "effect" and "impact" are used synonymously in the CEQ regulations (40 CFR 1508.8), the CEQA guidelines, and in this guidance.

A review of case law regarding the evaluation of indirect effects can be found in the National Cooperative Highway Research Program (NCHRP) Report 466, *Desk Reference for Estimating the Indirect Effects of Proposed Transportation Projects* (Course Module 2 – *Review of Case Law on Indirect Effects Evaluation*), and in the *Draft Baseline Report*, Executive Order 13274, Indirect and Cumulative Impacts Workgroup (March 2005).

In its *Interim Guidance: Questions and Answers Regarding the Consideration of Indirect and Cumulative Impacts in the NEPA Process* (January 2003), the Federal Highway Administration (FHWA) discusses the important differences in the meaning and requirements related to indirect and cumulative impacts in the NEPA process. A cumulative impact includes the total effect on a natural resource, ecosystem, or human community due to past, present, and future activities or actions of federal, non-federal, public, and private entities. Cumulative impacts include the total of all impacts to a particular resource that have occurred, are occurring, and will likely occur as a result of any action or influence, including the direct and reasonably foreseeable indirect impacts of a federal activity. This is illustrated in Figure 2-1.

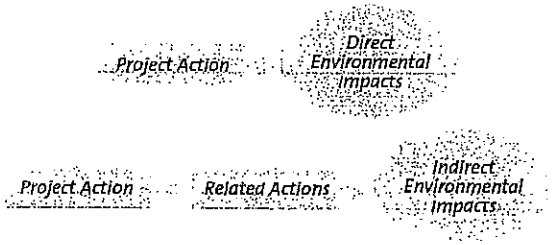
Figure 2-1. Cumulative Impact Diagram



Source: FHWA January 2003

Indirect impacts, as well as direct impacts, can be considered a subset of cumulative impacts but are distinguished by an established cause and effect relationship to a proposed federal action, such as a transportation project. Figure 2-2 is an illustration and comparison of the cause and effect relationship of indirect and direct impacts to a project action. Indirect impacts are caused by another action or actions that have an established relationship or connection to the project (related actions). These induced actions are those that would not or could not occur except for the implementation of a project. These actions are often referred to as "but for" actions and generally occur at a later time or some distance removed from the original action.

Figure 2-2. Direct and Indirect Impact Diagrams



Source: FHWA January 2003

2.2 CEQA Regulatory Framework

The CEQA Guidelines define indirect impacts as:

- "Indirect or secondary effects that are caused by the project and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect or secondary effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate, and related effects on air and water and other natural systems, including ecosystems [CEQA Section 15358(a)(2)]."

Section 15126.2(d) of the CEQA Guidelines states that a growth-inducing impact could occur if:

> "...the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects that would remove obstacles to population growth (a major expansion of a waste water treatment plant might, for example, allow for more construction in the service areas). Increases in the population may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. Also discuss the characteristics of some projects that may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment."

Additional information on CEQA and indirect impacts can be found in Caltrans Guidance for Preparers of Cumulative Impact Analyses, CEQA Guidelines for Cumulative and Indirect Impacts.

2.3 CWA Regulatory Framework

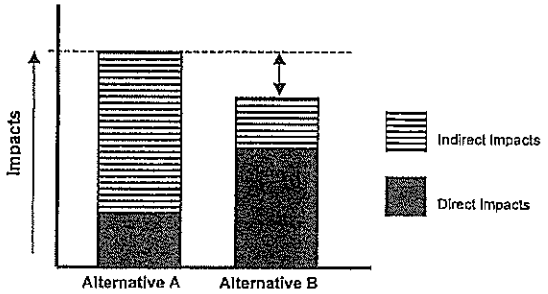
Section 404 of the CWA regulates the discharge of dredged or fill material into waters of the United States to meet the intent of restoring and maintaining the chemical, physical, and biological integrity of the nation's waters. The U.S. Army Corps of Engineers and U.S. Environmental Protection Agency (USEPA) share responsibility under Section 404. The Corps of Engineers administers the 404 program, including issuing permits, with the USEPA providing oversight.

The USEPA's 404 (b)(1) Guidelines (40 CFR 230 subpart B) specify that a permit can be issued for a discharge of dredged or fill material into waters of the United States only if the discharge is determined to be the least environmentally damaging practicable alternative (LEDPA), so long as the alternative does not have other significant adverse environmental consequences [40 CFR 230.10(a)]. To make this determination, the 404(b)(1) Guidelines require an analysis of cumulative and secondary effects on the aquatic ecosystem. Secondary effects are defined as the effects on an aquatic ecosystem that are associated with a discharge of dredged or fill materials into waters of the United States, but do not result from the actual placement of the dredged or fill material. For the purposes of this guidance, secondary and indirect effects mean the same thing.

The Corps of Engineers makes a LEDPA determination by considering both the direct and indirect impacts of the proposed project, including growth-related, indirect impacts. As shown in Figure 2-3, it is possible for an alternative with greater direct impacts, but fewer indirect impacts

(including growth-related impacts) to be selected as the LEDPA (Alternative B). In this example, the alternative with the fewest direct impacts is Alternative A, whereas the alternative with the fewest *total* impacts is Alternative B.

Figure 2-3. LEDPA Determination



Chapter 3. Land Use, Transportation, and Growth

How Transportation May Affect Growth:

Amount—a change in the overall amount of growth.

Pace—a change in the rate of growth.

Location—a change in the direction or location of growth.

Pattern—a change in the type of growth (density and use).

This chapter explores the complex relationship between transportation, land use, and growth in a California context. It describes the causes of growth generally and the link between transportation and growth specifically. Highway projects can affect the location, rate, type, or amount of growth in an area. Some types of development may be directly induced by a project (e.g., projects serving specific types of land development). However, most land use changes in California are not direct consequences of a highway project, but rather occur indirectly due to changes in travel time and increased land accessibility in areas that may be ripe for development. The result may be a change in spatial distribution of development over time, such as commercial development around a new highway interchange. These types of growth-land use-transportation relationships are more complex and difficult to analyze than those for a project specifically designed to encourage or facilitate land use change and development.

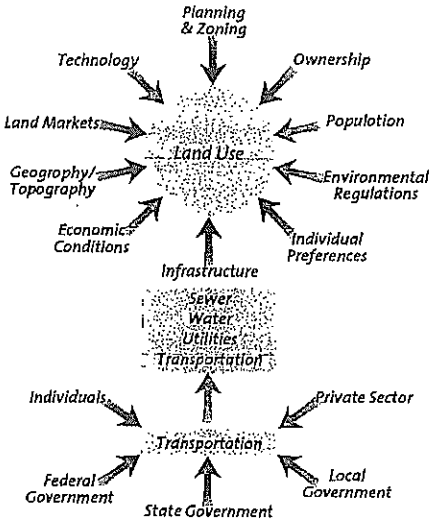
3.1 Factors that Influence Growth

Many factors influence land use and development in an area, as illustrated in Figure 3-1. Factors such as population and economic growth, desirability of certain locations, the costs and availability of developable land, physical and regulatory constraints, transportation, and the costs of sewer and water services all strongly influence where, when, and what type of development takes place.

Many of these factors also influence the policies and decisions associated with land use and growth. The key players include households, businesses, developers, and local governments (see FHWA's *Influence of Transportation Infrastructure on Land Use* and NCHRP Report 423A, *Land Use Impacts of Transportation: A Guidebook*). The interaction of supply and demand for housing and business properties in the land market produces the pattern of development within an area. Within this market, households and businesses create demand for new buildings and locations while developers provide these products within the supply and cost constraints of local government. External factors, such as zoning laws, incentive programs, and proximity of public transit and roadways also influence this relationship.

Households weigh the costs of different locations with their needs and preferences for living space, neighborhood type, quality of schools and other public services, and access to jobs, goods, services, and recreation. Various types of households weigh these factors differently as they consider what type and location of housing will best satisfy their needs and are within their budgets.

Figure 3-1. Factors Influencing Land Use and Development



Source: FHWA May 1999. An Overview: Land Use and Economic Development in Statewide Transportation Planning.

Businesses also balance the costs of various locations with their need to be accessible to workers, customers, supplies, and information, and to be attractive places to work and shop. These needs often lead them to cluster with other businesses in downtowns, suburban activity centers, and office and industrial parks. They also may outbid other uses for the highly accessible and visible places even though space may cost more in these locations.

Real estate developers respond to this market demand by evaluating the needs and preferences of their customers—most often homebuyers and commercial and industrial business tenants—and then by building new development projects that respond to that market. These new developments can compete with the existing stock of buildings for this market. Sometimes new developments augment existing supply in an expanding market; sometimes they compete with existing supply in a stagnant market, drawing tenants and buyers away from older properties.

Local government actions attract or discourage development by influencing the supply of land available for development/redevelopment; the densities at which development can occur; and directly or indirectly the cost of development. Developers' projects also can be constrained by the ability of local governments to provide needed infrastructure.

Further information about the factors that influence growth and a list of possible data sources is found in NCHRP Report 466, *Desk Reference for Estimating the Indirect Effects of Proposed Transportation Projects* (Course Module 4, Step 2 – *Identify Study Area Directions and Goals*).

3.2 What Is It About Transportation?

Land use and transportation are inextricably linked. Everything that happens to land use has transportation implications and transportation actions may affect land use. Transportation agencies such as Caltrans play a role in land use changes by providing infrastructure that can improve mobility to different destinations, and/or open up access to new locations. At the same time, new land development generates travel to that location and this additional travel generates the need for new transportation facilities. The extent that transportation influences development or the extent that land use influences transportation is a matter of ongoing debate (see Re:NEPA[3]).

Accessibility

Accessibility is the most direct link between transportation and land use. The concept of accessibility is key to understanding how transportation and land use relate to one another (NCHRP Report 423A). Transportation promotes spatial interaction between activities or land uses. This interaction is measured by accessibility, which reflects both the attractiveness of potential destinations and ease of reaching them. The pattern of land uses is important because it determines the opportunities or activities that are within range of a given place. The potential for interaction between any two places increases as the cost of movement between them—either in terms of money or time—decreases. Consequently, the structure and capacity of the transportation network affect the level of accessibility.

Transportation projects may reduce the time-cost of travel, thereby enhancing the attractiveness of surrounding land to developers and consumers. When the change in accessibility provided by a transportation project facilitates land use change and growth in population and employment, one outcome can be growth-related impacts to environmental resources.

[3] Re:NEPA is the FHWA's online "community of practice" supporting an open exchange of knowledge, information, experience, and ideas about NEPA, related environmental issues, and transportation decision making.

Research has shown that although accessibility improvements rarely change the rate of growth of a region (such as a county or metropolitan area) changes in accessibility can influence the direction of growth in a region and the rate of growth in local areas.[4] Even in areas where there is no net change in the overall amount of growth, the design or location of a transportation project can alter the patterns of land use and extent of potential impacts to resources. For example, the placement of an interchange may not change the net growth along a stretch of highway, but it could change where the growth occurs. Placing the interchange near a relatively intact wetland, rather than near a brownfield[5], could have very different consequences on environmental resources of concern.

3.3 Transportation and Land Use in California

Growth in California

Rapid population growth continues in California. In 2005, the state's population exceeded 36.8 million persons (Department of Finance Press Release May 2, 2005). The population is expected to increase by an average of 600,000 persons per year for the foreseeable future. If this projection holds, by 2020 the state's population will reach over 45 million, and by 2030 it will be nearly 52 million (*California Transportation Plan 2025*, May 2004).

The Department of Finance projects this population growth and forecasts its distribution around the state. The Department of Housing and Community Development, together with the regional Councils of Government (COG) throughout the state, estimate how many housing units each region and locality will be required to accommodate this growth, although the state's ability to enforce this requirement on local governments is limited.

Caltrans has a 20-year planning horizon consistent with standard FHWA practice for transportation project planning. In addition to Department of Finance projections, Caltrans sizes facilities based on travel demand projections prepared by Metropolitan Planning Organizations (MPO) in urban areas and county projections in rural areas. Travel demand forecasts are developed directly from population projections prepared by COGs, which are often (though not always) the same entities as the MPOs. The population and land use forecasts are based on the local government's general plan.

[4] For example, see the Brookings Institution's 2000 publication, *Do Highways Matter? Evidence and Policy Implications of Highways' Influence on Metropolitan Development.*

[5] Brownfields are real property, the redevelopment or reuse of which may be complicated by the presence of a pollutant or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land and improves and protects the environment.

In California, local governments—not Caltrans or FHWA—control the amount, location, and timing of new real estate development. A local government is required by state law to adopt a general plan. This plan should accommodate the jurisdiction's fair share of future housing as determined by the Department of Housing and Community Development and the COG. Although the state's ability to enforce this requirement is limited, most local governments do take this responsibility seriously. The general plan also reflects the community's vision for how and where land is developed, preserved, or redeveloped.

The general plan can be a good source for obtaining information about expected growth and development patterns that are likely to unfold in a community. A general plan addresses the following seven elements (William Fulton and Paul Shigley, *Guide to California Planning*):

- The land use element deals with population density, building intensity and the distribution of land uses within a city or county.
- The circulation element deals with all major transportation improvements. It serves as an infrastructure plan and must address the development patterns expected by the land use element.
- The housing element assesses the need for housing for all income groups and lays out a program to meet those needs.
- The conservation element deals with flood control, water and air pollution, and the need to protect sensitive resources, such as endangered species habitat, wetlands, and prime farmland.
- The open-space element provides a plan for the long-term conservation of open space in the community.
- The noise element identifies noise problems in the community and suggests measures for noise abatement.
- The safety element identifies seismic, geologic, flood, and wildfire hazards and establishes policies to protect the community.

CEQA review is required when general plans are adopted, amended, or updated. NEPA review is not required because preparing or amending a general plan is not a federal action. Caltrans' role in the land-use planning and development review process is limited to intergovernmental review of projects that affect the state highway system.

Land use change and the precise details of new development are not easily predicted and the reliability of land use plans can be variable. Even if a proposed transportation project is in a local agency's general plan, factors at the time of project analysis could create a situation in which the project may contribute to growth-related impacts. In addition, Fulton and Shigley (2005) explain that because general plans are revised every 10 to 15 years at most, the plans may be out of date and market conditions may have changed. Accordingly, *general plans should not be used as the sole source of reliable land use information.*

Key Transportation Growth Issues

Much of the guidance provided by CEQ, FHWA, and other agencies concerning growth-related impact analysis appears to focus on transportation projects whose purpose is to stimulate growth (i.e., growth is a part of the project's purpose). In California, projects are rarely designed to encourage or facilitate growth. Most Caltrans capacity-increasing projects are proposed as a response to traffic congestion that results from growth that has already occurred or will soon occur, rather than attracting new growth to an area that otherwise would not receive it. From this perspective, growth causes the project—the project is not designed to cause growth. Hence, when California projects have growth-related impacts, it is usually an unintended outcome of the project.

Even if the intended effect is to respond to growth that has occurred or is projected to occur, an unintended result of reducing congestion could be to increase accessibility—which could, in turn, affect the timing and location of additional growth and possibly drive growth into areas where growth was not planned or may not otherwise be foreseeable. This growth also could result in increased pressure on resources in the area.

Analyzing these types of growth-transportation relationships can be difficult. Nevertheless, this is an analysis required by NEPA and CEQA. Chapter 5, *Making the First Cut* and Chapter 6, *Performing the Analysis* are designed to help the practitioner evaluate whether and how a transportation project may lead to growth-related impacts. When growth-related impacts are reasonably foreseeable, the guidance emphasizes the need for the Project Development Team (PDT) to consider and incorporate avoidance and mitigation measures for potential resource impacts. Chapter 4, *Key Concepts for Growth-related Impact Analyses*, discusses what makes an action or an impact "reasonably foreseeable."

Chapter 4. Key Concepts for Growth-related Impact Analyses

This chapter discusses the concepts of "reasonably foreseeable" and "causality" as they relate to assessing the growth-related impacts of a transportation project. To be considered reasonably foreseeable, an action, while uncertain, must be probable or likely to occur. In addition, although development and transportation projects are often built in close proximity to each other, this does not necessarily mean that a causal relationship exists between the transportation project and growth.

4.1 "Reasonably Foreseeable"

CEQ provided the following guidance[6] discussing the meaning of the term "reasonably foreseeable:"

> "The EIS must identify all the indirect effects that are known, and make a good faith effort to explain the effects that are not known but are 'reasonably foreseeable' [Section 1508.8(b)]. [I]f there is total uncertainty about the future land owners or the nature of future land uses, then, of course, the agency is not required to engage in speculation or contemplation about their future plans. But, in the ordinary course of business, people do make judgments based upon reasonably foreseeable occurrences. It will often be possible to consider the likely purchasers and the development trends in that area or similar areas in recent years; or the likelihood that the land will be used for an energy project, shopping center, subdivision, farm or factory. The agency has the responsibility to make an informed judgment, and to estimate future impacts on that basis, especially if trends are ascertainable or potential purchasers have made themselves known. The agency cannot ignore uncertain, but probable, effects of its decisions."

In other words, reasonably foreseeable events are those that are likely to occur or are probable, rather than those that are merely possible. This means that those effects that are considered possible, but not probable, may be excluded from NEPA analysis. There is an expectation in the CEQ guidance that judgments concerning the probability of future impacts will be informed ones, rather than based on speculation. At the same time, the agency can and should use its own informed judgment in order to make reasoned predictions.

A review of case law regarding "reasonably foreseeable" actions and effects can be found in NCHRP Report 466, *Desk Reference for Estimating the Indirect Effects of Proposed Transportation Projects* (Course Module 2 – *Review of Case Law on Indirect Effects Evaluation*),

[6] Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations (46 Fed. Reg. 18026, March 23, 1981; as amended, 51 Fed. Reg. 15618, April 25, 1986).

and in the *Draft Baseline Report*, Executive Order 13274, Indirect and Cumulative Impacts Workgroup (March 2005).

A confident prediction of whether growth is reasonably foreseeable requires judgment and needs to be based on information obtained from reliable sources. Coordination with local land use agencies and officials, including the review of adopted plans and similar documentation, if available, is important.

Assessing the growth-related impacts of a proposed transportation project can be thought of as a three-part process:

1. What is the reasonably foreseeable growth and land use change without the project? What is it with the project?
2. To what extent will the project influence the overall amount, type, location, or timing of that growth?
3. Will project-related growth put pressure on or cause impacts to environmental resources of concern?

In thinking about this process, it is important to understand that growth *per se* is not really what matters. What matters is the potential impact that this growth may have on resources of concern. For there to be a growth-related impact, the practitioner must find that growth is a reasonably foreseeable consequence of a transportation project (even in combination with other factors)—*and that growth would impact resources of concern.*

Determining whether growth is reasonably foreseeable can be a difficult task. Text Box 1 provides an example discussing the difference between probability and certainty. It illustrates the significance of distinguishing between a prediction (the probability something will happen) and the reliability of that prediction (the level of certainty). Thus, it is not just the predicted probability of something happening that makes it foreseeable, but also the reliability of those predictions. The practitioner should have a qualitative sense of how reliable his/her conclusions are based on the reliability of the source data.

Text Box 1. Distinguishing Between Probability and Certainty

Two amateur weather forecasters estimated the probability that it will rain tomorrow in their city. They both estimate the probability to be 80%. But how certain was each one about his prediction? One is very confident about his prediction, because he referred to current satellite imagery from the National Weather Service. The other is less confident about his prediction, because he used a less reliable data source—his personal journal of the weather during the same week last year.

Both predictions arrive at the same probability that it will rain, but the certainty about the predictions is not the same. Obviously the prediction using satellite imagery would be more certain. Other factors also can influence the level of confidence in a prediction.

4.2 "Causality"

The extent to which land use influences transportation and vice versa is a matter of ongoing debate. Statisticians say, "Correlation does not imply causation" (see Text Box 2). Growth is not necessarily caused by a transportation project. If the potential for growth in an area is inevitable and consistent with local land use plans and current trends, and the transportation project would not influence growth, then there would be no growth-related impacts attributable to the project. The question that must be analyzed is whether the transportation project will change the location, rate, type, or amount of growth. For example, how much of the future growth will occur anyway (no-build) and how much will occur if the transportation project is built? The difference between these two projections is the amount of growth that would not occur "but for" the project and is a growth-related impact.

Text Box 2. Correlation and Causation

Consider the following examples of correlations:

- Ice cream sales and the number of shark attacks on swimmers.
- Skirt lengths and stock prices.
- The number of cavities in school children and their vocabulary size.

Statisticians see e relationship between all of these factors. But a correlation between two things does not necessarily imply causality–that is, the notion that one factor (skirt lengths) caused the other (stock prices) to occur. These correlations *do not* imply causality—they are "common responses" often to unknown factors. For instance, ice cream sales and shark attacks are likely each caused by increases in the number of people who come to the beach.

This example does illustrate why a growth-related impact analysis can be difficult. Sometimes transportation causes growth, sometimes growth causes transportation, and in some ways the correlation between transportation and growth is in response to other factors. Yet the practitioner is tasked with untangling and estimating the causal relationship between transportation and growth.

The practitioner needs to consider these concepts to determine if growth will be a reasonably foreseeable effect of a transportation project. It would be unusual to conclude that a project would have no growth-related impact issues associated with a project without at least performing a "first-cut" screening (see Chapter 5, *Making the First Cut*). Likewise, a practitioner cannot assume a causal relationship exists between future land use changes and the project without further analysis.

Chapter 5. Making the First Cut

There is a continuum of transportation projects that range from those having little likelihood of growth-related impacts to those having a high likelihood of growth-related impacts. This chapter describes some "first cut" screening factors that can help determine where a proposed project lies in the continuum. It suggests what factors to consider, how to document the results, and what, if anything, to do after completing the first-cut screening.

Purpose of the First-cut Screening:

To use readily available information about project- and growth-oriented factors to evaluate the extent to which the practitioner will need to consider a growth-related impact analysis for a transportation project.

It is fairly easy to make the "first-cut" decision for projects that fall at either end of the continuum. For example, it would be appropriate to conclude that growth-related impacts are not reasonably foreseeable for an auxiliary lane project in a highly urbanized area with low growth rates and little remaining development capacity. Once this decision is documented, no further analysis of growth-related impacts would be necessary. In contrast, a new bypass with interchanges adjacent to an urban area (urban fringe) could increase accessibility to undeveloped land. In the presence of other factors such as a growing regional economy, suitable terrain, and favorable development regulations, this project would likely have growth-related impacts and would need further analysis.

For projects in the middle of the continuum, the practitioner will need to make an initial determination. Is further investigation or analysis of growth-related impacts needed? If so, the results of the first-cut screening can help to focus the analysis on potential issues that should be investigated in greater detail. Chapter 6 of this guidance, *Performing the Analysis*, describes the suggested steps for conducting the analysis.

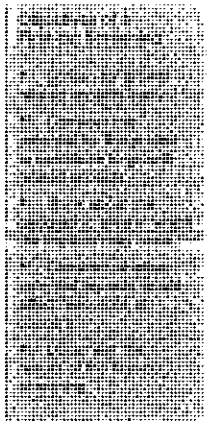
5.1 Caltrans Project Development Process

Consideration of growth-related impacts should begin early in the project development process. The first-cut screening is used to determine whether the potential for growth-related impacts is a project issue that needs to be evaluated in the environmental document. After completing the first-cut screening, the practitioner will have concluded and documented that either: (1) growth-related impacts as a result of the project are not reasonably foreseeable; or (2) further investigation or analysis is required. Any potential for growth-related impacts also should be discussed at Project Development Team (PDT) meetings, so that opportunities for avoidance and minimization can be explored and documented.

At the beginning of the Project Approval and Environmental Document (PA&ED) stage, the practitioner should review the Preliminary Environmental Analysis Report (PEAR) for any preliminary conclusions regarding growth-related impacts. The practitioner also should talk with

members of the PDT who worked on the project during the Project Initiation Document (PID) stage, especially the Project Manager and environmental staff. There are three possible outcomes from this review:

- If the PEAR concludes that growth-related impacts are not reasonably foreseeable, the practitioner should examine the basis for this conclusion and verify that this is still the case, taking into consideration any project changes and new information. If the conclusion is still valid, no further analysis is necessary and the conclusion should be stated in the environmental document. If the practitioner determines that a closer look is warranted, then a growth-related impact analysis should be conducted as described in Chapter 6.
- If the PEAR concludes that there is potential for growth-related impacts, the practitioner should conduct a growth-related impact analysis as described in Chapter 6.
- If the PEAR is silent about growth-related impacts, the practitioner should perform a first-cut screening as described below. Based on the outcome of the screening, the practitioner either documents that growth-related impacts are not reasonably foreseeable, or performs a growth-related impact analysis. Chapter 6 of this guidance describes the suggested steps for conducting the analysis.

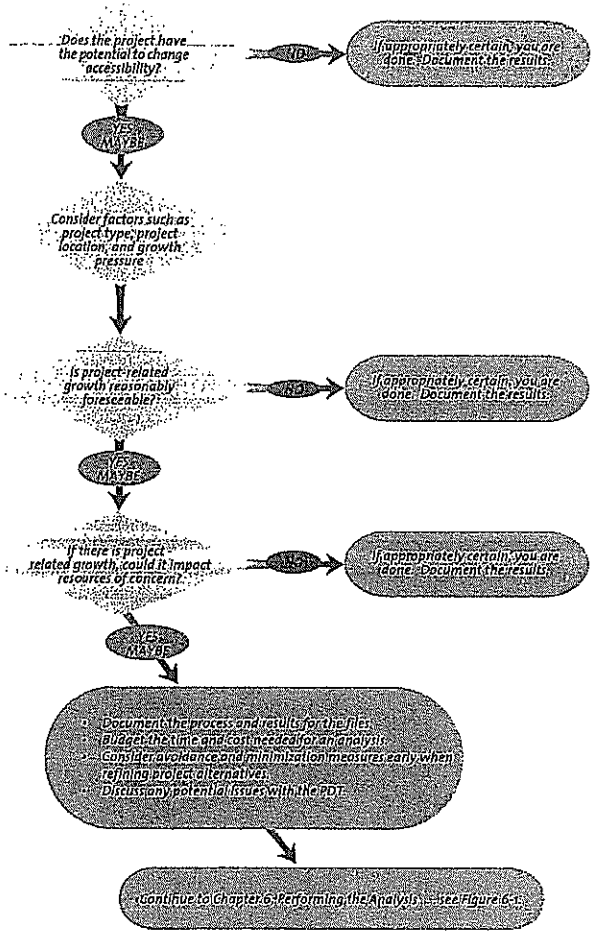


5.2 Conducting the First-cut Screening

The flowchart in Figure 5-1 provides an overview of the steps used to conduct the first-cut screening. The practitioner uses readily available information to examine a variety of interrelated factors to answer the following questions:

1. To what extent would travel times, travel cost, or accessibility to employment, shopping, or other destinations be changed? Would this change affect travel behavior, trip patterns, or the attractiveness of some areas to development over others?
2. To what extent would change in accessibility affect growth or land use change—its location, rate, type, or amount?
3. To what extent would resources of concern be affected by this growth or land use change?

Figure 5-1. The First Cut



Scoping is an important forum for gathering input on potential growth-related impact concerns and resources of concern. If growth-related impacts are a potential concern, this should be disclosed and explored during scoping for the project. This will provide an opportunity for coordination with agencies such as the U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, California Environmental Protection Agency, the California Department of Fish and Game, and local agencies on the types of effects to be evaluated and analysis methods that could be used.

As stated in Chapter 4, to be considered reasonably foreseeable, an action, while uncertain, must be probable or likely to occur. Determining whether something is reasonably foreseeable involves predictions about the future, which means there is built-in uncertainty that requires a practitioner to exercise judgment. As with many decisions, the practitioner may not be able to be completely definitive in saying "yes" or "no." When answering these questions, some screening factors to consider include accessibility, project type, project location, and growth pressures in the area. Although these factors are discussed separately below, they *must be considered in combination, as described in the following sections.*

Accessibility

Changes in land use could result from a transportation project for several reasons (NCHRP Report 423A, *Land Use Impacts of Transportation: A Guidebook*):

- Development that would have occurred anyway could be arranged in a different pattern. For example, new commercial activities might choose sites that the proposed project makes more accessible rather than other sites in the study area.
- The proposed project could cause some businesses or households to locate in the study area instead of other places in the region. For example, if access is improved to land on the urban fringe, developers may capitalize on the improved access and build homes in these areas instead of elsewhere in the region.
- The proposed project could stimulate new real estate development that changes existing land uses and increases intensities in already developed areas. For example, residential properties near a new interchange might be redeveloped into commercial buildings because the changes in accessibility will make the land more attractive to commercial users who will offer higher prices for the land.

Land use change can occur due to a transportation project in a highly urban context. For example, an improvement in accessibility like a transit stop or a new interchange could encourage redevelopment in the urban area at higher densities. In the urban setting, the main effects of land use change are on socio-economic or community conditions. Land

use change can cause residential or business displacement, altering the character of a community or changing property values/rents.

Some basic questions to consider when screening a potential project for changes in travel behavior and accessibility include:

- Is the number of trips likely to change?
- Do project alternatives have the potential to affect travel speeds and travel times?
- Are project alternatives likely to change levels of congestion and level of service (LOS)?
- Does it appear that project alternatives may change accessibility to, from, and within the study area?

Early in the Caltrans project development process, it is unlikely that results of the traffic operations analysis will be available to help answer these types of questions. However, a review of existing traffic counts, accident data, traffic forecasts, programming information for the corridor in the Regional Transportation Plan (RTP), and the purpose and need statement will help the practitioner piece together a picture of the project's context. This can help the practitioner conclude whether a potential accessibility change could result from the proposed project.

Project Type

Project types can range on a continuum from those projects having no likelihood of causing growth-related impacts to those projects having a high likelihood of causing impacts. For example:

- Projects not likely to cause growth-related impacts include projects to perform pavement rehabilitation, culvert work, signalization or storm damage repair; to install median barriers, sound walls or landscaping; or to widen existing lanes to standard widths, make curve corrections, or widen shoulders. These are typically projects on an existing facility that do not increase capacity or increase accessibility. These projects will not warrant an analysis of growth-related impacts.
- Adding high occupancy vehicle (HOV) lanes or mixed-flow lanes are examples of projects that could cause growth-related impacts because they add capacity to an existing facility. These projects warrant closer consideration to determine whether an analysis of growth-related impacts will be necessary.
- Projects such as a bypass, new road, or new interchange/intersection are the most likely to have growth-related impacts. These are typically projects that create a new facility or new access. These projects will likely require an analysis of growth-related impacts.

Project Location

Project location, whether urban, suburban, urban/suburban fringe, or rural, is another screening factor that can be used in combination with other factors when considering whether a transportation project could cause growth-related impacts:

- **Urban.** The likelihood of a highway project causing growth-related impacts in an urban area is typically low because of its built-out land use pattern and/or resources of concern may not be present. However, practitioners should not dismiss urban projects without conducting a first-cut screening, as well as considering other factors such as plans for increased land use density and transit-oriented development that could affect socio-economic or community condition resources.
- **Suburban.** A suburban area[7] may have a greater potential for growth-related impact concerns because of a greater presence of open space/vacant land and resources of concern. This is particularly the case in newly developing suburban areas where undeveloped natural areas are planned for human use (e.g., parklands, trails, etc). Transportation projects in these areas may cause growth-related impacts.
- **Urban/Suburban Fringe.** Undeveloped parcels adjacent to an expanding urban/suburban area can be prime growth areas. Fringe areas generally have high land availability and lower land prices. Transportation projects in these areas have a high potential to cause growth-related impacts, particularly if the land is suitable, development regulations are favorable, and the area is in the path of an expanding urban/suburban core.
- **Rural.** Transportation projects in rural areas have traditionally had a lower potential to cause growth-related impacts than suburban areas, because population density and economic activity generates lower demands for conversion of undisturbed lands to developed uses. However, the likelihood of impacts can vary depending on factors such as the distance to existing population centers, the degree of growth pressure, and so on.

There are exceptions to each of these general categories. For example, while highly urbanized, the City of San Diego contains a large number of sensitive plant and wildlife species. Hence, the location of the project area alone is not a completely reliable screening tool. But if used in the first-cut screening, in combination with other factors, project location can be an early indicator of the project's potential to cause growth-related impacts.

[7] A nearby, politically separate municipality with social and economic ties to a central city (urban area).

Growth Pressure

The amount and intensity of development in an area also can be an early indicator when considering growth-related impacts. If there is little active development because of a built-out land use pattern, there is likely low opportunity for growth, whereas proposed or ongoing construction activity, growth-control debates in newspapers, and the presence of tracts of undeveloped land likely indicate a high opportunity for growth.

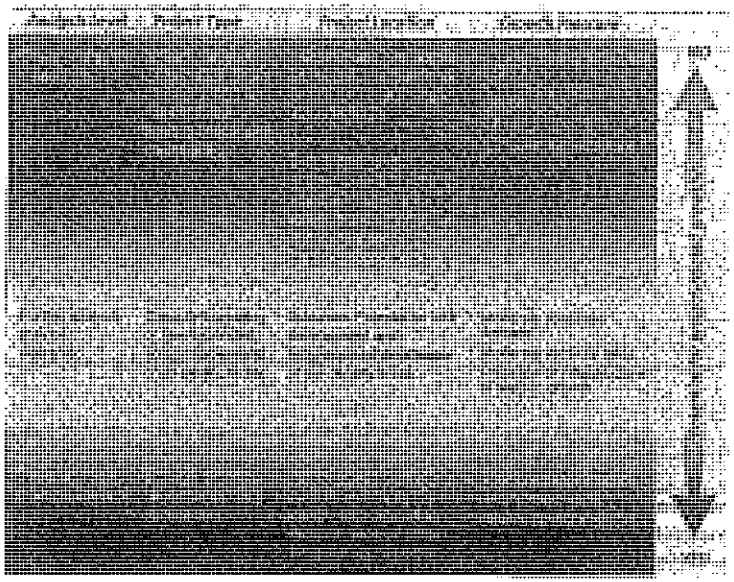
The general plan, other local plans, and census data are just a few of the data sources that can provide projections of future population, employment growth, and land development for an area. Other potential sources of data regarding growth plans and trends are discussed in NCHRP Report 466, *Desk Reference for Estimating the Indirect Effects of Proposed Transportation Projects* (Course Module 4, Step 2—*Identify Study Area Directions and Goals*). Keep in mind, however, that general plans may be out of date and other factors such as market conditions or developers' plans can change. Even in areas where there is an up-to-date plan and an effective planning process, it is still wise to consult with local and regional planners, real estate experts, and other knowledgeable people in the area to confirm the growth plans and trends expressed in the plan (see the discussion of general plans in Section 3.3, *Growth in California*, and the sample questions in the Data Gathering Issue Paper prepared for the cumulative impact analysis guidance).

Some general circumstances that could influence the likelihood of growth pressure include (see NCHRP Report 466, Course Module 7, Step 5—*Identify Potentially Significant Indirect Effects for Analysis*):

- **Land availability and price.** Development cannot take place without the availability of land at a price suitable for development.
- **Existing infrastructure.** The amount and kind of infrastructure (sewer, water, etc.) existing or planned in an area.
- **Regional economy.** Development is not likely to occur if the regional economy will not support new jobs and households, if credit or financing is not readily available, or if the availability of labor, suppliers, or local markets for goods is not sufficient.
- **Vacancy rates.** High vacancy rates in housing or commercial space would likely be absorbed before any shift in development occurs.
- **Land use controls.** Development is shaped by zoning ordinances and other land use controls that influence the amount of land available, the densities permitted, and the costs of development.

The continuum of the first-cut screening factors described above is illustrated in Figure 5-2. Keep in mind that these factors must be considered in combination when determining whether a proposed project could cause growth-related impacts. The fictional Canyon City Transportation Improvement Project, which follows Chapter 6 of the guidance, illustrates the process for conducting a first-cut screening.

Figure 5-2. Is There a Potential for Project-related Growth?



Geographic Area

The geographic area selected for evaluating growth-related impacts will generally be larger than the study area for direct impacts because indirect impacts are later in time or farther removed in distance. However, the geographic area should not be so large as to dilute the magnitude of the impacts. For example, many transportation projects originate in regional plans, but considering the whole region may lead to an analysis that diminishes the effects of an individual project. Some tools for determining the geographic area are discussed below (additional information can be found in NCHRP Report 466, Course Module 3, Step 1—*Initial Scoping for Indirect Effects Analysis*).

Political Boundaries. Boundaries based on the limits of political jurisdictions can be used to evaluate growth-related impacts. Many data sources such as demographics, growth projections, and general plans are

delineated by political jurisdictions. Examples of political boundaries include counties, planning districts, census tracts, and traffic analysis zones. However, use caution when selecting political boundaries. They can be arbitrary and may not represent the reality of market areas; spillover effects across jurisdictional lines are common. Demographic characteristics and development trends in urban and suburban areas may extend beyond an individual municipality into surrounding communities.

Commuteshed. The geographic area could be sized to coincide with a commuteshed. The commuteshed approach looks to identify key areas of household location (trip generators) and employment/shopping services (trip attractors) to capture origins and destinations most likely to be affected by the transportation improvement. This evaluation is most easily accomplished through the project's travel demand forecast. Using the outputs of the model, such as zone to zone travel times, it is possible to compare changes to travel times for specific trips in the model network. The network boundaries for a particular traffic analysis will be based on an approved travel demand model or a sub-area component of the travel demand model. The area defined for the transportation analysis can be considered the commuteshed.

Growth Boundaries. In jurisdictions with growth management policies, areas suitable for development or expected to see growth may already have been delineated in infrastructure or growth management plans. In some cases, development beyond these urban growth boundaries, or the extension of infrastructure to serve it, is limited or restricted. In these circumstances, it may be appropriate to confine the consideration of growth-related effects to an area coincident with these accepted growth boundaries. But the practitioner should look carefully to ensure that the jurisdiction is actually enforcing growth boundaries. If the political will does not exist to enforce the boundaries, then development may extend over the boundaries, thereby altering the growth-related impact analysis.

The time frame for a growth-related impact analysis is generally 20 years, because the time frame associated with most RTPs is usually 20 years.

Identify the Resources to Consider

Identify the types of resources that are likely to occur in the selected geographic area and their sensitivity. This can be accomplished by referring to information that was gathered during project scoping and during studies of direct project impacts, as well as published information (see the Resource Guide for the Data Gathering Issue Paper prepared for the cumulative impact analysis guidance).

5.3 Document the First-cut Screening

If the first-cut screening concludes that there is *not* a growth-related impact issue with the proposed project, the document the process and conclusions for the file.

If the first-cut screening concludes that a growth-related impact analysis is necessary, the practitioner should: (1) document the process and results of the first-cut screening for the file; (2) budget the time and cost necessary for undertaking the work; (3) consider avoidance and minimization measures early when refining the project alternatives; and (4) discuss any potential issues with the Project Development Team (PDT). Chapter 6, *Performing the Analysis*, describes the steps for conducting a growth-related impact analysis and some tools that could be used to perform the analysis.

Chapter 6. Performing the Analysis

Chapter 5 of the guidance provided some project- and growth-related factors that could be used to conduct a first-cut screening to weigh a project's likelihood of causing growth-related impacts. This chapter provides a step-by-step approach for conducting a more detailed growth-related, indirect impact analysis. No single formula is available for determining the appropriate scope and extent of the analysis. Ultimately the practitioner must determine the methods and extent of the analysis based on the location, size, and type of the project proposed, the type of environmental document needed, and the potential to affect resources of concern.

6.1 Developing a Growth-related Impact Analysis

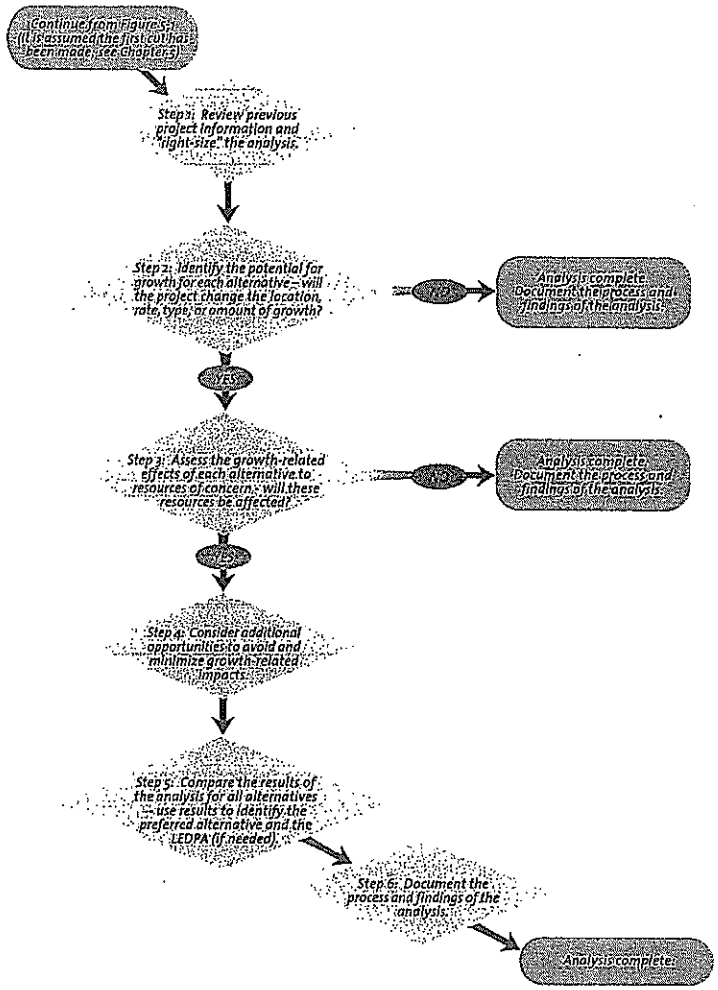
The flow chart in Figure 6-1 provides an overview of the steps used to conduct the growth-related impact analysis. The analysis occurs during the Project Approval and Environmental Document (PA&ED) stage when the direct and cumulative impact analyses are being prepared, and the NEPA/CEQA documents are being developed. The steps involved in the analysis are sequential; however, as more information for the proposed project becomes available, it should be used to refine the analysis.

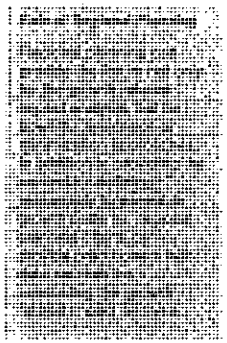
Key Points to Consider

Data gathering. Data are the foundation of the analysis. Many of the data needed are in existing documents. The Data Gathering Issue Paper, prepared for the cumulative impact analysis guidance, presents ways to identify existing data and the steps to take if data are unavailable. It includes information on tapping Caltrans internal data sources, and which agencies to contact and the types of data they maintain.

Qualitative and quantitative data. When resource issues can be measured, quantitative data are preferable and should be used in the analysis whenever relevant data are available. Using quantitative data is especially valuable when waters of the United States under Section 404 of the Clean Water Act (see Section 2.3) and other biological resources are involved. Quantitative data can be useful for identifying avoidance and minimization opportunities and for preparing permit applications.

Figure 6-1. The Analysis

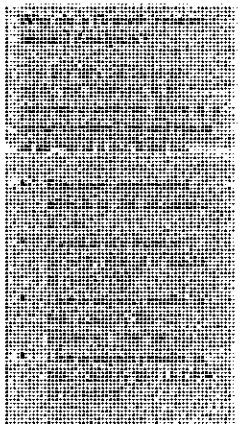




Avoidance and minimization opportunities. Identifying avoidance and minimization opportunities for reducing potential growth-related effects is an important theme throughout the analysis. Analysis results will be used as a factor in the identification of the preferred alternative, which attempts to balance all resource impacts (social, economic, and environmental). If a Section 404 permit will be required, analysis results will be used as a factor in identifying the least environmentally damaging practicable alternative (LEDPA, see Section 2.3). Because a Section 404 permit can only be issued for the LEDPA, it is important to consider avoidance and minimization opportunities for growth-related impacts early on and periodically during the analysis.

6.2 Step-by-step Approach for Conducting the Analysis

The growth-related impact analysis is used to determine whether a transportation project could contribute to growth-related impacts that would affect resources of concern. Its purpose is to more clearly identify the relationship between the no-build alternative, the proposed build alternative(s), and foreseeable growth (growth that would not have occurred "but for" the project), as well as to consider ways to avoid or minimize resource impacts should they occur. The following steps serve as guidelines for identifying and assessing growth-related impacts of a proposed transportation project:



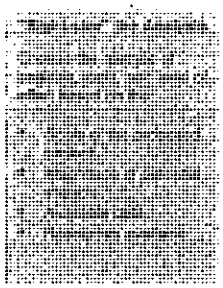
1. Review previous project information and decide on the approach and level of effort needed for the analysis ("right-size" the analysis).
2. Identify the potential for growth for each alternative.
3. Assess the growth-related effects of each alternative to resources of concern.
4. Consider additional opportunities to avoid and minimize growth-related impacts.
5. Compare the results of the analysis for all alternatives.
6. Document the process and findings of the analysis.

A hypothetical, illustrative example of a growth-related impact analysis, the Canyon City Transportation Improvement Project, follows Chapter 6. This fictional example was developed to illustrate the process for conducting a first-cut screening (described in Chapter 5), as well as for Steps 1 to 6 of the analysis as described in this chapter.

Step 1: Review Previous Project Information and "Right-size" the Analysis

In this step, the practitioner will need to review information from previous work on the project, particularly the first-cut screening. In addition, the scoping process may have provided information on

potential growth-related impact issues and on resources of concern. Also consider the amount of time that has elapsed since the first-cut screening (see Chapter 5) was prepared to account for changing conditions.



The first-cut screening will likely need to be supplemented with additional data and analyses, especially if preparing an Environmental Impact Statement (EIS). "Right-sizing" the analysis means choosing an analysis approach and the appropriate tools in order to answer the questions and accomplish the goals of the analysis. The depth of the study should be consistent with the scale of the project and its possible effects. It is not necessary or appropriate to engage in research outside the scope of a NEPA or CEQA analysis. When selecting an analysis approach and the tools to use, keep in mind that a comparison of the build/no-build alternatives will range in complexity depending on project-specific issues. If a project requires the preparation of an EIS, it will likely require a more detailed analysis. The practitioner should aim for a level of effort that is time-efficient but tells the story with clarity and accuracy for decision-makers and the public.

A well-chosen method will be salient (answers the question), valid (accepted by peers), and easily communicated to decision-makers and the public. Some methods may give more certain results as more resources are poured into them, but a point of diminishing returns is usually reached. This does not mean that the best approach is to use a method that is inherently more robust and funded to the point of diminishing returns. Certainty is not a virtue in and of itself. Investing in the right analysis approach to the point that it accomplishes its goal—and goes no further—is the virtue.

A variety of tools can be employed when analyzing growth-related effects. Table 6-1 describes some of the tools that could be used for Steps 2 and 3 the analysis. A link is provided to a summary description of the tool, its typical applications, and its strengths and weaknesses.[8] NCHRP Report 456, *Guidebook for Assessing Social and Economic Effects of Transportation Projects*, describes various techniques for evaluating changes in travel time, accessibility, and social impacts. In addition, NCHRP Report 466 (Course Module 3, Step 1—*Initial Scoping for Indirect Effects Analysis*) provides a discussion of factors to consider when matching methods to project types.

[8] Also see NCHRP Report 466, Course Module 8, Step 6—*Analyze Indirect Effects* and NCHRP Report 423A, *Land Use Impacts of Transportation, A Guidebook*).

Table 6-1. Possible Tools for Conducting a Growth-related Impact Analysis

Tools*	Description	Comment
Qualitative Analysis	Qualitative methods using expert knowledge are used frequently to predict and evaluate land use interactions. One such method, the Delphi method, presents a systematic way to use expert opinions based on an interviewing method that begins with general questions, but focuses the questions and the analysis more precisely as the process continues. Other qualitative methods include meetings with stakeholders or a project task force. Regardless of the method used, experts or stakeholders should be identified and contacted early in the process.	Qualitative process can take a holistic approach that considers all aspects of a system, which can be helpful for large transportation projects. The use of expert opinions and analysis can be helpful in developing forecasts or focusing on known issues.
Transportation Forecasts	Transportation forecasts summarize the transportation planning and traffic engineering processes to identify the size and type of proposed project to be developed.	Transportation forecasts can be especially helpful to determine the capacity associated with transportation facilities, and changes in behavior after new transportation facilities are constructed.
Geographic Information Systems (GIS)	GIS provides the ability to map, display and analyze data with a spatial component such as land use, census data, road networks, etc. It also can be used to identify environmental constraints, demographic data, etc.	GIS is a valuable tool that can provide maps and other data that can be used in land use and regional economic models. GIS is increasingly being used by Caltrans, local agencies, and regional organizations.
Integrated Land Use and Transportation Models	Integrated models are required to simulate the relationships between land use and transportation. The models predict how changes in accessibility influence changes in location of households and businesses, and how congestion created by relocated households and businesses affect accessibility. These models are frequently used by Councils of Governments (COGs) and Metropolitan Planning Organizations (MPOs).	Depending on the type of project, land use and transportation models can provide data that show what has triggered growth in the past, and whether those triggers would provide the same result in the future.
Regression Analysis, Econometric Forecasting Techniques, and Models	Econometric models are statistical and mathematical models that depict the decision making processes of businesses, households, financial institutions and governments, and show how they interact to produce the economy's broad movements. These models can be tailored to specific regions, and are often used by regional planning agencies to forecast employment and population change on regional or statewide levels.	Econometric models are useful for assessing the impacts of transportation investment and policies on a regional economy, and are useful in identifying how changes in the transportation system would affect the regional economy. However, they work best at predicting changes over large areas or corridors with multiple jurisdictions or urban centers. As a result, they are not useful in identifying the effects of a single transportation improvement on a local area. Also, the use of these models can be costly and time consuming.

*Note: Tools are listed from the most qualitative to most quantitative; a link is provided to a summary description of the tool, its typical applications, and its strengths and weaknesses.
Adapted from NCHRP Report 466, Course Modules 7 and 8, and NCHRP Report 423A, Section 2, *Analytical Tools*.

Step 2: Identify the Potential for Growth for Each Alternative

In this step, the practitioner will need to predict the land use and development patterns in the geographic area for each alternative, including the no-build alternative (without project). Initially this evaluation should be done for the no-build alternative. The practitioner should consider producing a future development scenario without the transportation project.

Table 6-2 provides some data sources to use for identifying the patterns, type, rate and location of growth (also see the Data Gathering Issue Paper). Compiling and reviewing these types of data and any available planning documents can help the practitioner determine the following information:

- Is land available for growth in the geographic area?
- What areas are targeted for growth?
- How much of previously designated growth has happened or is in progress?
- Has growth happened outside designated areas?
- What type of zoning is in the geographic area?
- Do proposed zoning changes usually gain approval?
- Is land in the area sought by developers?
- What areas and resources are protected from growth?

Keep in mind that general plans and other planning documents are updated over time and may be out-of-date. Even if there is an up-to-date plan, it is still wise to consult with local experts to confirm growth plans and trends. Another way to gauge how successful previous plans have been in predicting/managing growth is to evaluate how local plans have changed over time and how well the local government has followed the plans (zoning changes, variances).

An additional consideration to take into account is the level of certainty for growth. It should not be assumed that all planned growth will occur. William Fulton, co-author of *Guide to California Planning* (2005), has estimated that approximately 60% to 80% of the development anticipated in a general plan's land use element actually happens (personal communication, January 2006). Talking with local planners and other experts can help identify the degree of certainty associated with growth plans and trends in the geographic area.

Table 6-2. Data Sources for Identifying Growth

Data Source	Data Provided	Comments
Local and Regional Data/Trend Data		
U.S. Census Data	Population, income, age, industry and economic trends, etc	Recent and historical data can be obtained and assembled in time-series for tracts, block groups, or other geographic groupings to reveal trends.
State/Regional Growth Forecasts	Growth forecasts	California Department of Finance, state planning agencies, MPOs, other planning authorities generate growth forecasts.
Bureau of Economic Analysis (BEA) Industry Data	Industry earnings and employment	The BEA maintains time-series data at the county or Metropolitan Statistical Area (MSA) level that can reveal economic development trends.
County/Local Building Permits	Building permits, certificates of occupancy	Yearly data can reveal trends for household growth and location.
Variance/Zoning Changes	Zoning variances, regulation changes	Public records can be consulted to identify trends in the enforcement and stability of land use regulations.
Local Maps	Existing features	Location of residential and commercial areas, town center, parks, schools, etc.
Planning Documents/Comprehensive Plans		
Regional Transportation Plans (RTP)	Long-range plans for transportation improvements in a defined regional area.	Reviewing the RTP can determine whether the proposed project would support the transportation network shown.
Caltrans Transportation Concept Reports (Corridor/Route Concept Reports)	Caltrans' long-range transportation planning vision for projects along a state route, a U.S. highway, or an interstate highway. May include a discussion of local land use planning issues and an analysis of the environmental baseline.	Transportation concept reports can be used to fill in the data gap between outdated local general plans and the environmental analysis of current roadway development projects. When a transportation corridor extends across multiple local jurisdictions, a concept report also serves as a planning tool to facilitate dialogue among these jurisdictions and resource agencies, regional transportation planning agencies, Caltrans, and other stakeholders.
Planning Documents (e.g., General Plan, Comprehensive Plan, Specific-area Plan)	Identifies planned growth for a designated period.	Planning documents are updated over time and may be out of date. Consult with local experts to confirm growth plans and trends, and to determine the extent to which the planning documents guide development or the assumptions used to prepare plans. For example, do proposed zoning changes usually gain approval? Is land in the area sought by developers? The documents also can help to identify trends and community vision.

Data Source	Data Provided	Comments
Utility Plan or Map	Identifies existing and proposed utility infrastructure capacity, such as sewer, water, power.	Utility plans or maps can help determine whether infrastructure is present within or adjacent to the analysis area to support growth.
Environmental Resource Plans (e.g., California Wildlife Action Plan, Natural Community Conservation Plan, Habitat Conservation Plans, Conservation Easements).	Identifies location of environmental resources, proposed conservation areas.	Environmental resource plans can identify the location and status of existing resources and areas in which growth would be prohibited, such as within designated conservation easements. Consult with local planners and resource agency staff to identify critical environmental issues and the assumptions used for preparing the environmental resource plans.
Private Sector Plans/Development Proposals	Identifies forthcoming development.	Reviewing submitted and approved development applications can help determine growth demand and trends, the local agency's disposition toward development, and whether approved proposals conform to plans.
Local/Regional Development Regulations		
County/Local Zoning Ordinances	Data on zoning area boundaries and regulations.	Zoning regulates and restricts the use of private property in the public interest.
Urban Growth Boundary	Identifies designated areas in which growth is designated.	Urban growth boundaries can help determine infill areas to which growth could be directed. Consult with Local Agency Formation Commission (LAFCO) staff to determine whether a boundary will be extended and whether petitions have been made to do so.
Special Development Districts	Areas where development type is regulated.	Some jurisdictions may have special districts that regulate development. Examples include urban redevelopment areas, business improvement districts, tax increment finance districts, historic preservation districts.

Note: Not all of this data would be useful for every project. The practitioner can use the Preliminary Environmental Analysis Report (PEAR) as a starting point to determine additional information needs, as well as coordinate with the technical specialists who prepare the biology, community impact analysis (CIA), and farmland technical studies. Ongoing coordination with planning staff is invaluable for obtaining information on development proposals and community vision/plans. An effective public involvement program will also yield land use and resource information.

Adapted from NCHRP Report 466, Figure 4-2.

Next, the practitioner will need to determine if and how the land use and development patterns for each build alternative would change from the future development scenario crafted for the no-build alternative. In other words, will there be a change in the location, rate, type, or amount of growth that would *not* have occurred "but for" the project? The practitioner should take into account the following points (also see NCHRP Report 466, Course Module 7, Step 5—*Identify Potentially Significant Indirect Effects for Analysis*):

- Consider how the potential for growth (location, rate, type, amount) varies among the build and no-build alternatives.
- Consider whether the proposed alternatives(s) support previously designated development areas.
- Consider whether the proposed alternative(s) would remove barriers to development.
- Consider whether access provided by the proposed project would affect the desirability of an area for development.

Some analysis approaches for this step could include:

- Contact local planning agencies and business development councils for their input on changes in development with and without the project.
- Develop a future development scenario for each build alternative.
- Ask local or regional land use experts to review and/or contribute to the future development scenarios.
- Use of expert panels, which involves gathering together transportation planners, land use planners, resource agency staff, developers, and other experts to develop estimates of land use and other changes that would occur with and without the project.
- Use of geographic information systems (GIS) to better characterize the geographic scope of project effects.

If the build alternative(s) are found to *not* cause a change in the location, rate, type, or amount of growth, then the analysis of growth-related impacts is complete. The practitioner should document the process and findings of the analysis in the environmental document (see Step 6).

Step 3: Assess the Growth-related Effects of each Alternative to Resources of Concern

In this step, the practitioner will need to identify if and to what extent the change in growth identified in Step 2 for each alternative would affect resources of concern. The practitioner will need to identify the resources to consider in the analysis by gathering input from knowledgeable individuals and reliable information sources. Table 6-2 provides some

data sources (planning documents, environmental resource plans) that can be used for identifying resources of concern. Also see Exhibit B, *Resource Guide* from the *Data Gathering Issue Paper*, which presents various types of data that may be available for a specific resource and the source of such data. When resource issues can be measured, quantifiable data, such as an acre-by-acre estimate, is preferred.

If it is determined that a change in growth would not affect resources of concern, then the analysis is complete. The practitioner should document the process and findings of the analysis in the environmental document (see Step 6).

Step 4: Consider Additional Opportunities to Avoid and Minimize Growth-related Impacts

After identifying the possible growth-related impacts of each alternative to resources of concern, it is important to consider whether additional opportunity exists to further avoid or minimize these impacts.

Some key avoidance and minimization measures available in the practitioner's tool box include alignment choices, the location and/or configuration of access points, traffic impact fees, and mode choices. Decisions about alternative alignment choices are often made very early in the project development process to address transportation needs within a particular corridor. However, project alternatives may be modified to avoid or minimize growth-related impacts. Transportation choices that increase accessibility could place pressure on sensitive resources in the vicinity of the access point. Although modifying the location and/or configuration of access points is typically considered as a measure to avoid or minimize direct impacts, this approach also may be effective in redirecting future development that could affect resources in the vicinity of the access point. Also, transit projects, in combination with land use policies, can encourage compact development ("smart growth").

Local governments are best situated to incorporate the types of avoidance and minimization measures typically associated with land use. Transportation agencies can contribute to these measures with technical assistance. Purchasing access rights or conservation easements can prevent or minimize growth by limiting land accessibility and can help protect areas containing sensitive resources. Conservation easements also can be established to protect resources in perpetuity. Similar strategies include land banking and developing habitat conservation plans or resource conservation plans. For more information on these strategies, see the *Guide to California Planning* (2005) by William Fulton and Paul Shigley, and NCHRP Report 466, *Desk Reference for Estimating the Indirect Effects of Proposed Transportation Projects* (Course Module 10, Step 8—*Assess the Consequences and Develop Appropriate Mitigation and Enhancement Strategies*).

Step 5: Compare the Results of the Analysis for All Alternatives

In this step, the practitioner should summarize how and to what extent growth associated with the no-build and build alternatives would affect resources of concern. The results of this comparison will be used to contribute to the identification of the preferred alternative, which attempts to balance all resource impacts (social, economic, and environmental). If a Section 404 permit will be required, the results also will be used for identifying the LEDPA (see Section 2.3).

Also consider the reliability of the results in light of the uncertainties inherent in the analysis process and the data used (see NCHRP Report 466, Course Module 9, Step 7—*Evaluate Analysis Results*).

Step 6: Document the Process and Findings of the Analysis

It is important for the practitioner to clearly document the analysis process and its findings. This will clarify for decision-makers, the public, and resource agencies that all of the issues have been examined. Include information about the methods and assumptions used, the agencies and experts consulted, and any other research. The product of this step will be included in the environmental document.

Describe the Method or Process Used. Briefly state how the analysis was conducted. For example, a specific traffic forecast or a general plan was used, or maps were provided by resource agencies that show known wetland locations. Briefly state the approach that was used, identify the source and year of the data used, and describe any data gaps. If qualitative analytical approaches were used, such as questionnaires or interview panels, describe them.

Explain assumptions used in the analysis. Explain any assumptions used and limitations that were faced when conducting the analysis. Readers will need to know how conclusions were drawn in situations for which there were data gaps, lack of information, or limitations on obtaining data (e.g., data were cost prohibitive). If evaluating significant adverse effects in an EIS, refer to CEQ's regulations at 40 CFR 1502.22 for principles regarding incomplete or unavailable information. If models were used, summarize the assumptions on which the models are based. Also be sure to include any assumptions made with regard to uncertainty or the likelihood of potential development.

State your conclusions. The analysis will result in a conclusion about whether the project will influence growth, and what effect, if any, this growth will have on resources of concern. The conclusions should quantify the effect of each alternative using the data developed during the analysis. Also, describe avoidance and minimization measures incorporated into the project and document any commitments made.

6.3 Mitigation

By CEQ definition (40 CFR 1508.20), mitigation of impacts means avoiding, minimizing, rectifying, reducing and/or compensating with a substitute. This hierarchy is referred to as "sequencing," which means that actions to avoid and minimize adverse impacts should be considered first. This mitigation sequencing theme is carried forward into the regulations and policies of FHWA and Caltrans, as well as CEQA and the Section 404 regulations.

As discussed earlier in this chapter, there are a number of tools to avoid or minimize growth-related impacts. If avoidance or minimization of adverse effects to resources is not possible, then other mitigation strategies will need to be considered in the environmental document. It is suggested that a dialogue be initiated with the appropriate local agencies and resource agencies regarding other mitigation strategies.

Making a determination that mitigation is required for a growth-related, indirect impact can be complicated because there are many factors that contribute to growth (see Figure 3-1). Because these effects usually occur in combination with other actions by local agencies and private entities, Caltrans is not required to mitigate indirect effects that are outside of its control. Project-induced land development is almost always under the control of local governments and the private sector. The most effective way to mitigate or reduce the potential adverse resource effects from changes in land use is through the application of controls by local governments. Local governments have the authority to reject land use proposals that are inconsistent with local goals, surrounding uses, future plans, or zoning.

Despite these limitations, Caltrans is uniquely qualified to exercise a leadership role in environmental planning and stewardship. The Work Group advocates the following approach for transportation projects to alleviate the need for mitigation (other than avoidance or minimization) of growth-related, indirect impacts:

- Early collaborative planning between federal, state, and local agencies (see FHWA's web site on scenario planning, an approach that integrates land use and transportation).
- Incorporating reasonable avoidance and minimization opportunities for identified resource impacts.
- Thoroughly documenting analysis results.
- Assuring consistency with regional habitat/restoration planning efforts.
- Identifying opportunities for project stakeholders to become involved in regional planning efforts.

Section 6001 of the 2005 Transportation bill SAFETEA-LU provides support for early collaboration and integrated planning, and requires Metropolitan Planning Organizations to discuss potential mitigation activities and locations in the Regional Transportation Plan. In addition, FHWA's linking of NEPA and planning provides tools for interagency collaborative transportation, land use, and environmental planning.

Sources and Additional Reference Materials

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Descriptions of Analytical Tools

The following discussions are intended to help the practitioner assess which analytical tool or combination of tools may be appropriate to use when analyzing the growth-related effects of a highway project. Several tools are described – qualitative analysis; transportation forecasts; geographic information systems (GIS); integrated land use and transportation models; and regression analysis, econometric forecasting techniques, and models. The discussions include the basic types of each tool, when they might be applied, their strengths and weaknesses, and sources for additional information.

Qualitative Analysis

Qualitative methods using expert knowledge are used frequently to predict and evaluate land use interactions. There are a variety of qualitative analysis methods that can be applied to growth-related impact analyses. In general, qualitative approaches are most effective if used in conjunction with quantitative and GIS-based methods. Similarly, quantitative methods nearly always require the framework and context that an effective qualitative study provides. Gathering expert opinions and qualitative analysis can be helpful in developing a more focused analysis of known issues and can help frame corresponding quantitative and/or GIS studies.

Basic Types

There are several broad categories of qualitative techniques:

- **Stakeholder and Focus Group Meetings** – This approach uses engagement with locally affected citizens and experts to gather background information, knowledge of key issues and to find what resources are considered most valuable to neighborhoods affected by a given project.

- **Qualitative Inference** – This technique involves a case study description of an area of concern, e.g., habitat or neighborhood, and an identification of resources based on professional judgment of the possible impacts that the proposed project would entail. The case study focuses on the indicators that characterize the area of concern. Techniques involving professional judgment are often combined with other techniques noted here.

- **Literature Review/Comparative Case Analysis** – A comparative study involves comparing a like area where a similar project has been completed to the area of concern where a project is proposed. This is similar to the Qualitative Inference approach, but uses comparisons to enrich the analysis.

- **The Delphi Method** – This is a more systematic way to use expert opinions based on an interviewing method that begins with general questions, but focuses the questions and the analysis more precisely as the process continues. It employs survey research technique directed toward the systematic solicitation and organization of expert intuitive thinking from a group of knowledgeable people. It entails elements of the two methods described above, but is a more structured process.

- **Scenario Writing** – This method creates an outline in narrative form of some conceivable future environment given certain assumptions about the present and a sequence of events in the intervening period. Multiple scenarios can be drafted to include a variety of changing

conditions, a spectrum of potential developments, and a series of hypothetical socio-political, ecological, and economic consequences of proposed actions. This technique can develop ideas and identify causal relationships that might not surface in more structured methods. Rather than predictive, scenario writing is a technique which attempts to establish some logical sequence of events to show how, under present conditions and assumptions, a future environment might evolve. Scenarios can also serve to set the upper and lower bounds of potential outcomes.

- **Networks** – Creating system diagrams or networks can be used in classifying, organizing, and displaying problems, processes, and interactions and to produce a causal analysis of the indirect/cumulative effects. This approach is a diagrammatic version of the scenario writing method and assumes a high level of knowledge and expertise by its designer. The Network approach can be both qualitative and quantitative.

- **Matrices** – This technique can assist in the display and interpretation of information developed using many other qualitative and quantitative techniques. The matrix is commonly a grid diagram in which two distinct lists are arranged along perpendicular axes, e.g., actions and environmental characteristics. The interactions between the two that would produce impacts are noted and effects are described in a binary fashion (yes or no) a qualitative fashion (descriptive paragraph) or a quantitative fashion rank or index.

Typical Applications

Qualitative methods can usefully serve to evaluate the context or overall situation wherever little historical data exist or wherever existing data are questionable or inconsistent. In most cases, qualitative approaches to an impacts assessment are part of a larger, multi-pronged approach to doing an analysis. Qualitative approaches are most important for their ability to help frame an impact analysis. This is a most critical function when designing very large and complex analyses.

Strengths and Weaknesses

Strictly qualitative approaches have some limitations and risks. Foremost among these is the risk of slipping into speculation based on limited data or unusual circumstances. Broad participation, including input from local planners, experts, or other stakeholders through surveys, interviews, or task forces can serve as a safeguard against this. Broad and diverse participation also serves to protect against ideological biases, which is a risk when relying heavily on qualitative analyses. The Scenario Writing and Network methods are only as good as the underlying understanding or assumptions of often complex processes and interactions. Similarly, they place a high bar on the knowledge and expertise of the practitioners crafting them.

This summary was adapted from NCHRP Report 466, Course Modules 7 and 8.

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Transportation Forecasts

Transportation planners have long relied on computer-based models to predict how traffic patterns change with improvements to the transportation system. The traditional four-step model estimates how land use results in trips, what type of trips are generated, what mode is used for trips, and where and when those trips occur on the transportation network. Outputs from the travel model can be used to determine to key factors in land use change: accessibility (ease of travel to key destinations) and number of trips (reflecting opportunities for highway oriented or retail businesses).

Basic Types and Typical Applications

There are two basic types of techniques using travel demand models:

- **Screening and Comparative Evaluations** – Outputs of a travel demand model (volumes, level of service estimates, travel times, vehicle miles traveled (VMT) can be used to establish the where a project will have an effect on local traffic and travel times and whether the effect is regional or localized in nature. This involves a forecast of travel demand with a project alternative (build alternative) and without (no-build alternative) and comparison between the two conditions. If a project has a negligible effect on regional travel times, or indicators such as VMT its effect can be determined to be localized. Localized effects can be evaluated by analyzing changes in local traffic conditions in combination with qualitative (e.g., comparative case, scenario writing) or quantitative (e.g., relating traffic levels at a new interchange to types of business that may be supported by that pass-by traffic).

- **Input to Simple Regional Land Use Evaluations** – Outputs of the travel model can also be used as input variables to an accessibility analysis (evaluation of how travel times between key destinations change with and without a project) and a simple gravity model (method for allocating growth in households or employment based on accessibility change) for use in a broader regional analysis.

Strengths and Weaknesses

Transportation Forecasts can provide valuable insight into how a project would affect local and regional patterns of traffic. Analysts can use this information in qualitative or quantitative assessments to establish the location and extent to which changes in accessibility may affect land use change. Traditional models will not provide direct output of the key variables (households and employment) in an indirect impact evaluation and will not capture the dynamic interaction of land use and transportation in feedback loops over time (see the summary for Integrated Land Use and Transportation Models). Travel demand models require special expertise to produce and evaluate results. The expense and complexity of travel models make them appropriate only in situations where an established, calibrated regional or statewide model is in place.

This summary was adapted from NCHRP Report 466, Course Module 8 and NCHRP Report 423A, Section 2, *Analytical Tools*.

For More Information

NCHRP Report 456, Section 2, *Changes in Travel Time* and Section 6, *Accessibility*.

Geographic Information Systems (GIS)

GIS provides the ability to map, display, and, analyze spatial data for evaluations of indirect and cumulative impacts. Although cartographic techniques for evaluating impacts have been in use for many years, GIS allows for the assembly of large databases and automated processing. In most locations, state, regional, and local planning agencies maintain GIS datasets that are useful in indirect impact evaluations. These datasets include roadway networks, political boundaries, topography, vacant land, existing land use, zoning, demographic and employment statistics, historic resources, habitats, and natural resources. GIS is useful for all steps in an evaluation but is often combined with other methods.

Basic Types

There are two basic types of techniques using GIS:

- **Map Overlays** – The McHarg overlay technique (1969), which involves the combination of project design maps and natural and community feature and resource maps, is time-tested and can be readily implemented in GIS. This technique can be particularly useful for visualizing potential indirect/cumulative effects related to alteration of the physical environment, e.g., habitat fragmentation or community segmentation. GIS has greatly enhanced the ability to process and display cartographic information. Cartographic techniques are limited in their ability to reveal the structure, function, and dynamics of areas. However, their utility can be expanded by relating inventoried information about these characteristics via a relational database.

- **Resource Capability Analysis** – Another cartographic technique applicable to identification of indirect/cumulative effects is resource capability analysis (Rubenstein 1987). Similar to the overlay technique, this process involves the preparation of two maps an opportunity map depicting conditions favorable to development (topography, soil types, zoning, and regulatory standards) and a constraint map depicting areas unsuitable for development (wetlands, floodplains, slopes, parklands, or other notable features). Overlaying the two maps produces a land suitability map indicating areas with capacity for potential induced growth. This map could be further modified to indicate areas with the highest potential for complementary development (interchange quadrants) and development shifts (interchanges and feeder roads) under the action alternatives.

Typical Applications

In analyses of growth-related effects, GIS is most often used to catalog resources and identify areas of conflict between features of the project and features of the natural or human environment. These include direct impacts such as property takings or habitat encroachment and indirect impacts to habitats and communities by allowing analysts to determine the location and extant of natural systems and notable community features.

While GIS cannot predict the location of future households or employment, it can be used to determine likely locations for these activities by analyzing the location of existing development, project features, zoning, and natural features and constraints. Some tools are now available which combined GIS input and display capabilities with decision rules or land use modeling techniques to

add predictive or scenario evaluation capabilities (see the summary for Integrated Land Use and Transportation Models).

GIS is also particularly effective in displaying the results of evaluations and support data with thematic maps depicting demographics, land use, and socio-economic conditions.

Strengths and Weaknesses

GIS is a widely used, efficient, and effective method for gathering and cataloging data, analyzing spatial data, and documenting assumptions and presenting results. GIS by itself can not be used to develop estimations of land use change and impacts and can not capture the dynamics of many natural and social systems. GIS can be used to support and implement each step in the evaluation process.

This summary was adapted from NCHRP Report 466, Course Module 7.

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Integrated Land Use and Transportation Models

Integrated land use and transportation models represent enhancements to the typical four-step travel demand model used at state and regional agencies. In the traditional models, demographic and land use assumptions used in the estimation of trips are developed outside the model and remain fixed for each forecast year in a model run. Integrated models allow land uses to shift in each forecast year to capture how changes in the transportation system affect land use change, and how land use change will affect volumes on the roadway network. Through an iterative process these integrated models predict an equilibrium land use and traffic pattern for a future year or years in the traffic forecast. Based on region-wide forecasts of population and employment, these models allocate new housing and employment to local areas based on transportation accessibility, land availability, and in some cases land prices and other factors.

Basic Types

There are several basic types of integrated models that vary in their complexity and methods:

- **Scenario Based Models** – These models allow the user to enter information about current land use conditions and the transportation network through Geographic Information System (GIS) maps. Users then input parameters on future land use regulations, and weights for factors that typically influence land use decisions. The models then rate land areas for their suitability for development and allocates regional growth to local areas based on suitability. Factor weights and other parameters can then be altered to create scenarios to be compared for planning or impact analysis purposes. Examples include the commercially available What If? and Smart Growth Index packages.

- **Spatial Interaction/Gravity Models** – These models use Lowry gravity-model formulation to allocate employment and households based on measures of attractiveness for development including availability of land, travel time and cost, and household income. These models can typically be linked to a region's travel modeling system to provide a feedback loop. Parameters for allocation are typically estimated through a process of calibration specific to the location being evaluated. Examples include the widely used DRAM-EMPAL/ITLUP/Metropilus package developed by Steven Putman for the U.S. Department of Transportation and the ULAM system used in Florida.

- **Market Equilibrium Models** – Several modeling systems in use in the United States and Europe base predictions for household and employment location on the demand and supply for these land uses and information on the economic factors in location choices of households and employers developed through discrete choice estimation techniques. Integration with travel demand models allow the land use models to account for increases or decreases in travel time and cost in location decisions. Parameters for allocation are estimated through a process of calibration specific to the location being evaluated. Examples include UrbanSim, Metrosim, TRANUS, and MEPLAN.

- **Cellular Models** – A more recent line of modeling involves making predictions about future land use based on probability modeling developed through time-series observations and decision-rules. One example is LEAM which uses historical series of satellite or aerial photography imagery in combination with maps of attributes and constraints to make predictions on future land uses.

Typical Applications

Most integrated, transportation and land use models require a significant investment in time and money to develop. Most current applications are by academics and Metropolitan Planning Organizations. In areas where these models are already in place and calibrated to local conditions, they can be used to assess the magnitude and location of land use change associated with a transportation improvement. By comparing results using a "no-build" transportation network and a "build" alternative, the analyst can identify the increment of change in households and employment in each area the model analyzes [usually Traffic Analysis Zones (TAZs) made up of census tracts or block groups]. The analyst can evaluate the land use changes in the context of resources and notable features.

Strengths and Weaknesses

Integrated models are based on established theories of location choice and land development. By providing a feedback loop between land use and travel estimation, the models more closely represent reality than tradition travel demand models because they assume a dynamic rather than a static land use/transportation system. Integrated models also allow the analyst to directly estimate the key variables in an induced growth analysis – housing and population. Models available to date, however, have been costly to set-up, implement, and maintain because of their cost, data requirements, and need for calibration to local conditions. For these reasons, these models are used almost exclusively in academic and regional planning settings and there are very limited examples of their use in NEPA/CEQA evaluations of projects.

This summary was adapted from NCHRP Report 466, Course Module 8.

For More Information

FHWA Toolbox for Regional Policy Analysis located at http://www.fhwa.dot.gov/planning/toolbox/index.htm.

FHWA Travel Model Improvement Program (TMIP) located at http://tmip.fhwa.dot.gov/.

Regression Analysis, Econometric Forecasting Techniques and Models

Econometric and statistical models are mathematical equations that can be used to describe natural and social systems. In these models, statistical techniques are used to uncover relationships or correlations between elements of these systems so that analysis can make predictions about the future. These techniques are used often in regional planning to forecast employment and population change and describe the decision-making processes of businesses, households, financial institutions, and governments.

Basic Types

There are three broad categories of statistical analysis techniques:

- **Curve Fitting/Trend Extrapolation** – Trend extrapolation techniques are used to determine how one dependent variable (e.g., population, household size, or number of building permits issued) has varied with a single independent variable (time) in the past, so that a prediction may be made about the future. Spreadsheet software and statistical packages can be used to analyze time-series series data and develop best-fit curves and projections.

- **Econometric Forecasting Models** – Regression and econometric techniques allow an analyst to establish the relationship between a dependent variable and one or more independent variables. For example, by establishing the correlation between past levels of employment in a particular county or city to past national economic indicators (e.g., national employment or industry output), an analyst can make predictions local activity by relying on established projections of the national indicators.

- **Discrete Choice Models** – Discrete choice models can to make predictions on the probability of a decision-maker's choice by establishing the relationship between choices and the characteristics of the decision maker (e.g., age, presence of children, number of workers, housing tenure). Information on the link between choices and the characteristics of decision-makers is often established directly through surveys (stated preference) or through observations of past behavior (revealed preference).

Typical Applications

- **No-action Future Projections** – In doing an evaluation of induced growth impacts the analyst needs to compare the growth of an area's population and employment without the project (No-Action) to the future with project alternatives. Some local areas may not have estimates of future growth available at the level of detail needed (i.e., geography, time). Other areas may have a forecast that explicitly considers the effect of the proposed project in which case a projection based on current trends may be more appropriate for use as the baseline.

- **Explaining Relationships or Developing Assumptions** – By establishing the relative importance of transportation among the other factors influencing past location decisions in a local area (e.g., water/sewer infrastructure, employment base, land use regulation, and ease of obtaining permits) an analyst can predict how a transportation improvement will contribute to future land use change. These types of studies can also involve quantitative evaluations of comparative cases in other regions.

- Impacts on Property Values and Location Attractiveness – There is a growing literature in economics and planning relating changes in property values to improvements in transportation access such as interchanges and transit stops. By looking at how accessibility improvements have been capitalized into real estate prices in comparable areas, an analyst can make predictions about the effect of a proposed project on property values and ultimately land use and household or employment growth.

Strengths and Weaknesses

Econometric techniques are widely used in social science and regional planning and, when used correctly, provide an effective and defensible method on which to base conclusions about the "reasonably-foreseeable" future with our without a proposed transportation project. These techniques are often data intensive and may require considerable effort to determine if they will be useful in an evaluation. For example, an analyst may have to conduct a statistical analysis of a dataset before determining whether curve-fitting or econometric methods would produce statistically valid results. In general, econometric and statistical techniques are most applicable on large-scale systems such as regional economies, urban centers, or large corridors where large datasets can be easily obtained and individual events (e.g., business openings or closings, zoning changes) do not obscure broader trends. Although widely available desktop software packages can make the task of econometric and statistical analysis less time consuming, trained-professional judgment is required to ensure that statistical measures are accurately applied, interpreted, and summarized in documentation.

This summary was adapted from NCHRP Report 423A: Section 2, *Analytical Tools*.

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Induced Traffic and Induced Development

A Literature Review

October, 2002

Reid Ewing and Allan Lichtenstein

Alan M. Voorhees Transportation Center
Edward J. Bloustein School of Planning and Public Policy
Rutgers University

Prepared for the Chester County Planning Commission

Summary

The issue of induced development and the associated loss of farmland and rural character is a controversial topic whenever new highway capacity is proposed. Induced development is development that would occur as a direct result of the additional roadway capacity from an expanded roadway – not development that would have been expected to occur with or without highway expansion. Because this is such an important issue throughout Chester County, the Chester County Planning Commission contracted with Dr. Reid Ewing, the Director of the Alan M. Vorhees Transportation Center at Rutgers University, to conduct a literature review and offer an opinion on what is known and what is not known about induced development. Dr. Ewing is a nationally recognized expert on traffic calming and the link between land use and transportation.

The key findings of this study include:

- The issues of "induced traffic" and "induced development" are related but separate issues, but are often confused and used interchangeably. Induced *traffic* is the volume of traffic that is drawn to a new road by additional capacity. This induced traffic comes from a number of sources including trips diverted from other roadways, discretionary trips that might not have been made without the capacity increase, different employment location choices, induced development, etc. Induced *development* is one of the sources of induced traffic on an expanded roadway, but only accounts for a portion of that new traffic.
- There is significant research and literature on induced traffic, but very little on induced development. Based on this research on induced traffic, it is sometimes possible to predict induced traffic from a new or expanded roadway, at least within a range of possibilities.
- The limited research that has been done on induced development suggests it is a real phenomenon. While the cause and effect between road construction and development is not totally clear, the studies suggest that some level of development is likely to occur specifically as a result of the additional road capacity.
- No reliable method is currently available to predict levels of induced development. Experiments have been done with large and complex land use allocation models. Dr. Ewing examined the possibility of attempting to predict levels of induced development using regional land use models, such as DRAM/EMPAL and others. Although these models were not developed with this application in mind, it would be theoretically possible to use them for this purpose. However, these models are very expensive, extremely time and data intensive to use, were designed to analyze large metropolitan areas rather than specific corridors, and have produced very questionable results even when use for their intended purposes. Use of these models does not appear to be a practical or reliable option for predicting induced development.

Finally, based on this study, one can conclude that induced development is likely to occur with many roadway projects, but how much induced development would occur for a given project cannot be reliably determined.

Summary prepared by Chester County Planning Commission.

Induced Traffic and Induced Development

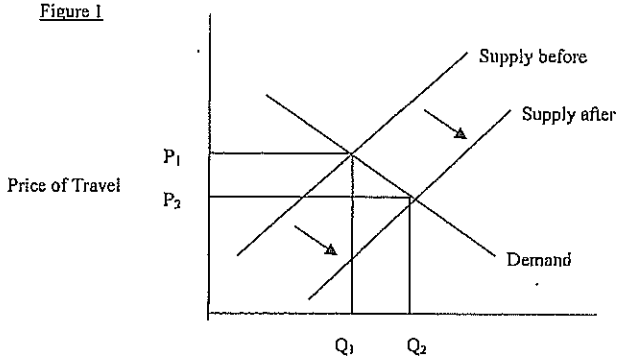
Reid Ewing and Allan Lichtenstein

1. General Discussion

Controversy exists over whether and to what extent the addition of highway capacity induces new traffic and promotes development in proximity to the added highway capacity. The notion of induced traffic challenges the view that the expansion of existing roads or the building of new roads will necessarily relieve highway congestion. The idea of induced development challenges the view that highway investments are a response to growth and development, as opposed to a cause of them. In the highway debates that occur between environment and development interests, opposing sides have very different positions on the nature and magnitude of induced traffic and induced development. In this memo, we will attempt to sort out facts from debating points.

The theory of induced traffic rests on the economic theory of supply and demand. When the capacity of a specific highway or road network is expanded in order to relieve congestion, road supply grows. Initially, the increase in road supply leads to a reduction in travel times, that is, the cost of travel declines (from P_1 to P_2 in figure 1 below). Lower travel times, however, will prompt an increase in the quantity of travel demanded (from Q_1 to Q_2). Consequently, the levels of vehicle traffic will begin to rise over time. Eventually a new equilibrium will be reached. Demand and supply are then reconciled at a point where the amount of travel on the expanded highway is greater than that which existed without the expansion of the specific highway or road network (P_2 and Q_2 in figure 1 below). This increase in the demand for travel represents the induced traffic effect.

Figure 1



Conceptually the notion of induced traffic is easier to explain than to measure or quantify. The first obstacle to measurement is reaching agreement on a definition. Given a common definition, the phenomenon can be subjected to empirical testing and comparisons can be made across the various studies that have attempted to estimate the induced traffic effect. For the purposes of this memo it will be useful to borrow from the work of Patrick DeCorla-Souza. He poses a number of questions that need to be resolved when defining induced traffic. These are:

- type of travel - whether the travel being referred to is "person" travel or "vehicle" travel;
- unit of measure - whether the induced travel consists only of absolutely new trips (trips) or whether it also includes the lengthening of trips (miles);
- time frame of reference - whether induced travel refers to any increase in total daily personal travel or whether it refers to increases in peak period travel resulting from shifts in the time of day when personal travel is undertaken;

- geographic frame of reference - whether it is limited to a specific facility, corridor or sub-area or whether it is region-wide travel that is of interest, or whether a national perspective is necessary; and
- period of impact - whether travel impacts occur in the short-term (up to 1 year) or the long-term (up to 20 years).

The definition of induced traffic proposed by DeCorla-Souza serves as a useful baseline to compare with other definitions of induced traffic. He defines induced traffic as "any increase in daily vehicle miles of travel (daily VMT) in the long-term at the region-wide level resulting from expansion of highway capacity." This definition implies:

- vehicle, not person trips;
- daily travel, without regard to peak and off-peak periods;
- region-wide, not limited to a specific corridor or facility; and
- long-term.

Most authors (Cervero, Hansen, Noland) agree with DeCorla-Souza's definition that induced traffic is measured in terms of overall VMT. Few, however, tend to define it as specifically as DeCorla-Souza and do not include the geographic frame of reference or the period of impact. Typical of this approach is the definition given by Noland and Lem, who define induced traffic as "the increase in VMT attributable to any transportation infrastructure project that increases capacity."

There are also some variations in the definition and these are found in those studies that examined induced traffic at the facility or corridor level. In these cases, average daily traffic (ADT) is used in addition to VMT as the measure of induced travel. The inclusion of ADT expands the definition to include diverted trips. Todd Litman uses the term "generated traffic" which he defines as "the additional vehicle travel that results from a road improvement." In this definition, generated traffic consists of diverted traffic (trips shifted in time, route and destination), and induced vehicle travel (shifts from other modes, longer trips, and new vehicle trips). Mokhtarian, Samaniego, Shumway and

Willits define induced demand as "the increment of new vehicle traffic (measured either as average daily traffic, ADT, or vehicle-miles traveled, VMT) that would not have occurred at all without the capacity of improvement."

By emphasizing the contribution of road improvements to growth of vehicular traffic, these definitions create a methodological challenge: to separate the capacity-induced effect from those exogenous factors that also drive the growth in vehicular traffic. Exogenous factors, such as population growth, increases in income, and various other demographic factors, such as the increased participation of women in the labor force, all contribute to growth of VMT.[1] It is only the increased VMT associated with a reduction in the cost of travel (due to road improvements) that qualifies as induced travel. Much of the empirical research has been aimed at distinguishing the induced traffic that occurs when highway capacity is expanded from the increase in travel that would have occurred in any event due to these exogenous factors.

To better understand induced traffic and its connection to induced development, it is necessary to explore the behavioral consequences of additions to roadway infrastructure capacity. Looking more specifically at the "period of impact" aspect of the definition, the short-run and long-term behavioral consequences should be distinguished. In the short-run a variety of sources can contribute to increased traffic without any induced development. These include route switches, mode switches, and changes in destination. In addition there is the possibility of new trips that would not have occurred without the addition in infrastructure capacity.

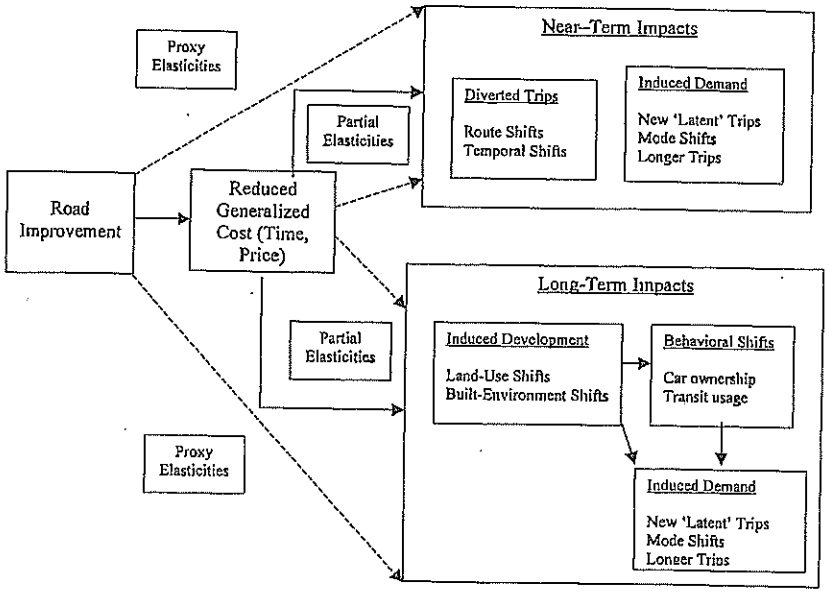
In the long run, increases in highway capacity may lower travel times so that residences and businesses are drawn to locate in the area surrounding the expanded highway capacity. The question is always whether the new development that occurs in proximity to the highway was induced to locate there as a consequence of the expansion or whether it would have occurred anyway, regardless of the change in local accessibility. If the

[1] Over time, however, the influence of these factors will change. For example, as the participation of women reach a saturation point, its influence will wane.

development itself would not have occurred otherwise, both the traffic it generates and the development itself can unambiguously be considered induced. (See Figure 2 below reproduced from Cervero, 2002 which shows the relationship between induced traffic and induced development.)

For example, if there is a notable increase in trips to a theme park following a major improvement to the highway linking an urban area with the theme park, this would clearly be considered induced traffic in the short run. And, if the theme park expands to take advantage of the increased capacity of the highway link, this too would be considered induced but would fall into the category of induced development, a long-run phenomenon.

Figure 2: Path of Induced Demand and Elasticity Measures



2. Summary of Literature

The subject of *induced traffic* has received much attention in the professional literature and many studies have attempted to measure it. By contrast, the subject of *induced development* has received scant attention. This section summarizes the available literature on induced travel demand and induced development. First, the results of various studies are described in order to show what is known about these two phenomena. Second, the key issues that remain unresolved are described. Finally, some conclusions appear at the end.

What is known about induced travel demand

Robert Cervero (2002) has distinguished five analytic approaches used to measure induced travel demand. They are: 1) facility-specific analyses; 2) model forecasts that require large scale travel demand forecasting computer simulation models; 3) area studies that use proxy measures in place of a preferred variable because its measurement is very difficult; 4) area studies that use partial measures because there is always the possibility that the results will be influenced by exogenous factors; and 5) disaggregate models that study travel behavior at the level of the individual trip maker rather than at the aggregate level. The different approaches lead to different estimates of the magnitude of the induced traffic effect. Results are typically summarized with elasticities. Elasticities present the percentage change in VMT or other travel output measure associated with each percent increase in highway capacity or each percent reduction in travel time due to the increased highway capacity. For example, an elasticity of 0.2 with respect to VMT means that for every ten percent addition in lane miles built, VMT will grow by 2 percent. Elasticities, thus, provide good overall summary measures of impacts. This section explains each of the approaches and presents results (often in the form of elasticities) from different studies.

a) Facility-specific studies

Facility-specific studies compare observed traffic counts along an improved or expanded roadway to what would have been expected had the project never been built. Three types of facility-specific studies are common practice. First, researchers have used growth comparisons which index past traffic trends to a factor, like car registrations. Estimates are made of what traffic volumes would have been without a road improvement by factoring of known car registrations. The induced traffic is the difference between the recorded and expected traffic volumes. This technique has been used extensively in the United Kingdom. A 1994 study by the Standing Advisory Committee on Trunk Road Assessment in the United Kingdom that compared actual traffic volumes with forecasted volumes found that travel forecasts were, on average, 10 to 20 percent below actual recorded traffic (SACTRA, 1994).

A second approach uses a quasi-experimental procedure in order to introduce controls into the analysis. Time-series data of traffic counts are collected on a corridor where road improvements have occurred. These include observations both before and after the project's completion. Traffic increases on these facilities are then compared to traffic growth on unimproved roads matched to the improved roads (in a paired comparison). A study carried out in California which compared eighteen state highway segments whose capacities had been paired with eighteen unimproved (control) segments matching the improved ones on facility type, region, approximate size, and initial traffic volumes and congestions levels for the period 1976 to 1996 "found the growth rates to be statistically indistinguishable" (Mokhtarian et al, 2002).

The third approach involves multiple regression analysis, a statistical procedure that examines the relationship between a dependent variable and a number of independent variables. This approach has seldom been undertaken at the facility specific level. One study, though, of eighteen California highway segments conducted for the period 1970 to 1990 found that elasticities of VMT with respect to lane miles were 0.2 to 0.3 during the first four years, increasing to 0.3 to 0.4 after ten years, and to 0.4 to 0.6 after sixteen years

(Hansen et al, 1993). In other words, a ten percent increase in lane miles would generate a two to three percent increase in VMT during the first four years, increasing to three to four percent after ten years, and to four to six percent after sixteen years.

b) Model forecasts

A second analytical approach involves the use of large scale travel-demand forecasting computer simulation models. Differences between forecasted and actual volumes are assumed to represent induced travel. Little work has been carried out in the US to derive travel-model-based-estimates of induced demand. In one example where the conventional four-step travel demand model was used to compare actual and forecasted traffic on several expanded and enhanced facilities in northern California, compelling evidence of the existence of induced demand was found. In the case of a twelve-mile arterial upgrade to a grade-separated facility, Addison found that daily traffic on the improved section observed in 1985 exceeded 1985 forecasts by 21 percent, whereas peak-hour traffic was 25 to 30 percent higher" (Cervero 2002).

For the most part travel forecasting models in use are not up to the task of evaluating induced effects. As Mark Hansen has noted: "...most transportation models are not used in ways that fully reveal whether or how adding capacity can increase traffic. For example, most modeling studies assume that the number of trips to and from places like households and offices are independent of the transportation supply. A sizeable number also assume that origin-destination trip matrices, and even the modal distribution of trips, are independent of road capacity. Finally, and perhaps most important, it's far from clear that conventional transportation models, even when enhanced to capture numerous potential links between road supply and traffic, have much predictive power, even if they faithfully replicate base-line conditions. This is because these models make predictions that depend on numerous calibration parameters ('fudge factors') and are valid only if these parameters remain constant over time" (Hansen, 1995).

c) Area studies based on proxy measures

The third analytical approach, area studies based on proxy measures, employs statistical techniques, typically used in economic studies, to measure the effect of added lane-miles on VMT. Added lane miles, a proxy measure, is used because of difficulties measuring a preferred variable, such as travel time. This approach usually makes use of time series data which are data collected over discrete intervals of time. The data is aggregated on an area-wide basis, for example for counties or metropolitan areas, in order to estimate changes in VMT. Lane miles additions for the same areas serve as the independent variable in these analyses. An analysis of VMT growth vs. lane mile growth is used to estimate the magnitude of the induced travel effect. Results are usually expressed as elasticities, that is, the percentage change in VMT associated with each percent increase in highway capacity.

Numerous studies have adopted this broad approach and all have found evidence of induced traffic. One of the earliest studies conducted by a group of researchers at the UC Berkeley examined the relationship of VMT to the supply of state highways as measured in lane-miles for a set of metropolitan areas (Hansen, 1995; Hansen and Huang, 1997). They also analyzed whether induced VMT on state highway system represented a net increase in traffic or only redistributed travel from other roads. At the county level, this study found that VMT would grow immediately by two percent (an elasticity of 0.2) immediately for every ten percent increase in lane-miles, building to six percent (an elasticity of 0.6) within 2 years. At the metropolitan level, the study found an elasticity of 0.9 percent after 4 years, meaning that induced travel had used up 90 percent of the new capacity within 4 years.

Subsequent studies by other researchers using variations of the techniques employed by Hansen and his associates have all found evidence of induced travel demand. A study by Fulton et al. (2000) confirms both the range of elasticities found in other studies and the robustness of these estimates. This study, which examined county level data from Maryland, Virginia, North Carolina, and Washington D.C., found average elasticities of

VMT with respect to lane-miles on the order of 0.2 to 0.6, meaning 20 percent to 60 percent growth in VMT. These researchers also found that "growth in lane-miles precedes growth in VMT," a very important finding in sorting out cause and effect.

Another recent study, which used a data set consisting of 22 years of data for 34 California urban counties, found an elasticity of VMT to lane-miles of 0.56, that is, for every ten percent increase in lane-miles, VMT grows by 5.6 percent (Cervero and Hansen, 2000). Interestingly, this study also found an elasticity of lane-miles with respect to VMT of 0.33, that is for every ten percent increase in VMT, lane-miles grew by 3.3 percent. These results indicated "a strong two-way empirical relationship between road supply and demand." The authors, thus, conclude that "over the past several decades in California, road supply has been both a cause and an effect in relation to VMT." From the elasticity values, the effects of lane-mile additions on VMT appear to be stronger than visa-versa.

d) Area studies based on partial measures

The fourth analytical approach, area studies based on partial measures, attempts to relate traffic increases directly to travel time savings in order to obtain a better measure of the benefits of road capacity improvements. However, because there is always the possibility that the results will be influenced by exogenous factors, the variables used in the analysis are considered only partial measures. In these cases elasticities are preceded by a negative sign because the result refers to the reduction in travel time that would be achieved with an increase in lane-mile capacity.

To date very few studies have used sophisticated statistical techniques to relate highway VMT to changes in travel time. In the United Kingdom, Goodwin (1996) estimated that "in round terms, as an overall average, reasonably well-established research on petrol price and values of time suggest a short-term elasticity of traffic with respect to travel time of about –0.5, and a longer-term elasticity of the order of –1.0," meaning that in the

short term traffic volumes would increase by 5 percent and in the long term by 10 percent in response to ten percent change in speeds.

e) Disaggregate models

The fifth approach, disaggregate models, studies travel behavior at the level of the individual trip maker rather than at the aggregate level. Results of two studies done in the U.S. yielded lower elasticity estimates than those of most area studies, although confirming the existence of induced travel demand. Strathman et al. (2000) estimated cross-sectional elasticities of VMT with respect to per capita road capacity of 0.29, while Barr (2000) imputed travel time elasticities ranging between –0.35 and -0.58, with an average value of –0.44 (Cervero 2002; Noland and Lem, 2002).

f) Generalizing Across Studies

Cervero (2002) compares elasticity values across studies in a so-called meta-analysis. Again, the elasticity is the percentage change in one variable that accompanies a one percent change in another variable. An elasticity of VMT with respect to lane miles of 0.5 implies that every one percent increase in lane miles is accompanied by a 0.5 percent increase in VMT. Or equivalently, a doubling of lane miles (100% increase) is accompanied by a 50 percent increase in VMT. At the facility level, a doubling of lane miles is what you would get if a facility were widened from two to four lanes.

In his meta-analysis, Cervero (2002) extracts the mean elasticities shown in the table.

	Facility-Specific Studies	Area-wide Studies
Short-Term	0	0.4
Medium-Term	0.265	NA
Long-Term	0.63	0.73

Based on the meta-analysis, Cervero (2002) concludes that "...the preponderance of research suggests that induced-demand effects are significant, with an appreciable share of added capacity being absorbed by increases in traffic, with a few notable exceptions." The exceptions are among the more sophisticated studies, so the elasticity estimates in the table may be on the high side. The more sophisticated studies control for more variables and, thus, the resulting elasticities are likely to be lower, whereas the more simple studies have higher resulting elasticities.

What is known about induced development

Compared to induced traffic, little work has been done in the area of induced development. This section describes the only three studies on the subject uncovered by our literature search.

The first is a study by Boarnet et al. (2000). Boarnet and his associates undertook a before-and-after study of the impact on house prices of the construction of toll roads in Orange County, CA. The study was premised on the idea that highway improvements affect urban growth patterns through land prices. If highways improve accessibility, an accessibility premium will be reflected in higher land prices (and higher house prices), and higher priced land will be developed more densely. That is to say, improved accessibility should be capitalized into house prices.

The results of the empirical analysis provided evidence that construction of the first two portions of the Orange County toll road network created accessibility premiums that were reflected in home sales prices. Boarnet et al. concluded that "the implication for induced travel is that the evidence from Orange County suggests rather strongly that new highways change the geographic pattern of accessibility, that those changes are reflected in home sales prices, and thus that it is reasonable to conclude that new highways will also create changes in development patterns." They continued that "based on the evidence in this study, home buyers are willing to pay for the increased access that new roads provided. It is that willingness to pay for increased access which influences

both development patterns and, potentially, induced traffic." They ended with this telling comment: "Overall, our results are consistent with recent research that has suggested that induced travel is a real phenomenon, and our results are consistent with the hypothesis that changes in development patterns are one cause of induced travel."

The second study was conducted by Hansen et al. (1998). Hansen and his associates employed econometric techniques to study land use impacts of highway capacity expansion projects in several corridors, all located in California's four largest urban areas. Specifically, they measured the effect of the expansions upon land development in the area served by the expanded roadway, after controlling for other factors. Land development was measured in terms of construction permits for single and multi-family housing units, for commercial construction, and for industrial development.

Capacity enhancement had the effect of increasing the number of single-family housing permits in the affected corridor relative to the level in the region. The results for multi-family housing permits were similar. The results for non-residential land uses were more complex. "Capacity enhancement is found to have an immediate positive impact on commercial but not on industrial land use.... In the case of commercial development there is evidence that this trend diminishes over time." In conclusion, the authors write that "our results offer strong support for one overriding conclusion: highway capacity expansion stimulates development activity, both residential and non-residential, in the corridors served by the expanded facilities."

The third study was conducted by Kockelman et al. (2001). This study took a three-pronged approach to understanding the impacts of capacity expansions on development by examining capacity expansions and land development in Austin, Texas. First, Kockelman and associates analyzed nine years of building permit data. Thereafter, they studied seventeen years of tax assessment records for parcels along an improved highway. Finally, they interviewed four real estate professionals with diverse perspectives of the land markets.

The results of the analysis of permitting data suggested "that the extensions had no impact on development activity." However, the authors note that since the models offer "relatively poor prediction of permitting levels, ... It may be that more spatially disaggregate and/or larger data sets would better expose the underlying relationships." The examination of tax assessment records "found significant changes in land prices in response to right of way acquisition by the Texas Department of Transportation. The subsequent statistical analysis confirmed that the year of land acquisition is a significant event in land price adjustments." In addition, they found that "the price of land on corners and the price of land with frontage on the major facility were much higher than other land." Finally, the interview subjects "agreed that transportation has an underlying and possibly indirect role in determining the timing and location of development. Sites would not be considered for development without basic transportation access." Still, factors such as zoning and permitting regulations, quality of schools, and prejudices for or against certain communities may play a much more important role in locational decisions than transportation access or planned improvements.

What is not yet understood

The study of induced traffic and induced development both confront similar issues with regards to what is not yet understood. The same theoretical and methodological challenges are encountered in studying induced demand and induced development and, to the extent, that these are not resolved, then the topics will not be fully understood.

a) Appropriate Scale

Because of the interdependency of the road network, improvements on any one link will inevitably have repercussions on travel demand on other links that feed into it. Consequently, as noted in the paragraph on definition, a facility-specific analysis is too narrow in scale to account for the all the traffic that may be induced by the expansion of road supply. A broader geographical scale, such as the metropolitan level or county level, as included in DeCorla-Souza's definition of induced demand, blurs any

connection to individual road projects. So what scale of analysis is big enough, but not too big? One possible compromise would be a corridor study which catches the localized land use changes and at the same time would be broad enough to understand the diversion patterns.

b) Data Collection

Data collection or data availability poses another problem. Suitable data is often dependent on the data collected by various state departments. These departments usually only collect data for higher level state and county roads that are under their jurisdiction. The collectors and arterials that feed into the state highway are under local jurisdiction and data is often not available for these roads. So it is unclear to what degree improvements to major facilities have spillover effects on local facilities.

c) Exogenous Variables

The problem of measuring induced demand is further compounded by the contribution of exogenous factors to increased travel. There is a need to separate the induced effect from those exogenous factors that also drive the growth in vehicle miles of travel. Exogenous factors, such as population growth, increases in income, rising car ownership, national and regional economic trends, whether the area in question is in the "path of growth", other infrastructure capacities (such as sewer and water availability), the declining real costs of gasoline in the U.S., and various other demographic factors, such as the increased participation of women in the labor force all affect the demand for travel.

Just how important are these exogenous factors as contributors to VMT growth relative to highway capacity increases? Few studies address this point. Hansen (1995) estimates that capacity expansions account for somewhere between 6 percent and 22 percent of the growth of VMT, while Noland (2001) estimates that induced travel effects account for about 28 percent of annualized growth in VMT.

d) Causality

Is the relationship between road supply and traffic a simple one-way causal link where more roads cause more traffic? Or does more traffic cause more roads? Or is there a simultaneous relationship where traffic and roads are co-dependent? Do road improvements both induce and respond to travel demand?

Most of the studies have not attempted to deal with this issue. The exceptions are described here. Fulton et al. (2000) applied certain statistical tests which provided a strong indication that changes in lane-miles preceded changes in travel, but not necessarily visa versa. Cervero and Hansen (2000), on the other hand, also using statistical techniques, found that the relationship worked in both directions suggesting that the causality works in both ways – supply induces demand and demand induces supply.

e) Interaction Effects

Little effort has been devoted to determining the conditions under which induced travel effects are large or small (Cervero 2002). One would expect the induced travel effect to be greater where levels of congestion are higher than in free-flowing conditions, but there is scant evidence of it. Likewise the evidence is not clear that urban areas produce greater induced demand effects than suburban or rural areas. The evidence is also weak that big metropolises register greater induced demand effects than medium or smaller sized metropolitan areas.

Conclusion

Overall, this review of the literature supports the conclusion reached by Noland and Lem (2002) in their review of the evidence for induced travel: "Our conclusion from the

relevant literature is that the theory of induced travel can certainly not be refuted and is largely confirmed." This conclusion is shared by Cervero (2002) in his review of the literature. He writes that "all that can be said with certainty is that induced demand effects exist (i.e., elasticities vary from zero), and they accumulate over time." In addition, it should be noted that there is evidence that the relationship between road supply and traffic is two-way and more research needs to be done to discern the causal link. Similarly, the little work that has been done in the area of induced development also suggests that development is induced by new road infrastructure. In both cases there is need to refine the methods used to measure induced traffic and induced development as well for more work in trying to quantify these phenomena.

3. Quantifying Induced Development

A number of urban models have been developed over the years and implemented in various parts of the world. These are complex models that attempt to model the urban development process and include both land use and transportation elements. While they are not specifically designed to quantify induced development, it is possible to use them to do so.

Not much has been written about the problems of implementing such models. "Word on the street" is that they are expensive to implement due to data requirements, difficult to calibrate, and occasionally produce results that are unreasonable on their face. Particular problems have been reported with DRAM/EMPAL, the most widely used of such models. Some metros have dropped DRAM/EMPAL, others have given up trying to implement, and still others have had poor results. So the decision to develop an urban model should not be taken lightly.

This memo focuses on four sets of models as examples of the scale and scope of these models — the Disaggregated Residential Allocation Model (DRAM) and the Employment Allocation Model (EMPAL), TRANUS and MEPLAN, and a more recent entry to the field of urban modeling, UrbanSim. You can think of these as different generations of urban models, each building on the one before.

The DRAM/EMPAL model[2]

DRAM/EMPAL model has been implemented in at least 16 metropolitan areas around the United States. It is the industry standard, despite the problems referenced above. The EMPAL model, which is the first stage in the DRAM/EMPAL modeling process, forecasts the locations of future employment by economic sector. This is done for each of the analysis zones in the study area. At the regional level the EMPAL model requires target year values of total employment by economic sector, and at the analysis zone level it requires base year values for:

- Households, by type;
- Employment by sector
- Total land area;
- Land area occupied by basic and commercial employment; and
- Zone-to-zone travel times and/or costs.

Thereafter the DRAM model forecasts the future location of households, by income level, given the distribution of employment. The DRAM model requires target year values of

- Total population;
- Total person trips by purpose (i.e., work-to-home, work-to-shop, home-to-shop);
- Percent unemployment, by sector;
- Employees per household, by household type;
- Matrix of households by income per employee by sector; jobs per employee; and
- Net regional rate of employee commuting.

At the analysis zone level, the DRAM model requires base year values of:

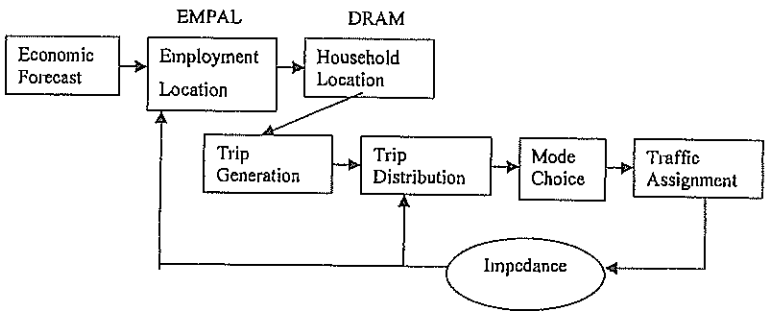
- Households, by type;
- Total population;
- Total employed residents;
- Group quarters population;
- Land area by use (i.e., basic and commercial employment, residential, streets and highways, developable, undevelopable);
- Land area occupied by basic and commercial employment;
- Employment, by sector; and
- Zone-to-zone travel times and/or costs.

DRAM/EMPAL models are usually used in conjunction with a conventional four-step regional travel model, where outputs of one are fed back into the other and back and forth until equilibrium is reached. Expansion of infrastructure, such as a road widening, that

[2] The description of this model is drawn from a U.S. Environmental Protection Agency publication titled

results in reduced travel impedance as estimated with a travel demand model, can be cycled through the DRAM/EMPAL models to influence future land use forecasts. In this way, induced development can be estimated.

The following diagram illustrates the procedure:



EMPAL and DRAM forecast land use activity, that is, employment and households, in each zone, not land consumption. They have no economic content, and are simple spatial interaction rather than full-blown real estate models. The models are proprietary and a license fee of approximately $50,000 covers one year of implementation support, including model preparation and staff training. For an additional $5,000 annually technical support by telephone is provided. (These costs are as reported for 1997.)

MEPLAN and TRANUS models[3]

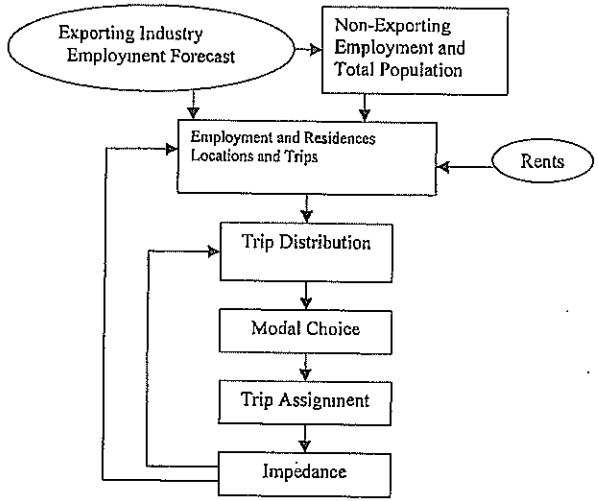
MEPLAN and TRANUS have been or are being applied (one, the other, or both) in Sacramento, Baltimore, and Portland, as well as many cities outside the U.S. Although two distinct models, they are similar in their philosophy and structure. They integrate microeconomic theory with operational planning methods. They capture the interaction

"Evaluation of Modeling Tools for Assessing Land Use Policies and Strategies" August 1997.

of two parallel markets: one for land and one for transport. The land portion of these models predicts amount and location of activities by explicitly considering costs of land and development. Demands for goods, services, and labor are related to one another through an input-output framework. The projected amount and location of activities are then used to project travel demand, both passenger and freight, which is assigned to modes and routes on the basis of travel impedance measures. These travel impedances then influence the location of activities in future time periods. Thus, future land uses are influenced by the pattern of land uses in the prior period and by previous period transport accessibilities; and transport is influenced by previous infrastructure and present activity patterns arising from land use.

[3] The description of this model is drawn from a U.S. Environmental Protection Agency publication titled "Evaluation of Modeling Tools for Assessing Land Use Policies and Strategies" August 1997.

The general structure of these models is illustrated in the following diagram:



For both models, the data requirements for calibration are extensive. The simpler of the two, TRANUS, requires the following data for calibration of the base year:

Land use

- Number of households by income class by zone;
- Average number of people per household by income class;
- Average acres per dwelling by income class by zone;
- Average acres per employee by type by zone;
- Land sales prices by land use and density;
- Land use designations in local plans by zone;
- Number of employees by type and residence zone;
- Number of employees by income class and work zone;
- Average income per capita by income class;
- Household expenditures for land, travel, retail, other; and

- Number of school children by residence zone/school zone combinations and income class

Transport

- Road counts;
- Public transport route counts;
- Walk, wait, and ride time by mode;
- Average parking cost by zone;
- Free flow speeds by link type;
- Transit fares
- Operating costs by transit operator;
- Operating costs by auto user
- Fuel consumption;
- Average occupancy by auto for trip purpose;
- Average occupancy by transit;
- Car availability by trip purpose and household income class;
- Number of trips by zone pair;
- Proportion of trips in morning peak by purpose; and
- Cordon volumes.

The data requirements for subsequent periods are more modest. They include:

Land Use

- Allowable growth in each land use by zone;
- Building density caps by land use by zone; and
- Projections of total or basic regional employment.

Transport

- Network changes;
- Changes in transit headways and fares;
- Roadway tolls; and
- Parking charges.

Like the DRAM/EMPAL modeling system, the MEPLAN and TRANUS models can also be used to project induced development. An infrastructure upgrade, such as a road widening, that resulted in reduced travel impedance, suitably estimated with a travel demand model, could be represented in the models and would lead to a change in projected land use pattern.

The cost of the complete MEPLAN system is $15,500 with an additional $4,650 for an associated graphics system. An unlimited TRANUS site license can be obtained for $6,000 from the Venezuelan firm Modelistica where Tomas de la Barra the developer of TRANUS works. The fee includes software, documentation, one year of (email) support, and free upgrades as they become available. (These costs are as reported for 1997.) Implementation is additional, and reportedly can take six or more person years of effort.

UrbanSim model[4]

The UrbanSim model is a more recently developed metropolitan-scale land use model which is "designed specifically to address the policy requirements of metropolitan growth management, with particular emphasis on interactions between land use and transportation." It has been applied in Honolulu and Salt Lake City as well as the Eugene-Springfield metropolitan area in Oregon. The software is distributed as Open Source software and can be downloaded from the Internet. There is some question "on the street" as to whether UrbanSim is fully operational yet.

The UrbanSim model adopts a behavioral approach. The model includes components that reflect the key choices of households, businesses, developers, and governments and their interactions in the real estate market. It is not a single model but is better described as an urban simulation system, consisting of a software architecture for implementing models and a family of models interacting within this environment.

[4] The description of this model is drawn from an article in the Journal of the American Planning Association titled "UrbanSim – Modeling Urban Development for Land Use, Transportation, and Environmental Planning" Vol. 68, No. 3, 2002.

The individual model components predict:

- The pattern of accessibility by auto ownership level (Accessibility Model);
- The creation or loss of households and jobs by type (Economic and Demographic Transition Models);
- The movement of households or jobs within the region (Household and Employment Mobility Models);
- The location choices of households and jobs from the available vacant real estate (Household and Employment Location Choice Models);
- The location, type, and quantity of new construction and redevelopment by developers (Real Estate Development Model); and
- The price of land at each location (Land Price Model).

The UrbanSim model also has the capacity to accommodate information that planners have about pending development, corporate relocations, or policy changes. Through changes in accessibility, induced development can be estimated and the model can be used to test the potential effects of major road improvements on development and traffic.

Conclusion

From this examination of existing land use allocation models, it is clear that these models can be used to project induced development impacts of a road expansion project. However, such models potentially have significant limitations for this use, including:

- Projecting induced development is not the purpose these models were designed for and the accuracy of such projections would be questionable;
- These models were designed to be used at a metropolitan area geographic scale and their accuracy if applied only to a specific roadway corridor or sub-region is questionable;
- Some of these models have produced results that have appeared to be illogical on their face – hence, their accuracy is questionable even when used for their intended purpose; and

- These models are highly data intensive and, thus, very expensive and time-consuming to implement.

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NATIONAL PARK SERVICE
U. S. DEPARTMENT OF THE INTERIOR

LAND AND WATER CONSERVATION FUND
STATE ASSISTANCE PROGRAM

FEDERAL FINANCIAL ASSISTANCE MANUAL
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CHAPTER 8 - POST-COMPLETION AND STEWARDSHIP

A. Purpose

Pursuant to Section 6(f)(3) of the LWCF Act and 36 CFR 59.3, this chapter contains the requirements for maintaining LWCF assisted sites and facilities in public outdoor recreation use following project completion and to assure that LWCF-assisted areas remain accessible to the general public including non-residents of assisted jurisdictions. These post-completion responsibilities apply to each area or facility for which LWCF assistance is obtained, regardless of the extent of participation of the program in the assisted area or facility and consistent with the contractual agreement between NPS and the State. Responsibility for compliance and enforcement of these requirements rests with the State for both state and locally sponsored projects. The responsibilities cited herein are applicable to the area depicted or otherwise described on the 6(f)(3) boundary map and/or as described in other project documentation approved by the NPS.

B. Operation and Maintenance

Property acquired or developed with LWCF assistance shall be operated and maintained as follows:

1. The property shall be maintained so as to appear attractive and inviting to the public.
2. Sanitation and sanitary facilities shall be maintained in accordance with applicable health standards.
3. Properties shall be kept reasonably open, accessible, and safe for public use. Fire prevention, lifeguard, and similar activities shall be maintained for proper public safety.
4. Buildings, roads, trails, and other structures and improvements shall be kept in reasonable repair throughout their estimated lifetime to prevent undue deterioration and to encourage public use.
5. The facility shall be kept open for public use at reasonable hours and times of the year, according to the type of area or facility.
6. A posted LWCF acknowledgement sign shall remain displayed at the project site pursuant to Chapter 7.

C. Availability to Users

1. Discrimination on the basis of race, color, national origin, religion, or sex. Under Title VI of the 1964 Civil Rights Act property acquired or developed with LWCF assistance shall be open to entry and use by all persons regardless of race, color, or national origin, who are

otherwise eligible. Title 43, Part 17 (43 CFR 17), effectuates the provisions of Title VI. The prohibitions imposed by Title VI apply to park or recreation areas benefiting from federal assistance and to any other recreation areas administered by the state agency or local agency receiving the assistance. Discrimination is also prohibited on the basis of religion or sex.

2. Discrimination on the basis of residence. Section 6(f)(8) of the LWCF Act provides, with respect to property acquired and/or developed with LWCF assistance, discrimination on the basis of residence, including preferential reservation, membership or annual permit systems is prohibited except to the extent reasonable differences in admission and other fees may be maintained on the basis of residence.

   Fees charged to nonresidents cannot exceed twice the amount charged to residents. Where there is no charge for residents, but a fee is charged to nonresidents, nonresident fees cannot exceed fees charged for residents at comparable state or local public facilities. Reservation, membership or annual permit systems available to residents must also be available to nonresidents and the period of availability must be the same for both residents and nonresidents.

   These provisions apply only to the recreation areas described in the project agreement. Nonresident fishing and hunting license fees are excluded from these requirements.

3. Discrimination on the basis of disability. Section 504 of the Rehabilitation Act of 1973 requires no qualified person shall, on the basis of disability, be excluded from participation in, be denied benefits of, or otherwise be subjected to discrimination under any program or activity that receives or benefits from federal financial assistance. The Americans with Disabilities Act of 1990 (P.L. 100-336) simply references and reinforces these requirements for federally-assisted programs.

4. Reasonable use limitations. Project sponsors may impose reasonable limits on the type and extent of use of areas and facilities acquired and/or developed with Fund assistance when such a limitation is necessary for maintenance or preservation. Thus, limitations may be imposed on the numbers of person using an area or facility or the type of users, such as "hunters only" or "hikers only." All limitations shall be in accord with the applicable grant agreement and amendments.

D. Leasing and Concession Operations Within a Section 6(f)(3) Area

A project sponsor may provide for the operation of a Section 6(f)(3) area by leasing the area/facility to a private organization or individual or by entering into a concession agreement with an operator to provide a public outdoor recreation opportunity at the Fund-assisted site.

As the principal grantee, the State is ultimately accountable for assuring compliance with the applicable federal requirements, and, therefore, the delegation or transfer of certain responsibilities to subgrantees or lessees does not relieve the State of its compliance burden. As the grant recipient, the State has agreed to provide suitable replacement property should the

public use of the leased or concessioned area/facility be restricted or the outdoor recreation resource be compromised.

All lease documents and concession agreements for the operation of LWCF-assisted sites by private organizations or individuals must address the following:

1. In order to protect the public interest, the project sponsor must have a clear ability to periodically review the performance of the lessee/concessioner and terminate the lease/agreement if its terms and the provisions of the grant agreement, including standards of maintenance, public use, and accessibility, are not met.

2. The lease/agreement document should clearly indicate that the leased/concessioned area is to be operated by the lessee/concessioner for public outdoor recreation purposes in compliance with provisions of the Land and Water Conservation Fund Act and implementing guidelines (36 CFR 59). As such, the document should require the area be identified as publicly owned and operated as a public outdoor recreation facility in all signs, literature and advertising, and is operated by a lessee/concessioner as identified in the public information to eliminate the perception the area is private.

3. The lease/agreement document should require all fees charged by the lessee/concessioner to the public must be competitive with similar private facilities.

4. The lease/agreement document should make clear compliance with all Civil Rights and accessibility legislation (e.g., Title VI of Civil Rights Act, Section 504 of Rehabilitation Act, and Americans with Disabilities Act) is required, and compliance will be indicated by signs posted in visible public areas, statements in public information brochures, etc.

E. Conversions of Use

Property acquired or developed with LWCF assistance shall be retained and used for public outdoor recreation. Any property so acquired and/or developed shall not be wholly or partly converted to other than public outdoor recreation uses without the approval of NPS pursuant to Section 6(f)(3) of the LWCF Act and these regulations. The conversion provisions of Section 6(f)(3), 36 CFR Part 59, and these guidelines apply to each area or facility for which LWCF assistance is obtained, regardless of the extent of participation of the program in the assisted area or facility and consistent with the contractual agreement between NPS and the State.

Responsibility for compliance and enforcement of these provisions rests with the State for both state and locally sponsored projects. The responsibilities cited herein are applicable to the area depicted or otherwise described on the 6(f)(3) boundary map and/or as described in other project documentation approved by the Department of the Interior. This mutually agreed to area normally exceeds that actually receiving LWCF assistance so as to assure the protection of a viable recreation entity.

Local sponsors must consult early with the State LWCF manager when a conversion is under consideration or has been discovered. States must consult with their NPS-LWCF manager as early as possible in the conversion process for guidance and to sort out and discuss details of the conversion proposal to avoid mid-course corrections and unnecessary delays. A critical first step is for the State and NPS to agree on the size of the Section 6(f) park land impacted by any non-recreation, non-public use, especially prior to any appraisal activity. Any previous LWCF project agreements and actions must be identified and understood to determine the actual Section 6(f) boundary.

If the NPS is alerted or otherwise becomes aware of an ongoing conversion activity that has not been approved, NPS shall request the State Liaison Officer (SLO) to advise the project sponsor of the necessary prerequisites for approval of a conversion and to discontinue the unauthorized conversion activities. If the conversion activity continues, NPS shall formally notify the State it must take appropriate action to preclude the project sponsor from proceeding further with the conversion, use, and occupancy of the area pending NPS independent review and decision of a formal conversion proposal (see Section 10 below).

The NPS Regional Director has the authority to disapprove conversion requests and/or to reject proposed property substitutions. This approval is a discretionary action and should not be considered a right of the project sponsor.

1. Situations that trigger a conversion include:

   a. Property interests are conveyed for private use or non-public outdoor recreation uses.

   b. Non-outdoor recreation uses (public or private) are made of the project area, or a portion thereof, including those occurring on pre-existing rights-of-way and easements, or by a lessor.

   c. Unallowable indoor facilities are developed within the project area without NPS approval, such as unauthorized public facilities and sheltering of an outdoor facility.

   d. Public outdoor recreation use of property acquired or developed with LWCF assistance is terminated.

2. Situations that may not trigger a conversion if NPS determines that certain criteria are met include:

   a. Underground utility easements that do not impact the recreational use of the park and is restored to its original surface condition (see Section F below).

   b. Proposals to construct public facilities, such as recreation centers and indoor pool buildings, within a Section 6(f)(3) protected area where it can be shown there is a gain or increased benefit to the public outdoor recreational opportunity. These proposals must be reviewed by the NPS as a "public facility request" (see Section H below). The State should consult with the NPS early in the formative stages of developing proposals to construct indoor facilities on Section 6(f)(3) protected land (see Section H below).

   c. Proposals for "temporary non-conforming uses," that is temporary non-recreation activities of less than a six-month duration within a Section 6(f)(3) protected area, must be reviewed by the NPS (see Section I below).

   d. Proposals to build sheltered facilities or to shelter existing facilities within a Section 6(f)(3) protected area provided they do not change the overall public outdoor recreation characteristics and otherwise meet the sheltering criteria in Chapter 3. The NPS review and approval of such proposals will not trigger a conversion (see Section J below).

   e. Proposals for changing the overall outdoor recreation use of a Section 6(f)(3) area from that intended in the original LWCF project agreement. These proposals must be reviewed by the NPS (see Section L below).

3. Prerequisites to the NPS consideration of conversions. Formal requests from the project sponsor for permission to convert LWCF assisted properties in whole or in part to other than public outdoor recreation uses must be submitted by the State Liaison Officer to NPS in writing and conform to the prerequisites set forth in 36 CFR 59.

   States shall consult with NPS when conversions are proposed or discovered and prior to making the formal request to NPS. States shall use the Proposal Description and Environmental Screening Form (PD/ESF) to prepare its conversion proposal (see Chapter 4). The PD/ESF guides the development of the conversion proposal, including the incorporation of the following prerequisites that must be met before NPS will consider the formal conversion request:

   a. All practical alternatives to the conversion have been evaluated and rejected on a sound basis.

   b. The fair market value of the property to be converted has been established and the property proposed for substitution is of at least equal fair market value as established by a state approved appraisal (see Chapter 4 for appraisal guidance) excluding the value of structures or facilities that will not directly enhance its outdoor recreation utility.

   c. The property proposed for replacement is of reasonably equivalent usefulness and location as that being converted. Depending on the situation, and at the discretion of the NPS, the replacement property need not provide identical recreation experiences or be located at the same site, provided it is in a reasonably equivalent location. Generally, the replacement property should be administered by the same political jurisdiction as the converted property. NPS will consider state requests to change the project sponsor for any replacement property when it is determined a different political jurisdiction can meet the criteria for replacement properties. Equivalent usefulness and location will be determined based on the following criteria:

(1) Property to be converted must be evaluated in order to determine what recreation needs are being fulfilled by the facilities which exist and the types of outdoor recreation resources and opportunities available. The property being proposed for substitution must then be evaluated in a similar manner to determine if it will meet recreation needs that are at least like in magnitude and impact to the user community as the converted site. This criterion is applicable in the consideration of all conversion requests with the exception of those where wetlands are proposed as replacement property.

Wetland areas and interests therein shall be considered to be of reasonably equivalent usefulness as compared to the recreational usefulness of the property proposed for conversion if they have been identified in the wetlands provisions of the Statewide Comprehensive Outdoor Recreation Plan (SCORP) in accordance with Section 6(f)(3) of the LWCF Act as amended (36 CFR 59.3) by Section 303 of the Emergency Wetlands Resources Act of 1986.

(2) Replacement property need not necessarily be directly adjacent to or close by the converted site. This policy provides the administrative flexibility to determine location recognizing that the property should meet existing public outdoor recreation needs. While generally this will involve the selection of a site serving the same community(ies) or area as the converted site, there may be exceptions. For example, if property being converted is in an area undergoing major demographic change and the area has no existing or anticipated future need for outdoor recreation, then the project sponsor should seek to locate the substitute area at another location within the jurisdiction.

(3) Should a local project sponsor be unable to replace converted property, the State would be responsible, as the primary recipient of federal assistance, for assuring compliance with these requirements and for the substitution of replacement property.

(4) The acquisition of one parcel of land may be used in satisfaction of several approved conversions (see Section 6 below) and vice versa.

d. The property proposed for replacement meets the eligibility requirements for LWCF assisted acquisition (see Chapter 3). The replacement property must constitute or be part of a viable recreation area. Viability and recreational usefulness is dependent upon the proposed outdoor recreation development plan and timetable for the development of the replacement parks. If full development of the replacement site(s) will be delayed beyond three years from the date of conversion approval, the conversion proposal shall explain why this is necessary (see Chapter 3.B.7).

For proposed replacement property with a history of contamination, proposals must address the nature of the contamination, how the contaminated area has been or will be

remediated, how the area will be developed into a safe, public outdoor recreation area, and how provisions will be put in place to monitor the new replacement parkland to ensure public health and safety in perpetuity. Certain contaminated areas may not meet the equal or greater recreational usefulness prerequisite for replacement land. Early coordination with NPS for conversion proposals involving contaminated replacement land, even if remediated, is required (see 3.4 below).

Unless each of the following additional conditions (also see Chapter 3) is met, land currently owned by another public agency may not be used as replacement land for land acquired as part of an LWCF project:

(1) The replacement land was not originally acquired by the sponsor or selling agency for recreation.

(2) The replacement land has not been previously dedicated or managed for recreational purposes while in public ownership.

(3) No federal assistance was provided in the replacement land's original acquisition unless the assistance was provided under a program expressly authorized to match or supplement LWCF assistance.

(4) Where the project sponsor acquires replacement land from another public agency, the selling agency must be required by law to receive payment for the land so acquired (see Chapter 3.A.9).

An exception may be made to this condition only in the case of development projects for which the project sponsor's match was not derived from the cost of the purchase or value of a donation of the land to be converted, but from the value of the development itself. In this case, public land that has not been previously dedicated or managed for recreation/conservation use may be used as replacement land even if this land is currently owned by the project sponsor or is transferred from one public agency to another without cost.

e. In the case of Section 6(f)(3) protected areas that are partially rather than wholly converted, the impact of the converted portion on the remaining area shall be considered. If such a conversion is approved, the unconverted area must remain recreationally viable or be replaced as well.

f. All necessary coordination with other federal agencies has been satisfactorily accomplished including, for example, compliance with Section 4(f) of the Department of Transportation Act of 1966.

g. The guidelines for environmental review under NEPA have been satisfactorily completed and considered by NPS during its review of the proposed Section 6(f)(3) action. In cases where the proposed conversion arises from another federal action, NPS

final review of the State's proposal shall not occur until the NPS is assured all environmental review requirements for the other federal action have been met, e.g., Army Corps of Engineer permits.

The environmental review process must analyze not only the Section 6(f)(3) area proposed for conversion, but also the development of the replacement parkland. The purpose and scope of the environmental review must focus on the impacts on the "human environment" resulting from the loss of the Section 6(f)(3) parkland, impacts on any remaining Section 6(f)(3) parkland for partial conversions, and the development of new Section 6(f)(3) replacement park(s). The scope of the environmental review should not include impacts of the action precipitating the conversion on resources beyond the Section 6(f)(3) boundary, such as impacts of a new housing development or a school on a neighborhood.

The environmental analysis must be conducted in a neutral and factual manner and result in statements that reflect this same neutrality so the interested and affected public can focus on and understand the details of the proposed federal action of converting parkland including the replacement of new parkland according to 36 CFR 59. The environmental analysis documents should not include statements that promote or justify the action precipitating the conversion, such as proclaiming that the subject parkland is the best location for a new fire station.

For detailed guidance on NEPA and how to conduct environmental reviews for LWCF conversions, consult Chapter 4 of this manual, and the NPS.

h. Adherence to state intergovernmental review procedures as appropriate (see Chapter 4).

i. The proposed conversion and substitution are in accord with the SCORP.

4. State preparation of conversion proposal for NPS review: To avoid any unnecessary delays, duplication of effort, and mid-course corrections, the States shall consult with NPS early when conversions are proposed or discovered to ensure:

   a. the extent of impact from the conversion activity on Section 6(f)(3) protected area is mutually agreed upon; and

   b. the acceptability of proposed replacement parkland has been explored prior to State/local sponsor expenditure of resources on appraisals and the required environmental review process to be undertaken in accordance with NEPA.

   The State shall coordinate the development of the conversion proposal including ensuring the project sponsor complies with applicable federal, state and local laws, regulations and permit requirements. As the proposal is developed, the State may enlist the assistance of NPS to provide technical guidance as needed, especially for complex and controversial conversions. A State's submission of a formal conversion request to NPS is a State's

endorsement of the conversion. If a State does not concur or endorse the conversion, then the proposal should not be forwarded to NPS for formal review and decision.

5. NPS review of the State conversion proposal. NPS will conduct an independent review of the proposal using the conversion prerequisites and any other critical factors that may have arisen during proposal development. If the State has adequately addressed the prerequisites, and NPS finds no other reason to deny the request, the NPS administrative record will be documented as such and an amendment will be signed approving the conversion.

6. Banking excess fair market value of replacement land for future conversions. The acquisition of one parcel of replacement land may be used in satisfaction of several approved conversions.

   Excess fair market value (FMV) of a replacement property can be "banked" for a period not to exceed five years from the date of the initial conversion amendment. During this time period, the same project sponsor may use the remaining value to make up the FMV difference in cases where the subsequent proposed replacement property satisfies the equal usefulness criterion but its appraised FMV falls short of the equal fair market value requirement.

   The initial replacement property with the excess fair market value may not be used to satisfy the equal usefulness criterion for subsequent conversions unless additional conversions are anticipated by the sponsor at the time of the original conversion request and the accompanying documentation clearly addresses how the replacement property would satisfy the equal usefulness criteria for the original conversion as well as those that are anticipated.

7. Conversions on leased land. Should a conversion occur on leased land during the term of the lease, the State must comply with the conversion requirements of Section 6(f)(3) including the provision of replacement land. In this instance, the conversion of the original lease can be replaced with a leasehold interest for a period of time that is not less than the time remaining on the original lease, and, which fulfills the recreation commitment agreed to in the original lease agreement.

   For existing projects that involve leases, the responsibility for retaining the property in recreation terminates at the end of the lease period unless the grant agreement calls for some other arrangement. Lease agreements containing a renewal clause that can be exercised by the lessee must be reviewed to ensure that Section 6(f)(3) compliance will continue throughout the duration of the next lease period.

8. Conversion proposal documentation. A conversion requires an amendment to the original project agreement. Therefore, the amendment should be submitted concurrently with the formal conversion request or at such time as all details of the conversion have been worked out with NPS.

   The formal conversion proposal submission to NPS must include the following items:

a. A transmittal letter briefly describing the conversion proposal and requesting NPS review and approval

b. Standard Form 424 for amendments (see Chapter 7)

c. PD/ESF including Step 4, the environmental screening form, and an environmental assessment document analyzing the entire conversion proposal (the converted parkland and the replacement parkland in one document).

d. LWCF project amendment form identifying changes to the original Section 6(f)(3) boundary caused by the conversion and to establish a new 6(f) boundary around the replacement site(s)

e. Signed and dated Section 6(f)(3) boundary map for any remaining parkland resulting from a partial conversion, and for the replacement site(s)

f. Description and Notification Form (DNF)

Once the conversion has been approved by NPS, replacement property should be immediately acquired and developed according to the replacement proposal timetable. If development will be delayed beyond three years from the date of NPS conversion approval, then a request for delayed development beyond three years with a justification for the delay must be made to NPS (See Chapter 3.B.7.c).

9. Small conversions. Small conversions are composed of small portions of Section 6(f)(3) protected areas that amount to no more than 10 percent of the 6(f) protected area or five acres, whichever is less. States should consult with NPS prior to developing the small conversion proposal.

Because small conversion proposals are less complex, NPS review and decision can be facilitated when:

a. Minor or no environmental impacts would occur on resources being removed from Section 6(f)(3) protection, on the remaining Section 6(f)(3) area, and on the contiguous new replacement parkland by placing it under Section 6(f)(3) protection per the environmental screening form. This includes consideration of impacts to historic resources per the Section 106 process of the National Historic Preservation Act. The entire conversion proposal is categorically excluded from further environmental review under NEPA (see Chapter 4).

b. The proposed conversion is not controversial.

c. The replacement property is contiguous to the original Section 6(f)(3) area.

The State's proposal must include:

d. Transmittal letter describing the entire small conversion proposal.

e. Standard Form 424

f. PD/ESF with the portion for conversions completed indicating that a categorical exclusion is justified.

g. LWCF project amendment form.

h. Description and Notification Form (DNF)

i. Revised 6(f) boundary map indicating the deletion of the small converted area and the addition of the replacement property.

10. Discovering unauthorized conversions. When it is discovered that a Section 6(f)(3) area has been converted without NPS approval, a conversion proposal must be submitted and reviewed by NPS for retroactive action. .The NPS shall notify the State it is in violation of the grant contract, program regulations, and law, and an immediate resolution of the unapproved conversion must be expedited.

If it is discovered that an unauthorized conversion is in progress, the State must notify the project sponsor to cease immediately until the conversion process pursuant to 36 CFR 59.3 has been satisfactorily completed.

Resolution of the conversion will require State and NPS review of the conversion proposal as previously set forth in Section E.4 above including the provision of suitable replacement property.

If the sponsor has already provided replacement property without NPS approval, the eligibility of the replacement land must meet the same Section 6(f)(3) requirements as if it had not yet been acquired. It is incumbent upon the State to make the case that the replacement land fully meets these requirements.

Failure by the State to take steps to follow this procedure shall be considered cause for NPS to apply penalty options described in Section N below.

11. Conversions with delayed parkland replacement. Exceptions to the immediate replacement requirement (see Section 8 above) will be allowed only when it is not possible for replacement property to be identified prior to the State's request for the conversion. An express commitment must be received from the State to satisfy Section 6(f)(3) substitution requirements within a specified period normally not to exceed one year following conversion approval.

Such proposals are not routine and must include sufficient evidence to justify why such a delay is necessary.

F. Underground Utility Easements and Rights-of-Way

The State may allow underground utility easements within a Section 6(f)(3) area as long as the easement site is restored to its pre-existing condition to ensure the continuation of public outdoor recreational use of the easement area within 12 months after the ground within the easement area is disturbed. If restoration exceeds the 12 month period, or the easement activities result in permanent above-ground changes, NPS shall be consulted to determine if the changes will trigger a conversion. If present or future outdoor recreation opportunities will be impacted in the easement area or in the remainder of the Section 6(f)(3) area, a conversion will be triggered.

G. Commercial Signage in Section 6(f)(3) Areas

Commercial signs are only allowable within Section 6(f)(3) boundaries when the advertising is attached to allowable park structures such as benches, fencing, walls, and buildings and are not inconsistent with the park setting and/or the built environment in which it is located (e.g., athletic fields). Signs may face either outside or inside the park. Commercial advertising in the form of a stand-alone structure such as a billboard that creates a footprint in the park, or commercial signage permanently affixed to a natural feature within the 6(f) area, is a conversion regardless of which direction it faces.

H. Proposals to Construct Public Facilities

Public facility requests will only be approved if the public facility clearly results in a net gain in outdoor recreation benefits or enhances the outdoor recreation use of the entire park, and the facility is compatible with and significantly supportive of the outdoor recreation resources and opportunities of the Section 6(f)(3) protected area. The State shall use the PD/ESF to document its public facility proposal using the following criteria and submit it along with a project amendment and a recommendation for federal approval for NPS review and decision.

The NPS will consider requests to construct sponsor-funded public facilities when the following criteria have been met:

1. Uses of the facility will be compatible with and significantly supportive of outdoor recreation resources and uses at the rest of the site and recreation use remains the overall primary function of the site. The proposed public facility will includes a recreation component and will encourage outdoor recreation use of the remaining Section 6(f) area.

2. All design and location alternatives have been adequately considered, documented and rejected on a sound basis.

3. The proposed structure is compatible and significantly supportive of the outdoor recreation resources of the site, whether existing or planned. The park's outdoor recreation use must

continue to be greater than that expected for any indoor uses, unless the site is a single use facility, such as a swimming pool building, which virtually occupies the entire site.

Examples of uses which would not ordinarily be approved include, but are not limited to, a community recreation center which takes up all or most of a small park site, clinics, police stations, restaurants catering primarily to the general public, fire stations, professional sports facilities or commercial resort or other facilities which: (1) are not accessible to the general public; or, (2) require memberships; or, (3) which, because of high user fees, have the effect of excluding elements of the public; or, (4) which include office, residential or elaborate lodging facilities.

Restaurant-type establishments with indoor dining/seating that cater primarily to the outdoor recreating public must be reviewed under this public facility policy. Other park food service operations such as snack bars, carry-out food service, and concession stands with outdoor dining including pavilions and protected patios are allowable without further NPS if the primary purpose is to serve the outdoor recreating public.

4. Potential and future benefits to the total park's outdoor recreation utility must be identified in the proposal. Any costs or detriments should be documented and a net recreation benefit must result.

5. The proposed facility must be under the control and tenure of the public agency that sponsors and administers the original park area.

6. The proposal has been analyzed pursuant to NEPA, including providing the public an opportunity to review and comment on the proposal if required as part of the NEPA review.

7. All applicable federal requirements for approval are met.

8. The proposal has been adequately reviewed at the state level and has been recommended by the SLO.

I. Requests for Temporary Non-Conforming Uses Within Section 6(f)(3) Areas

All requests for temporary uses for purposes that do not conform to the public outdoor recreation requirement must be submitted to and reviewed by the State. The State, in turn, will submit a formal request to NPS describing the temporary non-conforming use proposal.

Continued use beyond six-months will not be considered temporary, but will result in a conversion of use and will require the State/project sponsor to provide replacement property pursuant to Section 6(f)(3) of the LWCF Act.

1. Criteria. NPS will use the following criteria to evaluate each request:

   a. The size of the parkland area affected by any temporary non-recreation use shall not result in a significant impact on public outdoor recreation use. This means that the site of the temporary activity should be sufficiently small to restrict its impacts on other areas of a Fund-assisted park.

   b. A temporary use shall not result in permanent damage to the park site, and appropriate mitigating measures will be taken to ensure no residual impacts on the site once the temporary use is concluded.

   c. No practical alternatives to the proposed temporary use exist.

   d. All applicable federal requirements for approval are met.

   e. The proposal has been adequately reviewed at the state level and has been recommended by the SLO.

2. Required proposal documentation. The State's formal proposal to NPS shall include:

   a. SLO recommendation;

   b. PD/ESF providing a complete description of the proposed temporary use, including:

      (1) start and completion dates;

      (2) identification of the portion of the site affected, including a map showing the relationship of the temporary use site to the full area protected under 6(f)(3) and a justification of why the area needed is the minimum necessary for the proposed use;

      (3) an analysis of the alternatives to the proposed use that were considered;

      (4) a description of both immediate impacts on the site as a result of the temporary use and any residual or long-term impacts on the site's environment or on recreation use;

      (5) a description of any appropriate mitigation actions that may be necessary and a schedule for their implementation; and,

   c. An acknowledgement by the SLO a full conversion will result if the temporary use has not ceased after the maximum six-month period allotted.

J. Sheltering Facilities within Section 6(f)(3) Areas

NPS approval is required to shelter an existing facility located within a Section 6(f)(3) protected area. See Section 3.C.7 for further guidance.

K. Obsolete Facilities

Project sponsors are not required to continue operation of a particular recreation area or facility beyond its useful life. However, Section 6(f)(3) of the LWCF Act requires project sponsors maintain the entire area within the Section 6(f)(3) boundary in some form of public outdoor recreation use.

Notwithstanding neglect or inadequate maintenance on the part of the project sponsor, a recreation area or facility may be determined to be obsolete if:

1. reasonable maintenance and repairs are not sufficient to keep the recreation area or facility operating;

2. changing recreation needs dictate a change in the type of facilities provided;

3. park operating practices dictate a change in the type of facilities required; or,

4. the recreation area or facility is destroyed by fire, natural disaster, or vandalism.

States may determine a facility is obsolete and permit its use to be discontinued or allow a particular type of recreation use of the LWCF assisted area to be changed provided that the project record maintained by the State is documented by the sponsor with a justification statement for determining obsolescence and the State concurs in the change. However, NPS approval must be obtained prior to any change from one LWCF allowable use to another when the proposed use would significantly contravene the original plans for the area. See Section L below for further guidance.

If, in the judgment of the State, the facility is needed and was lost through neglect or inadequate maintenance, then replacement facilities must be provided at the current value of the original investment.

LWCF assistance may be provided to renovate outdoor recreation facilities that have previously received LWCF assistance if the State determines the renovation is not required as a result of neglect or inadequate maintenance and the State documents the project record to that effect.

L. Significant Change of Use

Section 6(f)(3) of the LWCF Act requires project sponsors maintain the entire area defined in the project agreement in some form of public outdoor recreation use. NPS approval must be obtained prior to any change from one eligible use to another when the proposed use would significantly contravene the original plans or intent for the area as described in the original LWCF project(s).

NPS approval is not required, however, for each and every facility use change. Uses within a Section 6(f)(3) protected area should be viewed in the context of overall use and should be

monitored in this context. A change from a swimming pool with substantial recreational development to a less intense area of limited development such as a passive park, or vice versa, would, for example, require NPS approval.

States shall notify NPS in writing of proposals to significantly change the use of Section 6(f)(3) areas in advance of their occurrence. NPS will expedite a determination of whether a formal review and approval process will be required. A primary NPS consideration in the review will be the consistency of the proposal with the Statewide Comprehensive Outdoor Recreation Plan.

If the change in use proposal requires a formal review and decision by NPS, the State shall complete the Proposal Description and Environmental Screening Form (PD/ESF) found in Chapter 4.

Changes to other than public outdoor recreation use constitute a conversion and will require NPS approval and the substitution of replacement land in accordance with Section 6(f)(3) of the LWCF Act

M. Post-Completion Inspections

1. Purpose. In order to determine whether properties acquired or developed with LWCF assistance are being retained and used for outdoor recreation purposes in accordance with the project agreement and other applicable program requirements, a state post-completion inspection is to be made within five years after final billing and at least once every five years thereafter.

   The following points should be taken into consideration during the inspection of properties that have been developed for public use:

   a. Retention and use. Is the Section 6(f)(3) boundary in tact and the property being used for outdoor recreation purposes including those intended through the projects funded with LWCF assistance?

   b. Appearance. Is the property attractive and inviting to the public?

   c. Maintenance. Is upkeep and repair of structures and improvements adequate? Is there evidence of poor workmanship or use of inferior quality materials or construction? Is vandalism a problem? Is the area being maintained?

   d. Management. Does staffing and servicing of facilities appear adequate?

   e. Availability. Is there evidence of discrimination? Is the property readily accessible and open to the public during reasonable hours and times of the year?

   f. Signing. Is the area properly signed to allow for user information and safety, and proper acknowledgement of the federal Land and Water Conservation Fund?

   g. Interim use. Where lands have been acquired but not yet developed, the inspection should determine whether the interim uses of the property are in accordance with agreements with the NPS.

2. Reporting. Within 90 days of completion of an on-site inspection, States shall submit to NPS a post-completion inspection report for only those projects which have compliance problems. The report should include the date of inspection, description of the finding, and a summary report of corrective actions taken or to be taken.

   For all other sites inspected with no compliance problems, the State shall only report to NPS the project number and date of inspection, and shall retain the actual inspection report with the State LWCF project file. States shall submit a report of all LWCF project sites inspected at least annually and by September 30.

   Post-completion inspection reports shall also be completed for those projects in which the facilities have been deemed obsolete. The report should include certification by the State Liaison Officer that the facility is obsolete and that such obsolescence is not a result of neglect or inadequate maintenance on the part of the project sponsor.

3. Applicability. The provisions of this section apply to the Section 6(f)(3) area encompassing the area or facility assisted by the LWCF, regardless of the exteot of LWCF assistance in that area or facility. That is, in cases where assistance is provided only for an acquisition, the entire park or recreational area involved, including developments on the lands so acquired, are subject to the provisions of this section. Where development assistance is given, the lands of the park or recreation area identified on the Section 6(f)(3) boundary map are subject to this section.

4. State responsibility. Responsibility for enforcement of the provisions of this chapter rests with the State. The NPS will inspect LWCF assisted areas and facilities from time to time, but it shall conduct such visits in concert or through consultation with the State agency or State Liaison Officer.

5. Costs. The costs of making post-completion inspections by the State are allowable overhead charges for LWCF assistance and are allowable costs covered by the indirect cost rate.

6. NPS inspections. Properties acquired or developed with LWCF assistance shall be available for inspection by the NPS Director or other NPS representatives.

N. Penalties for Failure to Comply with Federal Laws and Regulations

Pursuant to 43 CFR Part 12.83, when the NPS determines a State has violated or failed to comply with applicable federal law, or the regulations governing this program with respect to a project, NPS may withhold payment of federal funds to the State on account of such project, withhold funds for other projects of the State, withhold approval of further projects of the State,

and take such other action deemed appropriate under the circumstances, including debarment and suspension pursuant to Executive Order 12549 at 43 CFR 12.100-.510, until compliance or remedial action has been accomplished by the State to the satisfaction of NPS.

Los Angeles Times | ARTICLE COLLECTIONS

Wildlife Highway Links Vital Habitats

The Region

Now closed to vehicles, a Santa Ana Canyon underpass allows animals wider range.

April 19, 2004|Janet Wilson | Times Staff Writer

Until 15 months ago, a highway underpass beneath the Riverside Freeway was a favorite hideaway for sleep-deprived truckers in search of a nap. Today, hopeful signs indicate that four-legged creatures are reclaiming the passageway as a critical wildlife crossing.

"Two weeks ago we had a beautiful mountain lion track right here after the rain. Deer, too. Look, these are probably skunk," Chino Hills State Park Supt. Ron Krueper said, bending over delicate paw prints etched in the soft silt of a creek bed.

For The Record
Los Angeles Times Saturday April 24, 2004 Home Edition Main News Part A Page 2 National Desk 1 inches; 47 words Type of Material: Correction
Wildlife underpass -- An article in Monday's California section about a wildlife crossing under the Riverside Freeway incorrectly reported that animals crossing from north to south tend to go west along a bike trail to Brush Canyon. In fact, animals crossing south to north follow that path.

Under the smooth, arching concrete belly of the freeway, the harsh lighting and asphalt are gone. Caltrans shut down the Coal Canyon Road exit in 2003, ripping up the offramps. Bobcats, coyotes and songbirds are among the animals now spotted using the wide underpass.

"They can make a dash through 50 yards without getting really jumpy," said Claire Schlotterbeck, executive director of Hills for Everyone, which fought for 18 years to eliminate the freeway exit and a proposal to build 1,550 homes and an industrial park alongside Coal Canyon Road.

The project was never built, and neither was Coal Canyon Road. The land, 650 acres, was bought with $53.5 million in state funds and is now part of Chino Hills State Park.

The only reminders of the project were offramps and the underpass that, essentially, led to nowhere.

Scientists lobbied to remove the exit because they recognized that wildlife long knew what humans discovered as they developed the region: The Coal Canyon area is at the center of several natural passageways.

"Restoring a natural linkage in what is now a road underpass would set a global precedent," wrote a panel of conservation biologists in 1998 after studying area terrain and animal movement. "Conservation-minded citizens throughout the world could look to Coal Canyon as an example of how an ecological error was corrected through thoughtful public action."

Southland commuters know a different Coal Canyon -- the former exit bordering Orange and Riverside counties that radio traffic reporters list daily as a major congestion point.

"The 250,000 cars and trucks that go by here every day probably have no idea they're going over a wildlife crossing," said Krueper.

Railroad tracks, a major sewer line and the Santa Ana River also all squeeze through the area, between the Chino Hills to the north and the Santa Ana Mountains to the south.

Using centuries-old trails, the wildlife funnels down from broad lateral canyons and steep mountain flanks at rough cross angles to the freeway.

"This is the pinch point," said Krueper. "You've got this hourglass of a wildlife crossing bisecting this narrow main transportation point, with road, rail and the Santa Ana River."

Krueper gestured to green ridges tipped with yellow mustard, and a flower-lined creek bed abutting the churning freeway. "Animals use ridges and creek beds for travel," he said. "That's their road map."

The wildlife corridor is 3 miles across at its broadest point, with Yorba Linda crowding in on one side, and Corona on the other, but conservation biologists who champion connecting "islands" of habitat believe it is enough.

Providing proper wildlife linkages could help maintaining genetic diversity, they say, by hooking up large swaths of habitat to avoid inbreeding. They also provide escape routes to reach other wild lands in case of fire or drought, and keep large predators at the top of the food chain because they have enough room to roam, ensuring that mid-size skunks and raccoons and others don't over-multiply and wipe out songbirds and frogs, for instance.

Like any construction project, there are bumps in the road, and there is years' worth of additional work ahead.

It was box culverts -- pitch dark, 6-foot-high tunnels scrawled with fading graffiti -- that made biologists realize the area was a natural wildlife crossing. Biologist Paul Beier tracked one mountain lion through the culverts 22 times in a year and followed him by using a radio collar to Brea, 15 miles to the north. Mammals exiting the underpass on the south side tend to go west along a bike trail to Brush Canyon, or east through a golf course to Aliso Canyon, both part of Chino Hills State Park. Mountain lions can roam an area of 150 square miles, and Krueper said that from Chino, they can go through Puente Hills, across occasional roads and under the San Gabriel River Freeway from the Whittier Narrows to the San Gabriel Mountains.

On the south side, the state park links with the Cleveland National Forest, providing 420,000 acres of largely unbroken habitat stretching south through San Diego County. Endangered gnatcatchers nest here in coastal sage scrub, and the rare Tecate cypress clings to canyon walls.

But the specter of development bumping up against the wildlife corridor remains.

Anaheim officials and the Irvine Co. are preparing zoning for a master-planned community that could put more than 3,000 homes along and below a ridge that Krueper says is vital to cougars and other wildlife.

"We're talking with them; we're hopeful that we can keep a buffer zone ... that would save the ridge," he said. Krueper said mountain bikers, hikers and others are welcome to pass through the undercrossing, which connects an extended network of trails.

"Humans use it during the daytime, and the animals use it at night," said Krueper. "It works."

Los Angeles Times

O-8-1

The EIR/EIS provides a complete and thorough analysis of all potential environmental impacts of the proposed project. For specific and complete responses to the issues raised in this comment letter, refer to responses to comments O-8-2 through O-8-54, below.

O-8-2

As reflected in the responses to comments O-8-3 through O-8-54, below, in other responses in this Responses to Comments appendix, and throughout the EIR/EIS, RCTC and the Department prepared and circulated to the public a Draft EIR/EIS that provides a complete analysis of all environmental issues and assesses the potential impacts of the proposed project, and which includes mitigation that is sufficiently detailed to adequately address those potential impacts.

Refer also to Section O.5.4.3, Recirculation of the Environmental Document, in Section O.5.4, Common Response Related to the Environmental Process and Schedule, on page O-15, for additional discussion regarding why RCTC and the Department did not prepare or circulate a revised Draft EIR/EIS because such recirculation was not required under either CEQA or NEPA.

O-8-3

Refer to Section O.5.5, Common Response Related to Chino Hills State Park, on page O-18 in Section O.5, Common Responses, for project effects at CHSP, mitigation for those effects, and the results of the consultation with State Parks regarding the project effects and mitigation at CHSP.

Refer to Section O.5.5.4, De Minimis Determination, on page O-22, which indicates that the Department made a determination that the project effects at CHSP would be de minimis and State Parks concurred with this determination on March 26, 2012. As a result, no discussion of avoidance alternatives is required for the project effects at CHSP.

Refer also to comment letter F-1 on page O-45 in which the Department of the Interior "...concurs that there is no feasible or prudent alternative to the Preferred Alternative identified in the document, and that all reasonable measures to minimize harm to Section 4(f) property have been identified."

O-8-4

Refer to responses to comments O-8-5 through O-8-14, below, which explain why the project description is stable, complete, and fully adequate to allow for a meaningful and thorough analysis of the potential environmental impacts of the project.

O-8-5

The desirable LOS on freeways are described in Section 1.3.1.3, Level of Service, on page 1-14 and are shown on Figure 1-3 on page 1-15 in the EIR/EIS. Table 1.4 on page 1-20 in the EIR/EIS shows the existing LOS on the project segments of SR-91 and I-15. Tables in Section 3.6, Traffic and Transportation/Pedestrian and Bicycle Facilities, in the EIR/EIS provide detailed information on LOS with and without the project, as follows:

- **Table 3.6.5:** Baseline/Existing (2007) and 2015 and 2035 No Build Freeway Mainline Peak-Hour Levels of Service (page 3.6-47)
- **Table 3.6.11:** Freeway Mainline Peak-Hour Levels of Service for Baseline/Existing (2007), 2015 No Build, and the 2015 Initial Phase of Alternative 2 (page 3.6-59)
- **Table 3.6.22:** Freeway Mainline Peak-Hour Levels of Service for Baseline/Existing (2007), 2035 No Build, and Design Year 2035 with Alternatives 1 and 2 (page 3.6-71)

The LOS described above identify the desired design standards for the project. The tables cited above provide detailed information documenting the ability of the No Build and Build Alternatives to meet the desired LOS in 2015 and 2035. The text and table citations in this response are to locations in the EIR/EIS where more detailed discussion of the LOS standards and the LOS under with and without project conditions are provided.

Section 15124(b) of the CEQA Guidelines requires an EIR to include a statement of the project objectives. Project objectives do not typically include design standards as noted in this comment. They are typically clear and declarative statements identifying specific effects anticipated to be achieved by a project. The Department and the Riverside County Congestion Management Plan both designate LOS E as the desired LOS design standard for freeways. When a freeway operates at less than LOS E (i.e., LOS F), the carrying capacity of the freeway is reduced, resulting in unstable flow, persistent congestion, and stop-and-go traffic. LOS F conditions generate public pressure to improve the road to improve the LOS. It is recognized that LOS E is a

general design objective that must be balanced against other factors, including environmental impacts, costs and feasibility, and that not every road can achieve that objective without creating offsetting problems. However, alternatives can be assessed on a relative basis against how well they meet or approach this design standard. The traffic analysis in Section 3.6 in the EIR/EIS specifically considers the performance (LOS) of the freeway segments with and without the project, consistent with the identified LOS E design standard. This allows each alternative to be compared to the design standard to assess whether it meets the defined project objectives. As a result, RCTC and the Department did not revise the project objectives.

O-8-6

The improvements on local roads proposed as part of the Build Alternatives are shown in the preliminary project plans provided in Appendix L, Project Features, in the EIR/EIS. No local street improvements are planned outside the boundaries of the Build Alternatives shown on those preliminary plans.

For example, in Appendix L2, Project Features, the following sheets show the areas where improvements to local streets at their crossings of SR-91 are included in the overall project improvements in Alternative 2. The improvements to those local streets are to join the existing local streets with the proposed project improvements or at overcrossings/undercrossings.

- Along SR-91:
  - Sheet 4: Gypsum Canyon Road
  - Sheet 12: Green River Road
  - Sheet 22: Auto Center Drive/Serfas Club Drive
  - Sheet 24: South Maple Street
  - Sheet 25: Smith Avenue
  - Sheet 27: Lincoln Avenue
  - Sheet 30: Buena Vista Avenue
  - Sheet 32: East and West Grand Avenue
  - Sheets 31 and 32: Main Street
  - Sheet 37: Promenade Avenue
  - Sheet 38: McKinley Street
  - Sheet 43: Buchanan Street
  - Sheet 44: Pierce Street

- Along I-15:
  - Sheet 55: Hidden Valley Parkway
  - Sheet 56: Corona Avenue
  - Sheet 57: Crest Road
  - Sheet 62: Old Temescal Road
  - Sheet 64: Ontario Avenue
  - Sheet 67: El Cerrito Road
  - Sheet 69: Cajalco Road

The improvements to these local streets are within the disturbance/construction limits for the project. The analysis in the EIR/EIS considered the project impacts within the disturbance/construction limits. As a result, the potential impacts of these local street improvements were considered in the analysis in the EIR/EIS.

O-8-7

As part of the preliminary engineering effort required for preparation of the Project Approval/Environmental Documentation (PA/ED), a *Conceptual Drainage Study Report* (April 2010) was prepared. This report addressed existing and proposed drainage deficiencies and improvements associated with the SR-91 CIP improvements.

During March 2010, RCTC conducted preliminary investigations of the existing culvert conditions within the limits of the SR-91 CIP on SR-91 and I-15. Using available as-built plans, each cross culvert was examined to determine when the culvert was originally installed. It was determined that the majority of the cross culverts were over 40 years old and are reaching the ends of their service lives.

Additionally, with Department assistance, RCTC reviewed and addressed required improvements to specific culvert locations identified by the Department Maintenance Division. Those improvements were added to the proposed drainage improvements for the SR-91 CIP Build Alternatives and are included in the conceptual drainage plans.

Because a detailed analysis of drainage hydraulics is not required during the PA/ED phase, it was mutually agreed between the Department and RCTC that, prior to or during the design/build phase of the project, a comprehensive culvert investigation will be performed to determine the structural integrity of the existing drainage system. Those required culvert investigations and rehabilitation will be conducted

following the guidelines in the Department's Design Information Bulletin 83 (DIB 83). The culvert improvements included in the Build Alternatives will be limited to the existing and proposed rights-of-way for SR-91 and I-15, and in some cases, within TCEs.

The Department will have ultimate approval of the final drainage design to ensure that deficiencies are addressed, and appropriate improvements to address those deficiencies are implemented.

Section 3.0, Existing Regional System, in the *Conceptual Drainage Study Report* addresses specific requirements that were agreed to by the Department and RCTC. That section of the report is provided following the last response to the last comment in this letter.

O-8-8

Refer to response to comment O-8-9, below, which explains why the projects mentioned in these comments have separate and independent utility and are not separate parts of the SR-91 CIP.

The SR-91 Eastbound Lane Addition Project cited in the footnote is a separate project from the SR-91 CIP. The Lane Addition Project was proposed specifically to address traffic congestion at a pinch point on eastbound SR-91; that improvement focuses on traffic movement in that area. That project addresses a different traffic need than the SR-91 CIP. As a result, the Lane Addition Project has separate and independent utility.

O-8-9

The projects cited in comments O-8-9 through O-8-14 and described in Exhibits A through G provided with this letter are projects separate from the SR-91 CIP. Each of those projects has independent utility and logical termini, and can be constructed and operated effectively with or without the implementation of the SR-91 CIP. These projects are all included in the cumulative impacts analysis starting on page 3.25-1 in Section 3.25, Cumulative Impacts, in the EIR/EIS and are listed individually in Table 3.25.1, Summary of Transportation Projects in the SR-91 CIP Study Area, on page 3.25-43 in the EIR/EIS.

O-8-10

Refer to response to comment O-8-9, above.

O-8-11
Refer to response to comment O-8-9, above.

O-8-12
Refer to response to comment O-8-9, above.

O-8-13
Refer to response to comment O-8-9, above.

O-8-14
Refer to response to comment O-8-9, above.

O-8-15
Refer to responses to comments O-8-16 through O-8-44, below, which explain why all the project impacts were fully analyzed under both NEPA and CEQA, and why the project complied with all applicable mitigation requirements.

O-8-16
Refer to responses to comments O-8-17 through O-8-19, below.

O-8-17
All areas within and immediately adjacent to the project impact limits were surveyed by foot by biologists with a thorough knowledge of the regional setting and the specific biological resources being surveyed. Where access was not available for surveys, survey preparers erred on the side of caution and assumed the presence of biological resources likely to occur based on the site conditions. For example, areas of riparian vegetation were assumed to be wetlands. In those instances, analysis in the NES (2010) was based on the assumption of presence, and avoidance/minimization measures and compensatory mitigation were included as necessary.

Refer also to response to comment O-8-18, below, for a discussion of Braunton's milk-vetch.

O-8-18
The purpose of the BSA was to extend the survey area beyond the area of potential direct effects to adequately identify any biological resources and analyze direct and indirect effects. This defined a BSA that was substantially larger than the direct project impact limits. All areas of potential habitat for Braunton's milk-vetch, including USFWS-designated critical habitat, are outside the SR-91 CIP impact limits (71 Federal Register [FR] 66374-66423), but within the BSA. All areas with potential

habitat for Braunton's milk-vetch have been surveyed multiple times over multiple years with negative results (e.g., as documented in the SR-91 CIP NES [June 2010] and the Eastbound SR-91 Lane Addition Project NES [January 2007]). In addition, the proposed project will not directly impact these areas of potential Braunton's milk-vetch habitat. Therefore, the project is not expected to directly affect this species. However, because Braunton's milk-vetch occurs in alluvial washes, it is difficult to determine its complete distribution as it often changes from year to year. Regardless, as discussed in Section 3.21.3, Environmental Consequences, on page 3.21-9 in the EIR/EIS, the SR-91 CIP will not directly impact these areas of potential Braunton's milk-vetch habitat and is not expected to directly affect this species. Therefore, as described in Section 3.21.3.3, Temporary Impacts, on page 3.21-15 in the EIR/EIS, it was determined that the SR-91 CIP Build Alternatives may indirectly affect this species temporarily during construction (e.g., dust, human presence), based on the assumption that Braunton's milk-vetch may be present, even though it was not observed during the surveys, as described in Section 3.21.3.3, Temporary Impacts, on page 3.21-15 in the EIR/EIS. Measures NC-1, NC-2, NC-4, and NC-5, starting on page 3.17-27 in Section 3.17.4.2, Other Measures, in the EIR/EIS, are expected to avoid and/or minimize these potential impacts. Because the proposed project may indirectly affect Braunton's milk-vetch temporarily during construction, a Section 7 Consultation was conducted and a Biological Opinion was received from the USFWS on November 30, 2011. Based on the Biological Opinion, the USFWS determined a "may affect, but not likely to adversely affect" finding for Braunton's milk-vetch. Refer to Section O.5.10, Common Response Related to the Biological Opinion, on page O-43 in Section O.5, Common Responses, for additional information regarding the Biological Opinion and mitigation obligations.

O-8-19

The BSA includes both the area of potential direct project impacts (the project disturbance limits) and a substantial buffer area so as to allow for a thorough analysis of potential resources that could be affected by the project. As a result, the presence of potential habitat for a special-status species in the BSA does not necessarily mean the project would impact that species. Focused surveys were conducted for all special-status species with potential habitat in the BSA. A thorough analysis of potential direct, indirect, permanent, temporary, and cumulative project impacts were evaluated for each special-status species, based on the specific requirements of each species. If additional surveys were deemed to be required, they were included in the avoidance, minimization, and mitigation measures. For additional information regarding Braunton's milk-vetch, refer to response to comment O-8-18, above.

O-8-20

The SR-91 CIP Build Alternatives are not expected to directly impact LBV, but could result in indirect temporary impacts through the loss of potential (but not occupied) habitat in Orange County. As described in the LBV discussion in Section 3.21.3.2, Permanent Impacts, on page 3.21-14 in the EIR/EIS, the proposed project may directly impact LBV in Riverside County. Measures NC-1, NC-2, NC-3, NC-5, and NC-9 in Section 3.17.4.2, Other Measures (starting on page 3.17-27), and Measures WET-1, WET-2, and WET-3 in Section 3.18.4.2, Other Measures (starting on page 3.18-15), in the EIR/EIS address potential project impacts to LBV in Orange and Riverside Counties. Measures NC-17, NC-18, and NC-19 in Section 3.17.4.2 are measures in association with the Western Riverside County MSHCP to address potential impacts to LBV in Riverside County. A Section 7 Consultation was conducted and a Biological Opinion was received from the USFWS on November 30, 2011. Based on the Biological Opinion, the USFWS determined a "may affect, but not likely to adversely affect" finding for LBV. Refer to Section O.5.10, Common Response Related to the Biological Opinion, on page O-43 in Section O.5, Common Responses, for additional information regarding the Biological Opinion.

By going through the consistency process for the Western Riverside County MSHCP and the Section 7 Consultation with the USFWS, the project must demonstrate to the resource agencies (e.g., USFWS and CDFG) that the avoidance and minimization measures and the compensatory mitigation are biologically equivalent or superior to the project impacts. This will result in full mitigation and will ensure that the impacts are not substantial. As part of the Biological Opinion, the SR-91 CIP was determined to be consistent with the relevant Western Riverside County MSHCP policies and procedures.

Refer also to responses to comments O-8-21 through O-8-28, below.

O-8-21

Table 3.20.1 (Special-Status Wildlife Species Potentially Occurring or Known to Occur within and in the Vicinity of the BSA) on page 3.20-3 and Sections 3.20.2.2 (Western Riverside County MSHCP-Covered Species) on page 3.20-8 and 3.20.2.3 (Other Special-Status Species) on page 3.20-9 in the EIR/EIS identify special-status animal species that may be indirectly impacted by the SR-91 CIP Build Alternatives as a result of the loss of potential habitat. Measures NC-1 through NC-19, WET-1 through WET-3, and AS-2 through AS-7 in Section 3.20.4, Avoidance, Minimization,

and Mitigation Measures, on page 3.20-13 in the EIR/EIS address potential impacts to special-status animal species other than burrowing owl.

For the analysis of covered activities under the Western Riverside County MSHCP, such as the SR-91 CIP, the analysis of impacts to sensitive species as a result of covered activities was addressed in the EIR/EIS completed for the Western Riverside County MSHCP in 2004. Western Riverside County MSHCP permittees (RCTC and Caltrans for the SR-91 CIP) mitigate for impacts to covered species by meeting their obligations as stipulated in the Western Riverside County MSHCP Implementation Agreement. As a permittee under the Western Riverside County MSHCP, RCTC received a consistency conclusion from Western Riverside County RCA on April 4, 2011, that the SR-91 CIP demonstrates consistency with the requirements for covered road projects and with other requirements of the Western Riverside County MSHCP.

A Section 7 Consultation was conducted and a Biological Opinion was received from the USFWS on November 30, 2011. Refer to Section O.5.10, Common Response Related to the Biological Opinion, on page O-39 in Section O.5, Common Responses, for additional information regarding the Biological Opinion.

O-8-22

The linear configuration of the proposed project did not preclude the analysis of project impacts to potential biological resources. As discussed in response to comment O-8-19, above, the BSA includes both the area of impact and a substantial buffer area. Starting on page 3.17-1 in Section 3.17, Natural Communities, in the EIR/EIS, the amount of each Natural Community of Special Concern that will be impacted by the SR-91 CIP Build Alternatives is identified. A complete analysis was conducted based on the quantity of impacts by the proposed project and the quality of the natural communities in the BSA. These impacts were determined not to be significant under CEQA as discussed in the EIR/EIS in Section 4.2.1.3, Biological Resources, on page 4-3; Section 4.2.2.3, Biological Resources, and Land Use and Planning, on page 4-13; and 4.2.3.2, Biological Resources, on page 4-24. Because the SR-91 CIP was considered (i.e., as a covered project) during the development of the Western Riverside County MSHCP, the part of the project in Riverside County has, in essence, already been mitigated for being within the Western Riverside County MSHCP. As part of the Biological Opinion, the SR-91 CIP was determined to be consistent with the relevant Western Riverside County MSHCP policies and procedures and would not be considered substantial under NEPA.

O-8-23

Because the only suitable habitat for the Santa Ana sucker is in the Santa Ana River and the project will not directly impact the Santa Ana River, the SR-91 CIP is not expected to directly impact the Santa Ana sucker. The Build Alternatives will not directly affect the Santa Ana sucker or its habitat in the Santa Ana River. However, the Build Alternatives could potentially affect the sucker if the project impacts water quality in the Santa Ana River because the sucker is a water-dependent species. Implementation of the water quality measures (Measures WQ-1 through WQ-4) would ensure that the project would not result in substantial adverse water quality impacts and, therefore, would not impact the Santa Ana sucker. The Corps is currently separately realigning sections of the Santa Ana River and armoring the banks with concrete. As described in Section 3.18.3.2, Permanent Impacts, on page 3.18-10 in the EIR/EIS, information for the Corps project was provided by the Corps, and the SR-91 CIP impacts were reduced accordingly. The discussion of the Santa Ana sucker in Section 3.21.3.3, Temporary Impacts, on page 3.21-15 in the EIR/EIS identifies the potential for temporary and indirect project impacts to the Santa Ana sucker as a result of changes in water quality. However, as described on page 3.10-23 in Section 3.10.3.2, Permanent Impacts, and on page 3.10-28 in Section 3.10.3.3, Temporary Impacts, in the EIR/EIS, the equivalent of over 100 percent of new impervious areas will be treated for water quality based on BMPs implemented as part of the SR-91 CIP Build Alternatives (that is, storm water runoff from all the new impervious surfaces and some of the existing impervious surfaces would be treated by the project BMPs). The BMPs included in the Build Alternatives are described in the subsection titled "Water Quality/Erosion Control" on page 2-15 in Chapter 2, Project Alternatives, in the EIR/EIS. As shown in Table 2.7 on page 2-20 in the EIR/EIS, the SR-91 CIP will include biofiltration swales and/or strips, as described in Attachment H included with this comment letter, in addition to other types of BMPs. Some of the BMPs described in Attachment H may not be feasible for the SR-91 CIP due to structural and/or safety issues. The individual types of BMPs included in the alternatives are listed in Table 2.7 on page 2-20 in Chapter 2 in the EIR/EIS. As a result of the incorporation of BMPs, the SR-91 CIP Build Alternatives were determined not to result in substantial adverse water quality impacts.

O-8-24

As described in Section 3.19.3.2, Permanent Impacts, on page 3.19-12 in the EIR/EIS, the SR-91 CIP Build Alternatives would result in the removal of parts of, but not all of, the California black walnut and Coulter's matilija poppy populations within the BSA. Figure 3.19-2 on page 3.19-13 in the EIR/EIS indicates the parts of

those plant populations that would be permanently impacted by the project. Both these species are ranked by the California Native Plant Society (CNPS) as California Rare Plant Rank 4 (Rank 4). CNPS Rank 4 species are not considered rare, but are uncommon enough to be monitored regularly. As described in Section 3.19.2.2, Special-Status Plant Species in the Biological Study Area, on page 3.19-2 in the EIR/EIS, California black walnut and Coulter's matilija poppy are not federally or State listed and have no official status. Although they are addressed in the EIR/EIS, they are not listed, proposed for listing, or candidates under the federal or State Endangered Species Act. In addition, they do not meet the definition of rare or endangered under CEQA Sections 15380(b) and (d) or the California Native Plant Protection Act (Fish and Game Code Sections 1900 et seq.). Both species are covered under the Western Riverside County MSHCP and are considered adequately conserved under that habitat conservation plan for project impacts to California black walnut and Coulter's matilija poppy in Riverside County. The removal of four to eight California black walnut trees in Orange County (there are no project impacts to Coulter's matilija poppy in Orange County as shown on Figure 3.19-1 on page 3.19-5 in Section 3.19, Plant Species, in the EIR/EIS) is not considered substantial due to the removal of a small patch of isolated individuals. As a result, the impacts of the SR-91 CIP Build Alternatives to these species are not substantial.

O-8-25

Refer to response to comment O-8-24, above.

O-8-26

The analysis of cumulative impacts to biological resources was based on information reasonably available. As noted in Section 3.25, Cumulative Impacts, starting on page 3.25-1 in the EIR/EIS, detailed information regarding possible impacts of many projects was not available. The columns in Tables 3.25.1 and 3.25.2 in Section 3.25 titled "Summary of Environmental Evaluation, Documentation, and Impacts" indicate if there was an environmental document available for each specific project at the time the cumulative impacts analysis was conducted. For other cumulative projects where information was unknown, conservative estimates (worst case) of the potential impacts of those other cumulative projects were evaluated in comparison to impacts from SR-91 CIP.

The Western Riverside County MSHCP provides a comprehensive, habitat-based approach to the protection of covered species by focusing on conservation and management of lands essential for their long-term conservation. A key purpose of the

Western Riverside County MSHCP is to address cumulative impacts to endangered, threatened, and sensitive species within the Western Riverside County MSHCP area. The Western Riverside County MSHCP assesses the total direct and indirect impacts of all the covered projects (including the SR-91 CIP) on the species and habitats within the entire Western Riverside County MSHCP region. Specifically, as a regional plan, the Western Riverside County MSHCP serves to provide mitigation for cumulative impacts to covered species and their habitats. Project consistency with the Western Riverside County MSHCP ensures that cumulative and indirect impacts to those species are effectively mitigated. The SR-91 CIP was determined to be consistent with the Western Riverside County MSHCP by the RCA on April 4, 2011. Therefore, cumulative impacts on covered species in western Riverside County, including any contribution by the SR-91 CIP, are considered to be fully mitigated.

The cumulative impact analysis for biological resources in Orange County focused on the SR-91 CIP impacts in the regional context along with the impacts from other reasonably foreseeable past, present, and future projects. The SR-91 CIP is expected to fully avoid, minimize, and/or mitigate for impacts to all sensitive biological resources. In most instances, the mitigation that will be provided will result in a net increase in native vegetation (i.e., coastal sage scrub, riparian/riverine, and oak woodland) in the region. This will result in a net beneficial cumulative effect. In addition, because the sensitive biological resources being impacted by SR-91 CIP are already disturbed due to the existing highway corridor and the habitat mitigation will take place in protected open space areas adjacent to other native vegetation, the functionality of the available native habitat for special-status species will exponentially increase. This will benefit the special-status species in the region. However, because the future is uncertain, a conservative approach was taken. Rather than relying on the likelihood of the SR-91 CIP resulting in a beneficial cumulative effect to sensitive biological resources, it was determined it may contribute a small amount to cumulative impacts.

O-8-27

Refer to response to comment O-8-26, above, regarding cumulative impact analyses for biological resources. Refer to Section O.5.10, Common Response Related to the Biological Opinion, on page O-39, for discussion regarding the Biological Opinion for the project received from the USFWS on November 30, 2011, and the project mitigation obligations.

The SR-91 CIP is not expected to result in significant iinpacts to any species or habitats. Cumulative impacts to biological resources are addressed in Section 3.25.5.9, Natural Communities, Plant Species, and Animal Species, starting on page 3.25-30 in the EIR/ElS; Section 3.25.5.10, Wetlands and Other Waters of the United States, starting on page 3.25-37; and Section 3.25.5.11, Threatened and Endangered Species, starting on page 3.25-39. As described in those sections, the project is not expected to contribute to cumulative impacts to biological resources. As shown on Figure 3.1.5 in Section 3.1, Land Use, in the EIR/EIS, the proposed project is expected to permanently affect CHSP in two locations. One location is an underground permanent easement that will not affect any surface features, including biological resources, in any way (i.e., it will have no project-specific or cumulative effects of any kind). The other location is at Prado Road, where construction of the Build Alternatives will require a 0.48 ac of land for a permanent easement for two permanent bridge columns, an aerial easement for the elevated Green River Road off-ramp, and a small area south of the easement. No special-status species, natural communities of special concern, or other biological resources will be affected in the project impact area at Prado Road. As a result, the SR-91 CIP will not contribute to cumulative adverse impacts on biological resources in CHSP, including special-status species and natural communities of special concern. In addition, the Santa Ana River Mainstem Project Reach 9 Phases 2A and 2B and SARI Repairs Upstream of Prado Dam (Reaches IV-A and IV-B) Project that are referenced in this comment were included in the cumulative analysis, as well as many other nontransportation projects in the area, as described in Table 3.25.2 starting on page 3.25-55 in the EIR/EIS.

O-8-28

The SR-91 CIP Build Alternatives include extensive avoidance, minimization, and compensatory mitigation measures in Section 3.17, Natural Communities, and Section 3.21, Threatened and Endangered Species, in the EIR/EIS that address potential project impacts at Coal Canyon. As a result, it was determined that the proposed project will only contribute a small amount to the cumulative iinpacts to Coal Canyon and the surrounding areas. The openness ratio remaining after the widening of SR-91 (5.98 calculated in feet) will be of ample size to allow large mammals to move between the regions. Implementation of Measure NC-7 on page 3.17-32 in the EIR/EIS to restore disturbed habitat with native vegetation is expected to further attract wildlife to this corridor. In addition, large areas of open space are preserved on each side of the undercrossing, and there are either no or very limited opportunities for development in those areas. While the SR-91 CIP and other projects are expected to contribute to a cumulative impact to wildlife inovement at Coal

Canyon, it is expected that Coal Canyon will continue to function as a viable corridor for large mammals. Therefore, cumulative impacts to wildlife movement at Coal Canyon are not expected to be substantial.

Temporary impacts to wildlife movement at Coal Canyon will cease on completion of construction and are not expected to result in permanent cumulative effects to wildlife movement. Avoidance and minimization measures are included in Section 3.17.4.2, Other Measures, in the EIR/EIS to reduce those temporary effects during construction. For example, wildlife movement occurs predominantly at night. Measure NC-12 on page 3.17-34 in the EIR/EIS strictly limits the hours of construction to daytime except for limited instances when evening or night work is required for safety or operational reasons. When night work is required, Measure NC-9 on page 3.17-33 in the EIR/EIS requires the contractor to direct lighting and noise away from wildlife corridors. Because evening and night work will only be required in limited, short-duration circumstances (e.g., lane closure for placement of safety rails), impacts to wildlife movement would be minimal and temporary. Refer also to response to comment O-8-26, above.

O-8-29

The *2008 California Outdoor Recreation Plan* (CORP), prepared by the CDPR, is the statewide master plan for parks, outdoor recreation, and open space for California. The CORP provides policy guidance to all outdoor recreation providers, including federal, State, regional and local agencies, and special district, that provide outdoor recreational lands, facilities, and services in California. It also serves as a mandatory accountability document for states receiving funds from the L&WCF Act. CDPR is the State agency with the authority to act for California in dealing with the Secretary of the Department of the Interior (DOI) regarding the L&WCF. As written in the introduction to the CORP: [the Plan] "...provides a strategy for statewide outdoor recreation leadership and action to meet the state's identified outdoor recreation needs." While there are strategies, issues, and actions identified in the CORP, they are broad as they must describe identified goals on a statewide basis. The CORP is not regulatory in nature, but provides information goals, activities, deficiencies, and recreation demand and projections germane to the current and future operation and success of the State Parks system. While it does identify itself as a master plan for California Parks, its policies do not translate into codified regulations or rules. However, the distribution of the L&WCF has clear stipulations on what resources may be acquired with that funding, including remuneration and/or mitigation.

In its consultation letter dated January 26, 2012, the NPS indicated that two previous L&WCF Act grants were used for the acquisition of land for CHSP. The Build Alternatives would require acquisition of a small amount of land in parcel #31 in CHSP, which was not acquired with those grants. The NPS letter goes on to say "...we have determined that LWCFA §6(f)(3) does not now apply to parcel #31, and that the proposed project, were it to be built today, would not cause a LWCFA conversion of parkland on parcel #31." As a result, at this time, the requirements for the protection and mitigation of the acquisition of land from parcel #31 for the proposed project under Section 6(f) do not apply.

However, the NPS also indicated in its consultation letter that the timing of the closing of an approved third major L&WCF Act grant to State Parks for CHSP is not known. When that grant is closed, it will modify the Section 6(f) boundary for CHSP to include all the existing land in the park, including all of parcel #31. Because of the uncertainty of the timing of the closing of that approved L&WCF Act grant to CHSP, the NPS consultation letter also recommends "...that CEQA and NEPA environmental compliance treat the property as if §6f applied now, in terms of potential impacts assessment and mitigation measures."

Because parcel #31 is not currently subject to the requirements of protection and mitigation under Section 6(f), RCTC and the Department are proceeding without treating parcel #31 as if Section 6(f) applies now and will continue to monitor the status of the L&WCF Act grant closing. However, in the event that the grant is closed prior to construction of the SR-91 CIP, the requirements for the protection under Section 6(f) will need to be analyzed and addressed with CHSP and CDPR, Office of Grants and Local Services.

Therefore, the proposed 0.48 ac easement cannot be analyzed against the CORP (a non-regulatory plan) for consistency because of the strategic nature of the CORP. Refer also to Section O.5.5, Common Response Related to Chino Hills State Park, on page 0-18 for project effects at CHSP, mitigation for those effects, and ongoing consultation with CDPR regarding the project effects and mitigation at CHSP, including compliance with the requirements under the L&WCF Act.

The de minimis finding described on page 3.1-79 in the Draft EIR/EIS was clearly identified as a "Preliminary Section 4(f) De Minimis Finding." De minimis impacts on publicly owned parks are defined as those that do not adversely affect the activities, features, and attributes of the Section 4(f) property after consideration of

avoidance, minimization, and mitigation measures. The permanent 0.48 ac easement at CHSP will not adversely affect the activities, features, and attributes of the park because there are no park features or amenities in the 0.48 ac area proposed to be used. The 0.48 ac area proposed to be used is a very small percent of the overall 14,173 ac park, and its use will not adversely affect the ability of park visitors to use the trail north of the Green River Road off-ramp or Prado Road (a public road) because the elevated off-ramp will not be within the right-of-way for, or otherwise block access to, Prado Road, and will not be within the boundary of the State Park or block access to the trailhead. Refer to Section O.5.5.4, De Minimis Determination, on page O-22, which indicates that the Department made a determination that the project effects at CHSP would be de minimis and State Parks concurred with this determination on March 26, 2012.

Refer also to Section O.5.5, Common Response Related to Chino Hills State Park, for project effects at CHSP, mitigation for those effects, and the consultation with State Parks regarding the project effects and mitigation at CHSP.

O-8-30

The total area that will be used at CHSP is 0.48 ac; this includes most of the area under the aerial easement for the Green River Road westbound off-ramp (the columns for the off-ramp will be within the area under the easement), and a small area south of the easement. Part of the area under the aerial easement is within the right-of-way for Prado Road, a public road. Because this is a public road and is not part of CHSP, that part of the area under the aerial easement was excluded when totaling the acreage in the park boundary that would be used by the SR-91 CIP. The 0.48 ac contains no park amenities or facilities and does not contain native plants. Access to the trail head and the park maintenance road in this area will not be affected by the SR-91 CIP.

In 2009, as part of consultation with State Parks for the Section 4(f) process for the proposed SR-91 CIP, State Parks provided a number of agreements and other documents related to the purchase of land for CHSP. Those documents all relate to the purchase of approximately 655 ac of land on the south side of SR-91 between approximately SR-241 and the Orange/Riverside County line. That property is often referred to as the St. Claire property. The property was sold by the Cypress Canyon Group LLC to the CDPR for use as part of CHSP in the early to mid-1990s.

The following is a list of the documents received from State Parks:

1. Notification of Property Transfer CDPR 3-24-05 with attachments

2. Grant Deed Transferring Ownership from Cypress Canyon Group LLC to CDPR (10/3/00)
3. Quitclaim Deed (1-21-00)
4. Agreement Declaring Restrictive Covenants (9/21/00, recorded 10/3/00)
5. Memorandum of Unrecorded Grant Agreement (10-3-00)
6. California Wildlife Conservation Board (WCB) Real Property Acquisition Grant Agreement WC-0961-DT (5-24-00)
7. Property Acquisition Agreement CDPR (Buyer) and Cypress Canyon Group LLC (Seller) (8-28-00)
8. Policy of Title Insurance (10-3-00)
9. Program Supplement to No. MO22 Rev. 2 to Administering Agency-State Agreement for Federal-Aid Projects No. 12-0681 (9-19-00)
10. Financial Assistance Agreement, Agreement No. D99-054 (3-20-00)
11. Pledge Agreement in Support of CDPR's Acquisition of the St. Claire Property at Coal Canyon (9-26-00)

Detailed review of these documents was conducted to assess whether they include possible restrictions on the use of land covered by the agreements for uses other than park uses within CHSP. Based on that review, Documents 1, 2, 3, 7, 8, and 10 did not appear to contain any restrictions related to the use of land from the 655 ac parcel. The restrictions in the other documents are:

- **Documents 4 and 9:** It appears that transferring land from State Parks to the Department, which are both State agencies, is consistent with the requirements of this agreement that TEA funds and land be committed to transportation enhancement projects.
- **Documents 5 and 6:** It appears that the only restriction to use of land under these agreements is the requirement for written approval of the use of the land from the WCB.
- **Document 11:** Although the language in this agreement appears to restrict the use of the land for any purpose other than preservation, the agreement does not identify any specific requirements for written approvals or any notification if land is proposed to be used for other purposes.

As discussed earlier, the Build Alternatives will result in the permanent use of land in CHSP at the Green River Road off-ramp. The Build Alternatives will also require permanent subsurface easements on the south side of SR-91 in the area covered by those documents. This permanent use is for a subsurface easement for the tiebacks for

the tieback wall. There would be no permanent use of land in CHSP at ground level at this location, and there would be no project-related facilities at ground level at this location. Tiebacks are steel rods approximately 20 to 30 ft long, which will be drilled into the hillside from the State highway right-of-way and extending under CHSP. The tiebacks will be attached to the retaining walls in the highway right-of-way. No buildings or other structures can be constructed above the tiebacks to protect the integrity of the tiebacks and the retaining wall. However, because the tiebacks are at the boundary of CHSP, it is unlikely that State Parks would construct any buildings or structures over the area of the subsurface easements and the tiebacks. Other park features such as benches, interpretive signing, and trail signage can be installed over the subsurface easement area.

The construction of the SR-91 Build Alternatives will require TCEs in this part of CHSP to accommodate construction activities related to extending the existing culverts at these locations. There would be no permanent project-related facilities in these areas. The disturbed areas in the TCEs would be returned to their existing condition, or better, at the completion of construction in these areas and prior to the return of these areas to State Parks.

As a result, it appears that the existing agreements related to the land in CHSP on the south side of SR-91 would not prohibit the permanent subsurface easement or the TCEs anticipated to be required under the SR-91 Build Alternatives.

Refer also to Section O.5.5, Common Response Related to Chino Hills State Park, on page O-18 for project effects at CHSP, mitigation for those effects, and the consultation with State Parks regarding the project effects and mitigation at CHSP.

The footnote on page 18 of this comment letter mentions an off-ramp at Coal Canyon. There is no off-ramp proposed at Coal Canyon as part of the SR-91 CIP Build Alternatives.

O-8-31

As discussed in the *Los Angeles Times* article provided in Attachment L to this comment letter, the Coal Canyon Road underpass was closed in 2003 to allow for more wildlife movement between the Santa Ana Mountains and the Puente-Chino Hills. Indirect effects (including automobile traffic, litter, and noise in the area) to wildlife at Coal Canyon were thoroughly evaluated and determined not to be substantial. Because potential project impacts to wildlife movement due to traffic, litter, noise, etc. will not take place in the Coal Canyon wildlife crossing, they are

removed by distance and time; therefore, they would be indirect impacts of the project.

The only cause of indirect effects such as noise and lighting at Coal Canyon would be caused by traffic on the SR-91 mainline between Gypsum Canyon Road and Green River Road. As described in Table 3.6.22, Freeway Mainline Peak-Hour Levels of Service for Baseline/Existing (2007), 2035 No Build, and Design Year 2035 with Alternatives 1 and 2, in the EIR/EIS, the mainline peak-hour LOS on SR-91 will remain relatively the same, with or without the project. Because traffic levels will remain relatively the same with or without the project, indirect effects caused by traffic (e.g., noise and lighting) will remain relatively the same with or without the project. Therefore, Alternatives 1 and 2 are not expected to contribute substantially to these indirect impacts in Coal Canyon and the placement of sound barriers at Coal Canyon is not warranted. The forecasts in Table 3.15.13 indicate that noise levels are anticipated to be approximately the same in the future with or without the project, and that those future noise levels will be approximately 1–2 dB greater than under existing conditions. The actual noise contour lines would shift out, corresponding to the widening of the freeway (approximately one lane in each direction at Coal Canyon). Such a shift would be less than 1 dB at any ground location. Discussion was added to the Coal Canyon text in Section 3.17.3, Environmental Consequences, on page 3.17-16 in the EIR/EIS to describe this analysis.

In addition, the following condition, included in the Biological Opinion, was added as Measure TE-15 in the EIR/EIS. As with all project conditions and measures, RCTC and the Department will comply with the requirements of this measure.

TE-15 **Measure for Light Intrusion and Wildfires.** To minimize adverse effects from light intrusion from vehicle headlights and the potential threat of increased fires from the operation of SR-91, during final design, the Department and RCTC will work with the USFWS to investigate the possibility of adding features along SR-91 in the vicinity of the Coal Canyon wildlife crossing in Orange County. For example, consideration can be given to the placement of K-rail, concrete walls, and/or hardscaping barriers along the shoulder of SR-91. In investigating these features, consideration must be given to motorist safety, freeway

operations, vehicle headlight mitigation and the potential fire threat.

Refer also to Section O.5.5.7, Other Commitments by RCTC to Chino Hills State Park, on page O-28 which describes a March 26, 2012 Letter of Intent from RCTC to State Parks committing to provide a barrier along both the north and south sides of SR-91 in the vicinity of Coal Canyon, to shield headlight glare and freeway noise. The RCTC is committed to providing this barrier as part of the Ultimate Project in Alternatives 1 and 2.

O-8-32

Refer to response to comment O-8-31, above.

O-8-33

CHSP is already adjacent to parts of SR-91 and SR-71 and, therefore, is currently exposed to potential risks of fire associated with vehicle fires on SR-91 and other ignition sources (such as cigarettes thrown out car windows). This is a risk whenever a freeway or road is adjacent to areas of open space such as CHSP. This risk would continue unchanged in the future under the No Build Alternative and both Build Alternatives. However, Measure TE-15 was added to Section 3.21.4, Avoidance, Minimization, and/or Mitigation Measures, to address potential indirect impacts due to fire risk. In addition, as discussed in Section 3.5.2.2, Permanent Impacts, on page 3.5-7 in the EIR/EIS, the project would improve traffic throughput and travel times, and reduce delays for fire protection providers, and therefore may improve response times for emergency services. There is a temporary increased risk of fire during construction. Implementation of Measure NC-4 on page 3.17-31 in the EIR/EIS would minimize that risk.

Refer to Section O.5.5.6, Measures for Other Effects at Chino Hills State Park, on page O-25 which includes Measure UES-4, to provide a barrier on SR-91 between approximately SR-241 and SR-71, on both the westbound and eastbound sides of SR-91, to provide fire suppression and prevention benefits to CHSP.

The Freeway Complex Fire cited in this comment started north of and burned west and south through CHSP to SR-91, which effectively served as a firebreak to minimize the fire jumping over the freeway. That beneficial effect of the SR-91 facility is discussed on page 4-4 in Section 4.2.1.5, Hazards and Hazardous Materials, in the EIR/EIS.

O-8-34

Table 3.25.3 on page 3.25-63 in the EIR/EIS indicates that the SR-91 Build Alternatives would result in the permanent use of 0.48 ac of land in CHSP, but not from any other Section 4(f) or 6(f) resources. As a result, the analysis focused on whether the project effects on CHSP would contribute to cumulative adverse impacts on parks and the recreation functions in parks, specifically CHSP, when considered in conjunction with the effects of other projects. Because CHSP is so large (approximately 14,000 ac), it is adjacent to public facilities such as SR-91 and SR-71 or public improvement projects such as the work being conducted in the Lower Santa Ana River. As a result, land from CHSP has in the past, and will likely in the future, be needed for public projects such as the SR-91 CIP. At the same time, State Parks has in the past acquired, and likely will continue to acquire in the future, land for incorporation within the boundary of CHSP. As a result, although various projects have in the past required, or may in the future require, the use of land from CHSP, the overall effect of the removal of land from CHSP is not substantial when considered in the context of the overall size of the park and that ongoing land acquisition will likely result in the total net increase in the area of the park over time. As a result, the SR-91 CIP, by removing approximately 0.48 ac of land from CHSP [which will be mitigated for as part of the project consistent with the requirements of CEQA, NEPA, and Section 4(f)] is not expected to contribute to cumulative adverse impacts on CHSP.

O-8-35

Refer to response to comment O-8-29, above, for discussion regarding the appropriateness of a de minimis finding for the project effects at CHSP. Refer also to Section O.5.5, Common Response Related to Chino Hills State Park, on page O-18 in Section O.5, Common Responses, for project effects at CHSP, mitigation for those effects, and the consultation with State Parks regarding the project effects and mitigation at CHSP.

O-8-36

Refer to Section 3.1.3.3, Section 4(f), Section 6(f), and the Public Parks Protection Act, and Appendix B, Resources Evaluated Relative to the Requirements of Section 4(f), in the EIR/EIS for the analysis of the project effects under Sections 4(f) and 6(f) consistent with the requirements of the Department of Transportation Act of 1966. Refer to Section O.5.5, Common Response Related to Chino Hills State Park, on page O-18 in Section O.5, Common Responses, for project effects at CHSP, mitigation for those effects, and the consultation with State Parks regarding the project effects and mitigation at CHSP.

O-8-37

Refer to response to comment O-8-29, above, for discussion regarding the appropriateness of a de minimis finding for the project effects at CHSP. Refer also to Section O.5.5, Common Response Related to Chino Hills State Park for project effects at CHSP, mitigation for those effects, and the consultation with State Parks regarding the project effects and mitigation at CHSP.

It is acknowledged that the description of the park amenities in the vicinity of Green River Road was not correct in Table 3.1.5 on page 3.1-56 in the Draft EIR/EIS. The description of this area was revised in Table 3.1.5 to indicate there is a trail head and a park access/service road just north of the Green River Road interchange. However, the incorrect information in Table 3.1.5 does not make the EIR/EIS "...legally deficient as an informative public document under CEQA and NEPA. *See San Joaquin Raptor*...("[a]n accurate project description is necessary for an intelligent evaluation of the project environmental effects of a proposed activity.")" as cited in this comment. The correct information regarding the trail was provided later on page 3.1-63 in the subsection titled "Permanent Impacts to Parks and Recreational Facilities" in the Draft EIR/EIS, in the discussion of the preliminary de minimis finding. In addition, the description of these amenities is not a part of the SR-91 CIP description and, therefore, the correction noted above would not change the project description provided in Chapter 2, Project Alternatives, in the EIR/EIS.

O-8-38

Refer to Section O.5.5, Common Response Related to Chino Hills State Park, on page O-18 for project effects at CHSP, mitigation for those effects, and the consultation with State Parks regarding the project effects and mitigation at CHSP.

O-8-39

Refer to response to comment O-8-29, above, for discussion regarding the appropriateness of a de minimis finding for the project effects at CHSP. Refer to Section O.5.5, Common Response Related to Chino Hills State Park, for project effects at CHSP, mitigation for those effects, and the consultation with State Parks regarding the project effects and mitigation at CHSP.

O-8-40

The key determination in assessing the potential for constructive use impacts is whether "...the projects proximity impacts are so severe that the protected activities, features, or attributes that qualify a resource for protection under Section 4(f) are substantially impaired." As discussed in Section B.3.2, Assessment of the Potential

for Constructive Uses, in Appendix B in the EIR/EIS, the analysis in the EIR/EIS determined that the indirect impacts of the SR-91 Build Alternatives would not be so severe as to meet this standard at the parks near the SR-91. The summary conclusion in Appendix B is consistent with the Department's SER guidance for Section 4(f) documentation. Further, the citation from CEQA requiring documentation to be "...in the EIR..." not "...scattered here and there in the EIR appendices..." is not relevant because Section 4(f) is a federal issue, not a State issue.

O-8-41

Refer to Section O.5.5, Common Response Related to Chino Hills State Park, for discussion regarding CHSP and compliance with the requirements of Section 6(f).

O-8-42

Refer to Section O.5.5, Common Response Related to Chino Hills State Park, for discussion regarding CHSP and compliance with the requirements of Section 6(f), including required consultation with State Parks and the NPS.

O-8-43

Refer to Section O.5.5, Common Response Related to Chino Hills State Park, for discussion regarding CHSP and compliance with the requirements of Section 6(f).

O-8-44

Discussion regarding the Public Park Preservation Act of 1971 was added in a number of places, as appropriate, in Section 3.1.3, Parks and Recreational Facilities, starting on page 3.1-52. As discussed in detail in Section 3.1.3, Alternatives 1 and 2 would require the use of land in one publicly owned park (i.e., CHSP) and permanent subsurface easements at CHSP and the New OC Park (NNL). As a result of this acquisition of land from CHSP and the New OC Park (NNL) under Alternatives 1 and 2, compensation will be provided that meets the requirements of the Public Park Preservation Act for compensation, land, or both.

O-8-45

Refer to responses to comments O-8-46 through O-8-53, below.

O-8-46

Refer to response to comment O-6-5 on page O-256, which summarizes why the Build Alternatives would not result in growth-inducing impacts.

The growth analysis in Section 3.2, Growth, follows the guidance in the Department's *Guidance for Preparers of Growth-Related, Indirect Impact Analyses* which discusses

whether the project would change or improve accessibility in and around western Riverside County, and where, when, where, and how much growth might occur with and without the project starting on page 3.2-9.

This comment cites three potential effects of growth. Those three potential effects are discussed in Section 3.2.3, Environmental Consequences, on page 3.2-9 in the EIR/EIS. That analysis concludes:

- The improvements to SR-91 and I-15 along with the associated interchanges in Alternatives 1 and 2 described in detail in Chapter 2, Project Alternatives, in the EIR/EIS are expected to result in improvements to operational performance by providing improvements that will increase the efficiency of the local interchanges and reduce the durations of congestion on the highway, but would not substantially modify local, intra-regional, or inter-regional accessibility to and/or from SR-91 and I-15. The Build Alternatives will not change accessibility to these freeways but will make the local interchanges operate more efficiently and at an acceptable LOS.
- The improved travel times expected to be achieved as a result of Build Alternatives could have a slight influence on demand for residential and nonresidential uses in the project area or nearby cities; however, it would not be expected to be sufficient to result in the need to modify adopted General Plans to allow for greater levels of development (residential and nonresidential). The Build Alternatives are expected to accommodate existing, approved, and planned growth in the area, but are not expected to influence the amount, timing, or location of growth in the area.
- The project is proposed in response to existing and forecast traffic congestion resulting from prior restrictions to any improvements on SR-91 east of the Orange County toll road and traffic congestion due to growth, both locally and regionally, that has already occurred. This area is projected to continue to experience growth in population and jobs even in jurisdictions relatively constrained by limited land available for development. Additional housing and businesses in western Riverside County will generate additional traffic. However, as discussed in Section 3.2, that growth is forecast to occur with or without the project based on adopted General Plan Land Use Elements. The project area includes highly urbanized areas (City of Corona, the part of Riverside County within the project limits) with little remaining development capacity. SR-91 is also constrained on the south by the Cleveland National Forest and the New OC Park (NNL), and on the north by CHSP, the Santa Ana River, and Featherly Regional Park. The

proposed project is not expected to influence the amount, timing, or location of growth in the project area because, as discussed in Section 3.2, Growth, the type and location of the Build Alternatives are not sufficient to result in pressure for additional growth in western Riverside County. Accordingly, there is no reasonably foreseeable project-related growth expected to result from the proposed project.

As a result, the Build Alternatives were determined not to result in growth-inducing impacts.

O-8-47

Refer to responses to comments O-6-5 (on page O-217) and O-8-46 (above), earlier, which describe why the Build Alternatives would not result in growth-inducing impacts. As discussed starting on page 3.2-1 in Section 3.2, Growth, in the EIR/EIS, the majority of the areas along SR-91 and I-15 are built out or nearly built out. The project area is not a "fringe" area. As discussed in Section 3.1, Land Use, and Section 3.2, Growth, in the EIR/EIS, the majority of this area is built out or protected from development in parks and other open space uses. Refer to Figures 3.1-1 and 3.1-2 in Section 3.1, Land Use, which show existing and General Plan designated land uses. As shown on those figures, there are not substantial amounts of "undeveloped parcels" or areas of "high land availability" adjacent to the project study area that could be subject to development pressures. Further, the local jurisdictions' General Plans already identify and designate land uses and land use densities within all the areas in their jurisdictions. There are no areas in the cities and counties along SR-91 and I-15 shown as undesignated on those General Plans (refer to Section 3.1, Land Use, in the EIR/EIS). As a result, the minor improvements in operations on SR-91 and I-15 are not sufficient to create pressure for new or higher density development along the project segments of SR-91 and I-15. Refer also to responses to comments O-8-48 and O-8-50, below.

O-8-48

As discussed on page 3.2-10 in Section 3.2, Growth, in the EIR/EIS, the SR-91 CIP Build Alternatives would result in improvements to the operational performance of SR-91 and I-15 but would not add new interchanges with local roads or other freeways on either SR-91 or I-15, would not increase the capacity of local streets beyond the immediate vicinity of the interchanges on SR-91 and I-15, and would not provide new access between SR-91 and I-15. The Build Alternatives will not change accessibility to the freeway but will make the local interchanges operate more

efficiently and at an acceptable LOS. Although operations on SR-91 and I-15 would be improved, this would not result in a substantial change in accessibility to/from these corridors and, therefore, the project improvements would not substantially modify overall local, intra-regional, or inter-regional accessibility to and/or from SR-91 and I-15.

It is acknowledged that the SR-91 CIP general-purpose and HOV/tolled express lanes will increase the capacity on SR-91. However, as noted in Section 3.2, the SR-91 CIP is proposed in response to existing congestion and demand in that corridor and it would not increase accessibility to/from SR-91 and I-15. As a result, that increased capacity is not expected to influence the amount, timing, or location of growth in western Riverside County.

This comment asserts that the SR-91 CIP project area is in an urban/suburban "fringe." Refer to response to comment O-8-47, above.

O-8-49

Improvements in travel times are expected to have only a very minor effect on pressures for growth and development, as explained in the following text from page 3.2-12: "The improved travel times expected to be achieved as a result of Build Alternatives could have a slight increase on demand for residential and nonresidential uses in the project area or nearby cities. However, that influence is expected to be very minor when considered with other pressures for growth and development, specifically economic and market conditions in the area and developers available and interested in developing residential and/or nonresidential projects in western Riverside County. Demand for new development is largely driven by economic and market conditions. Improved travel times on SR-91 and I-15, while expected to benefit residents and businesses in this part of western Riverside County, are not expected by themselves to result in growth pressure for new residential or nonresidential uses in the area."

O-8-50

The overall study area is approximately 50 percent built out. However, a very large percentage of the study area that is not "built out" is protected from development in parks and other designated open space. Refer to Figures 3.1-1 and 3.1-2 in Section 3.1, Land Use, which show existing and General Plan designated land uses. Those figures show the areas used or designated for recreation and other open space. As shown on Figure 3.1-1, land available for development is very limited in the incorporated cities and the areas not protected in parks and other open space. The

pressure for development in those already urbanized areas is largely related to economic factors such as less expensive housing rather than available freeway access to other areas. In addition, as discussed starting on page 3.1-1 in Section 3.1, Land Use, in the EIR/EIS, future growth in these areas has already been accounted for in the local jurisdictions' adopted General Plans. As a result, the operational improvements in the Build Alternatives will not result in improvements in accessibility sufficient to increase demand for development in the areas along SR-91 and I-15.

O-8-51

Refer to response to comment O-8-50, above. Refer also to Section 3.1.1, Existing and Future Land Uses, starting on page 3.1-1 in the EIR/EIS, which clearly discusses the existing adopted General Plan land uses in the areas along SR-91 and I-15 and indicates much of that area is already built out or nearly built out consistent with those adopted General Plans. Future development in those areas is constrained by several factors. First, much of those areas are already built out or nearly built out. Second, and very importantly, the General Plans do not propose substantial changes in land uses or densities along the project segments of SR-91 and I-15. Overall economic conditions in the region and subregion are also very important factors in encouraging or discouraging development. Development and growth are dependent on consumers to acquire the product or service. Potential consumers must have sufficient economic resources to purchase and/or lease new developments. For example, if potential consumers do not have the economic resources to purchase new homes, then new home construction will slow until supply matches demand. Finally, the presence of existing development, parks, other open space, and the Santa Ana River create constraints to development because development is excluded from those areas.

O-8-52

Refer to responses to comments O-8-46 through O-8-51, above.

O-8-53

Refer to "Growth-Related Effects" in Table 3.25.3 on page 3.25-63 in the EIR/EIS, which indicates that "As discussed in Section 3.2, Growth, Alternatives 1 and 2 and their design variations would have little influence on the location, amount, rate, or type of growth in the study area. Because Alternatives 1 and 2 and their design variations would not result in direct or indirect growth-related effects, the potential

for the SR-91 CIP to contribute to cumulative impacts related to growth inducement was not further evaluated in this analysis. No mitigation is required."

As a result, although there may be growth-inducing impacts associated with other transportation and other development projects (including those listed in Tables 3.25.1 and 3.25.2 on pages 3.25-43 and 3.25-55, respectively, in the EIR/EIS), the SR-91 CIP would not result in growth-inducing impacts and therefore would not contribute to cumulative growth-inducing impacts, if any, associated with those other projects.

O-8-54

As reflected in the responses to comments O-8-1 through O-8-53, above, in other responses in this Appendix, and throughout the EIR/EIS, the Draft EIR/EIS as prepared and circulated to the public provides sufficient information to adequately and fully identify and assess the potential impacts of the proposed project and includes mitigation that is sufficiently detailed to adequately address those potential impacts. As a result, RCTC and the Department did not prepare or circulate a revised Draft EIR/EIS as proposed in this comment because such recirculation is not required under either CEQA or NEPA. Refer also to Section O.5.4.3, Recirculation of the Environmental Document, in Section O.5.4, Common Response Related to the Environmental Process and Schedule, on page O-15, for additional discussion regarding why RCTC and the Department did not prepare or circulate a revised Draft EIR/EIS because such recirculation was not required under either CEQA or NEPA.

Refer also to responses to comments O-8-2 through O-8-53, above.

3.0 EXISTING REGIONAL SYSTEM

Existing storm drain facilities will be protected in place where possible and extended to the limits of the SR-91 CIP. Existing concrete headwalls will be removed and the storm drain will be extended to the new grading limit. New headwalls or outlet structures will be constructed to drain to respective natural drainage course. Appendix A shows Site Photos. Exhibit B through Exhibit F shows the locations of the culverts and their tributary watersheds.

The existing drainage system for SR-91 has been in place for many years and in some places the system may be reaching the end of its expected service life. RCTC and Caltrans have agreed to work together in an effort to assess the structural integrity of the existing drainage system. RCTC will investigate the necessary locations and propose a fix prior to or during the Design-Build phase. A sample investigation process is described here:

- All culverts within the project limits will have their inlets and outlets photographed. Any laterals coming from the median will have their outlets photographed. The condition of the pipe material at these locations will be described.
- A strong flashlight could be used to examine the culvert. Any noticeable deformations will be noted. The presence of standing water will be noted.
- Based on what is seen at the inlet and outlet a more detailed investigation may be warranted. A suspect culvert may be remotely videoed and this may require the culvert be cleaned.
- Special consideration will be given to the larger culverts as they present the greatest threat to safety.
- Based on the investigation, a determination will be made regarding culvert rehabilitation (following Design Information Bulletin No. 83) or replacement.

Improvements to failing culverts will be made where necessary. Funding issues will be discussed with Caltrans depending on the nature of repairs and both agencies will develop a mutually acceptable plan to fix the problem areas during the construction phase.

Table 3.1 provides relevant information for the culverts that will be impacted by the SR-91 CIP.

Attachment "A"
Response to
comment O-8-7

O-9

AYRES HOTELS

A COLLECTION OF EUROPEAN BOUTIQUE HOTELS

July 18, 2011

Mr. Aaron Burton
Caltrans District 8
464 W 4th Street, 6th Floor
San Bernardino, CA 92401

RE: Comments for the State Route Corridor Improvement Project EIR, Ayres Hotel – 1900 Frontage Road, Corona

Dear Mr. Burton,

I am writing regarding the draft EIR for the SR91 expansion in regards to impacts to my property from the proposed constructions envisioned by alternatives outlined in the document. My concerns can be categorized in Two Areas: Loss of freeway view and Patron access. Below are some of these concerns in detail.

Visual

1. **Impact:** The freeway frontage views of my buildings will be lost because the East Bound Off ramp will block the sight lines for the motorists.
   Mitigation: Wayfinding measures should be implemented that would direct patrons to the obscured frontage road businesses.

2. **Impact:** The rerouting of the frontage road will disrupt the historical traffic patterns. We believe that it will be more difficult for existing and new patrons to find the businesses along the frontage road.
   Mitigation: Short term and long term Wayfinding solutions to direct traffic from the freeway exits to the Frontage Road businesses.

O-9-1

3. **Impact:** The installation of the proposed sound walls would further obscure the existing businesses on the Frontage Road.
   Mitigation: The sound walls in front of my property are deemed "feasible" but not "reasonable" in the EIR, so they should not be built.

4. **Impact:** The proposed East Bound Off Ramp will pose a significant opportunity for graffiti if it is not obscured by landscape screening or enhanced by theme graphics.
   Mitigation: City identity graphics should be incorporated on the walls or bridge structure to discourage graffiti. Where space is available, screen planting should be used to reduce the visual impact of the off ramp structure in view of Frontage Road businesses.

Phasing and Access Impacts

1. **Impact:** The Public access to my properties is vital for business viability during construction.
   Mitigation: Phasing plans should prioritize public access to businesses along Frontage Road. Closures must be avoided as these businesses are freeway patron dependant.

Respectfully submitted,

Bruce Ayres
President

355 Bristol Street, Suite A, Costa Mesa, California 92626 714.540.6060 Facsimile: 714.540.5408 www.ayreshotels.com

O-9-1

This letter was submitted after the close of the public comment period, and the commenting party did not request an extension of the review period from the Department. In compliance with the requirements of NEPA, responses to the comments in this comment letter are provided below.

Although for CEQA compliance purposes, no response to the comments in this letter is required (refer to Section 15088 in the State CEQA Guidelines), they are provided here as noted above.

The content of this letter from the owner of the Ayres Hotels is identical to the content of letter O-2 on page O-195. Letter O-2 was submitted by BMLA Landscape Architecture on behalf of the owner of the Ayres Hotels. Refer to responses to comments O-2-1 through O-2-9 starting on page O-196, provided earlier in this report.

WILDLIFE CORRIDOR CONSERVATION AUTHORITY
570 WEST AVENUE 26, SUITE 100, LOS ANGELES, CALIFORNIA 90065
TELEPHONE: (310) 589-3230
FAX: (310) 589-2408

O-10

July 20, 2011

Aaron Burton
California Department of Transportation
District 8
464 West Fourth Street
San Bernardino, California 92401

State Route 91 Corridor Improvement Project Draft Environmental Impact Report/Environmental Impact Statement

Dear Mr. Burton:

The Wildlife Corridor Conservation Authority (WCCA) has reviewed the State Route 91 Corridor Improvement Project Draft Environmental Impact Report/Environmental Impact Statement (DEIR/S). We request that you consider and address these comments. O-10-1

WCCA was created for the proper planning, conservation, environmental protection and maintenance of the habitat and wildlife corridor between the Whittier-Puente-Chino Hills and the Cleveland National Forest in the Santa Ana Mountains. As the last major natural open space resource connecting Los Angeles, Orange, San Bernardino, and Riverside Counties, the wildlife corridor provides essential relief from the urban environment. It exists as a single ecosystem in which changes that affect one part will invariably affect all other parts. O-10-2

In summary, WCCA is concerned with the major significant inadequacies of the DEIR/S in its portrayal of direct and indirect impacts on Chino Hills State Park (CHSP), biological resources, and recreational resources. The impacts are grossly understated, and the mitigation is clearly deficient. Therefore, we urge recirculation of this document. There would be project-specific and cumulative impacts from a multitude of freeway and other projects along State Route (SR)-91, some of which are interrelated with the subject project. WCCA maintains that the DEIR/S is deficient, and that the Final Environmental Impact Report/Environmental Impact Statement (FEIR/S) must provide additional serious consideration of less damaging alternatives and substantial additional mitigation. O-10-3

The DEIR/S Does Not Adequately Identify and Analyze Significant Impacts to Chino Hills State Park, Wildlife Movement, Other Biological Resources, and Recreational Resources

The DEIR/S does not provide an accurate representation of the actual significant project-specific and cumulative impacts to CHSP, wildlife movement, other biological resources, and recreational resources that would result from the proposed project, interrelated projects, and non-related nearby projects. The DEIR/S downplays those impacts. O-10-4

The DEIR/S continually emphasizes that 0.06 acre of impact to CHSP is "minor" (DEIR/S, p. 3.1-70) and California Department of Transportation (Caltrans) concluded a *de minimus* finding impact per Section 4(f) legislation[1] (DEIR/S, p. 3.1-75). In fact, the impacts on park resources, biological resources, and recreational resources are grossly understated.

All of the impacts together total more than 0.06 acre, in direct and indirect impacts, and the DEIR/S fails to acknowledge the significance of the impacts with respect to the location. Footings for three columns supporting the bridge structure would be located on a total of approximately 0.06 ac of land within the boundary of CHSP (DEIR/S, p. 3.1-60). The 0.06 ac would be at ground level below the 0.73 ac aerial easement for the elevated structure or bridge. Both alternatives (1 and 2) would result in one permanent subsurface easement in CHSP to accommodate subsurface tiebacks on the south side of SR-91 (i.e., a 1.65 ac subsurface easement under Alternative 1 and a 1.88 ac subsurface easement under Alternative 2). Table 3.1.6 of the DEIR/S (p. 3.1-63) identifies 2.0 ac within CHSP for temporary construction easements. Clearly, this totals to more than 0.06 ac. Also, regarding the subsurface easement, the DEIR/S does not appear to address any future maintenance or potential emergency work, and thus future disturbance, for any subsurface work. If in fact no maintenance would be needed or anticipated, then why would an easement be needed? Regarding the "temporary" impacts, the DEIR/S does not adequately address the period of impact. A year of construction work would have much greater impact (e.g., disturbance to wildlife) than for example, one week of construction work. O-10-5

The DEIR/S also fails to address the importance of the location of the impacts on the park. The project impacts would occur within a narrow stretch of CHSP (see Figure 2-16 of O-10-6

[1]Section 4(f) legislation is found at 23 United States Code (USC) 138 and 29 USC 303. Federal Highway Administration's final rule on Section 4(f) *de minimus* findings is codified in 23 Code of Federal Regulations (CFR) 774.3 and 23 CFR 774.17 (DEIR/S, p. 3.1-52).

DEIR/S), which is relevant for both human users and wildlife movement. This area is a key park entrance location (for people park users)[2] and a key part of the wildlife linkage. The impact in this area is important because of the key location, and because it is already constrained. O-10-6

Furthermore, there will be clearly a permanent significant impact to human park users. Users of the trail in CHSP would have very close views of a large retaining wall on the north side of SR-91 under Alternatives 1 and 2 (DEIR/S, p. 3.1-60). This permanent impact has not been adequately mitigated. O-10-7

As the DEIR/S (p. 3.17-13) states, Coal Canyon is the most important remaining wildlife connection between the Santa Ana Mountains and the Puente-Chino Hills. The project would widen the Coal Canyon undercrossing (DEIR/S, p. 3.17-18). There would also be increased noise, lighting, and potential for fire starts. The DEIR/S's conclusion (p. 3.25-31) that alternatives 1 and 2 would beneficially affect wildlife movements in the area defies logic. Clearly there are significant direct and indirect impacts to much greater than 0.06 ac. O-10-8

According to the DEIR/S (p. 3.1-74), a *de minimus* finding requires that the proposed action not adversely affect the activities, features, and attributes of the 4(f) resource. How can 4(f) de minimus finding be made, when in fact the proposed action clearly does adversely and significantly affect the park's recreational and biological resources? O-10-9

The project will have substantial impacts on coastal sage scrub (permanent impacts to 27.24 acres, DEIR/S, p. 3.17-15), and habitat potentially used by coastal California gnatcatchers (a bird species designated as threatened by the United States Fish and Wildlife Service). The DEIR/S is deficient for not defining impacts to gnatcatchers and their habitat in CHSP. O-10-10

The DEIR/S is also deficient for not fully addressing the consistency or inconsistency of the proposed project with any restrictions on CHSP land, which was partially funded in part by the Land and Water Conservation Fund. State Parks provided the following additional text to be included in the Section 4(f) analysis, in their October 23, 2009 letter on the Section 4(f) consultation: O-10-11

> ...the use of the two Coal Canyon parcels on the north and south side of SR-91 is limited by restrictive covenants and similar instruments. The Lead Agency will investigate restrictions on the proposed use of CHSP.

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[2]See State Parks' letter dated October 23, 2009. This is only existing public access point for hikers and vehicles in this southern portion of Chino Hills State Park.

As stated in the DEIR/S (p. 3.25-34), past and present SR-91 transportation improvements and other development in the RSA [resource study area] have contributed incrementally to the reduction of opportunities for wildlife to move north and south between the Santa Ana Mountains and Chino Hills. Some of these freeway projects are interrelated[3] and should be considered together in one California Environmental Quality Act (CEQA) document. Other projects that may not be interrelated would still contribute to significant cumulative impacts to biological and recreational resources in the area. Some of those projects are:

- SR-91/71 Interchange Improvement Project;
- new lane on SR-91 between SR-55 and SR-241[4];
- SR-91 Eastbound Lane Addition Between SR-241 and SR-71 (2007 Mitigated Negative Declaration);
- Santa Ana River Flood Control Project Reach 9, Phase 2A Embankment;
- Green River Mobile Home Embankment Project Reach 9 Phase II Portion of the Santa Ana River Mainstream Project; and
- Prado Basin and Vicinity Reach 9 and Stabilization of the Bluff Toe at Norco Bluffs, and Addendums.

O-10-12

Some of those impacts associated with these and other projects include, but are not limited to: widening of bridges, extension of culverts, direct loss of habitat, and "temporary" disturbance during construction (although construction time periods can in fact be quite long).

The DEIR/S also does not adequately address growth-inducing impacts of creating additional freeway capacity in a congested area.

O-10-13

Need for Serious Consideration of Alternatives

Because of these significant environmental impacts, the FEIR/S must include serious consideration of project alternatives, such as reversible lanes and an elevated structure within the SR-91 right-of-way. Alternatives must be thoroughly analyzed that do not result in direct impacts to CHSP and that avoid and minimize impacts to Coal Canyon and other sensitive biological resources.

O-10-14

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[3]"...several approved or planned projects in the project study area may affect or require design coordination with the proposed project." (DEIR, p. S-2).

[4]http://www.octa.net/weeklyupdate/weekly_update_071111.html

The DEIR/S Does Not Include Adequate Mitigation for Significant Impacts to Chino Hills State Park, Wildlife Movement, Other Biological Resources, and Recreational Resources

The DEIR/S does not provide adequate mitigation to offset those significant impacts to CHSP, wildlife movement, other biological resources, and recreational resources. In fact, in too many cases, the DEIR/S defers the specifics of the mitigation, relying on future consultation with other agencies, which could result in development of, and modifications to, mitigation measures.[5] Clearly consultation with State Parks is desired and of course mandatory, as State Parks will be involved in the Section 4(f) consultation, Section 6(f) Land and Water Conservation Fund consultation, and the issuance of a right-of-entry permit. However, that consultation should be well underway, and complete if possible, and the mitigation measures fleshed out prior to the FEIR/S. Clearly defined mitigation measures, notably those related to impacts to State Parks' land, must be included in the FEIR/S, affording the public and decision-makers the opportunity to evaluate the adequacy of the mitigation measures in relation to the impacts. Otherwise, the FEIR/S will be deficient. O-10-15

It is critical that the FEIR/S provide appropriate avoidance and mitigation measures to address impacts to Coal Canyon, rather than "write-off" the health of the Coal Canyon linkage, while relying on mitigation identified in another plan in another county, Riverside County (for example, see potential mitigation proposed for cumulative impacts, DEIR/S, pp. 3.25-32 through 3.25-35). The western Riverside County plan[6] does not even address Orange County, in which Coal Canyon is located. O-10-16

If the project as proposed does move forward, the FEIR/S should include a comprehensive mitigation package for the cumulative impacts to Coal Canyon, CHSP, Santa Ana River, rare wildlife and plant species, sensitive plant communities, and recreational resources. Mitigation should be substantial and on the order of hundreds of acres of actual land acquisition and permanent preservation to offset the impacts from this project and the other O-10-17

[5] "...the Department will continue to consult with State Parks on appropriate compensation for the use of land in CHSP protected under the requirements of Sections 4(f) and 6(f)...subject to refinement/modification..." (DEIR/S, p. 3.1-77); "Compensatory mitigation based on the Section 7 consultation for CAGN [coastal California gnatcatcher] and LBV [least Bell's vireo]..." (DEIR/S, p. S-28); Individual or Nationwide Corp permit, CDFG [California Department of Fish and Game] Streambed Alteration Agreement, Section 401 Water Quality Certification from the RWQCB [Regional Water Quality Control Board] (DEIR/S, p. S-27).

[6] Western Riverside County Multiple Species Habitat Conservation Plan

cumulative projects and growth-inducing projects. O-10-1

The DEIR/S (p. 3.25-34) states that it is not reasonable for any one project such as the proposed project or a private development project to mitigate for these cumulative impacts. The difficulty of coordinating mitigation for cumulative impacts from several projects does not relieve the lead agency from the responsibility to comply with the requirements and spirit of CEQA to identify significant environmental impacts and to avoid and mitigate those impacts, even if they are cumulative impacts. An attempt must be made. O-10-18

However, if Caltrans chooses not to acknowledge and address such cumulative impacts as required by CEQA, at the bare minimum, Caltrans must include well-defined mitigation in the FEIR/S to fully mitigate the direct and indirect impacts to CHSP, including Coal Canyon. Based on its prime location as a recreational and biological resource, that land to be impacted by the proposed project is irreplaceable. If the proposed project moves forward, then the highest level of offsite mitigation must be included in the FEIR/S. This must be at a bare minimum mitigation ratio of 20:1 (20 acres of mitigation land for every one acre of permanent impact), including mitigation for the acreage of the aerial easement. For any additional temporary impacts, the mitigation proposed should be 2:1 (two acres of land acquired or restored for every one acre impacted) to help offset the long-term temporal loss. The FEIR/S will be deficient unless there is well-defined mitigation, for example, specific parcels of land identified for acquisition and/or specific amount of funding to be designated for mitigation for direct and indirect impacts to CHSP. Said funding must be in place with the resource agency prior to construction. O-10-19

In addition to this substantial mitigation package, the following mitigation measures must be included to address the unique situation at CHSP:

- sound walls around Coal Canyon, and for a substantial additional distance as recommended by the State Parks ecologist, to mitigate noise, lighting, and increased potential for fire starts;
- native habitat restoration around Coal Canyon; and
- prohibition on construction in and around CHSP during nighttime. O-10-20

As outlined in this letter, WCCA is concerned with numerous deficiencies in the DEIR/S regarding identification of significant impacts to CHSP, Coal Canyon wildlife linkage, biological resources, and recreational resources, and the corresponding inadequate mitigation. WCCA recommends that the FEIR/S include additional analysis of impacts, serious consideration of project alternatives, and substantial mitigation to offset those impacts. The project proponents and decision-makers must seriously consider whether they want to sacrifice their parks of State-wide significance, and regionally significant biological and recreational resources, in order to promote a continually expanding major arterial in already congested areas. O-10-21

If you have any questions, please contact Judi Tamasi of our staff by phone at (310) 589-3230, ext. 121, or by email at judi.tamasi@mrca.ca.gov. Thank you for your consideration of these comments.

Sincerely,

Glenn Parker
Chairperson

O-10-1

This letter was submitted after the close of the public comment period for the Draft EIR/EIS, and the commenting party did not request an extension of the review period from the Department. In compliance with the requirements of NEPA, responses to the comments in this comment letter are provided below.

Although for CEQA compliance purposes, no response to the comments in this letter is required (refer to Section 15088 in the State CEQA Guidelines), they are provided here as noted above.

Refer to responses to comments O-10-2 through O-10-21, below.

O-10-2

No response is necessary because this comment describes the function of the Wildlife Corridor Conservation Agency (WCCA) but does not ask a question or provide a comment relative to the technical information or environmental analysis in the EIR/EIS.

O-10-3

Refer to Section O.5.5, Common Response Related to Chino Hills State Park, on page O-18 for discussion regarding the project effects on CHSP, mitigation included in the project to address those effects, the results of the consultation with State Parks and NPS. The analysis in Section 3.1, Land Use, and Appendix B, Resources Evaluated Relative to the Requirements of Section 4(f), in the EIR/EIS adequately and thoroughly documents the project effects at CHSP and the results of the consultation with State Parks and NPS. Therefore, RCTC and the Department did not recirculate the environmental document.

Refer also to Section O.5.4.3, Recirculation of the Environmental Document, in Section O.5.4, Common Response Related to the Environmental Process and Schedule, on page O-15, for discussion regarding why RCTC and the Department did not prepare or circulate a revised Draft EIR/EIS because such recirculation was not required under either CEQA or NEPA.

Refer also to Section O.5.7, Common Responses Related to Alternatives, on page O-30 in Section O.5, Common Responses, for discussion regarding the alternatives evaluated in the EIR/EIS and alternatives considered but not carried forward for detailed evaluation in the EIR/EIS.

Refer to Section O.5.10, Common Response Related to the Biological Opinion, on page O-39, for discussion regarding the Biological Opinion for the project received from the USFWS on November 30, 2011, and the project mitigation obligations.

Because this comment includes only general assertions regarding the adequacy of the document and does not provide specific examples of this commenter's concerns, no further response is required (refer to *Browning-Ferris Ind. v. City Council* (1986)181 Cal. App. 3d 852, 862 [where a general comment is made, a general response is sufficient]).

In addition, refer to responses to comments O-10-4 through O-10-21, below.

Refer also to responses to comments O-10-6, O-10-8, O-10-10, O-10-15, O-10-16, and O-10-17, below, for discussion regarding the project effects to biological resources.

O-10-4

The potential impacts of the project related to the cited environmental parameters are evaluated in detail in Chapter 3, Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures, and Chapter 4, California Environmental Quality Act Evaluation, in the EIR/EIS, including assessment of the severity of the impacts, whether the project contributes to cumulative impacts when considered with the effects of other projects, and, in Chapter 4, the significance of those impacts under CEQA.

The total area that will be used at CHSP is 0.48 ac; this includes most of the area under the aerial easement for the Green River Road westbound off-ramp (the two columns for the off-ramp will be within the area under the easement). Part of the area under the aerial easement is within the right-of-way for Prado Road, a public road. Because this is a public road and is not part of CHSP, that part of the area under the aerial easement was excluded when totaling the acreage in the park boundary that would be used by the SR-91 CIP. The 0.48 ac contains no park amenities or facilities and does not contain native plants. Access to the trail head and the park maintenance road in this area will not be affected by the SR-91 CIP.

The de minimis finding described on page 3.1-79 in the Draft EIR/EIS was clearly identified as a "Preliminary Section 4(f) De Minimis Finding." De minimis impacts on publicly owned parks are defined as those that do not adversely affect the activities, features, and attributes of the Section 4(f) property, after consideration of

avoidance, minimization, and mitigation measures. The use of land from CHSP, at 0.48 ac, will not adversely affect the activities, features, and attributes of the park because there are no park features or amenities in the 0.48 ac area proposed to be used. The 0.48 ac area proposed to be used is a very small percent of the overall park, and its use will not adversely affect the ability of park visitors to use the trail north of the Green River Road off-ramp or to use Prado Road (a public road) in that area. Refer to Section O.5.5.4, De Minimis Determination, on page O-22, which indicates that the Department made a determination that the project effects at CHSP would be de minimis and State Parks concurred with this determination on March 26, 2012.

This comment includes statements that the project effects are "understated." However, this comment does not include any information or analysis supporting the assertion that the project effects are understated. The project effects and the project contributions to cumulative effects are described in detail throughout Chapter 3, Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures, starting on page 3-1 in the EIR/EIS. Because this comment does not provide specific examples of where impacts are understated or what the analysis is that the commenter's conclusion is based on, no further response to this comment is required.

Refer to Section O.5.10, Common Response Related to the Biological Opinion, on page O-39, for discussion regarding the Biological Opinion for the project received from the USFWS on November 30, 2011, and the project mitigation obligations.

O-10-5

The impacts to CHSP are clearly defined and explained in Section 3.1, Land Use, and Appendix B, Resources Evaluated Relative to the Requirements of Section 4(f), in the EIR/EIS as follows:

- 0.48 ac permanent use
- 2.0 ac for TCEs
- 1.65 or 1.88 ac for a permanent subsurface easement, for Alternatives 1 and 2, respectively

The effect of the project on CHSP is not a total of these three acreages. The use of 0.48 ac of land from CHSP would be a permanent use that would be substantially mitigated as described in Section O.5.5 on page O-18.

The areas in CHSP used for TCEs would be used for the period of time needed to make the project improvements in those areas. This would be a few to several months, but not the entire construction period for the entire project. The areas used for TCEs would be revegetated and returned to their original or better condition prior to returning those areas to State Parks. The subsurface easements would not restrict most uses in State Parks above the areas where those subsurface easements would be located.

Therefore, the only permanent adverse effect would be the permanent use of 0.48 ac of land from CHSP, which would be mitigated.

No maintenance is expected to be required for the project facilities (tie-backs) in the subsurface easements in CHSP. Any maintenance that would be necessary would be conducted from the SR-91 right-of-way (similar to the construction of the tie-backs) and would not result in any surface disruption in CHSP.

O-10-6

The permanent use of land from CHSP, at 0.48 ac, will not adversely affect the activities, features, and attributes of the park because there are no park features or amenities in the 0.48 ac area proposed to be used. The 0.48 ac area proposed to be used is a very small percent of the overall park, and its use will not adversely affect the ability of park visitors to use the trail north of the Green River Road off-ramp or to use Prado Road (a public road) in that area. Users of the trail can access the trail from Prado Road or from within CHSP; neither of these access points will be changed by the SR-91 CIP. Note there is no vehicular access or vehicular parking for park visitors at this location. The only vehicular access in this area is an unpaved park maintenance road extending from Prado Road into the park that is not intended to be used by park patrons. Similarly, access for wildlife to cross under the freeway in this area will not be modified by the project.

The park entrance location described in this comment corresponds to the West Prado Road Undercrossing (Western Riverside County MSHCP Proposed Constrained Linkage 1). As described in Section 3.17.3.2, Permanent Impacts, on page 3.17-17, although the SR-91 CIP will widen this undercrossing, the openness ratio remaining after that widening would still be sufficient to allow large mammals to move along this corridor and is not expected to further constrain this linkage.

O-10-7

It is acknowledged that trail users will have views of a large retaining wall on the north side of SR-91 in the vicinity of the Green River Road overcrossing. This part of the park already includes views of SR-91, the Green River Road overcrossing, the BNSF railroad tracks, Prado Road, and the unpaved park maintenance road. Further east, trail users have views of existing residential uses east of CHSP. As a result, this part of the CHSP currently does not provide trail users with visually or aesthetically pleasing views. In addition, trail users in this area are transient and would not spend substantial amounts of time on the trail because there are no recreation amenities to attract trail users to stay long in this area. As a result, the changes in views from the trail in this area, while adverse, are not considered substantial and do not require mitigation.

O-10-8

Refer to responses to comments S-3-15 (page O-108), O-8-31 (page O-396), and O-8-33 (page O-397) for discussion regarding the project effects at and near Coal Canyon and, due to fire risk, adjacent to areas of open space (such as Coal Canyon).

O-10-9

The de minimis finding described on page 3.1-79 in the Draft EIR/EIS was clearly identified as a "Preliminary Section 4(f) De Minimis Finding." De minimis impacts on publicly owned parks are defined as those that do not adversely affect the activities, features, and attributes of the Section 4(f) property, after consideration of avoidance, minimization, and mitigation measures. The use of land from CHSP, at 0.48 ac, will not adversely affect the activities, features, and attributes of the park because there are no park features or amenities in the 0.48 ac area proposed to be used. The 0.48 ac area proposed to be used is a very small percent of the overall park, and its use will not adversely affect the ability of park visitors to use the trail north of the Green River Road off-ramp or to use Prado Road (a public road) in that area. In addition, the area does not contain native vegetation. As described in response to comment O-10-5, the project will result in the permanent use of only 0.48 ac of land from the park and includes revegetation of the 2.0 ac used for TCEs. As a result, the project would not result in adverse impacts on native plant communities in CHSP. Refer to responses to comments S-3-15 on page O-111 and O-8-31 on page O-397 for discussion regarding the project effects at and near Coal Canyon. Based on that information, the project effects at CHSP would be minimal. Refer to Section O.5.5.4, De Minimis Determination, on page O-22, which indicates that the Department made

a determination that the project effects at CHSP would be de minimis and State Parks concurred with this determination on March 26, 2012.

O-10-10

There will be no impacts to CAGN-occupied CSS vegetation in CHSP. Refer to responses to comments S-3-5 on page O-106 and S-3-11 on page O-108 for additional information regarding the project effects on CSS.

O-10-11

Refer to Section O.5.5, Common Response Related to Chino Hills State Park, on page O-18 for discussion regarding project compliance with the requirements of Section 6(f), including consultation with the NPS.

Refer also to response to comment O-8-30 on page O-395 for a detailed discussion regarding the agreements and other documents related to the land purchases for CHSP. The land in the vicinity of the Green River Road off-ramp that would be used for the proposed project is not subject to compliance with the requirements of the L&WCF Act because this land was not purchased or improved with L&WCF funds.

O-10-12

Refer to Section 3.25, Cumulative Impacts, starting on page 3.25-1 in the EIR/EIS, which describes the cumulative transportation and nontransportation projects considered in the cumulative impacts analysis and provides a discussion regarding the potential for the SR-91 CIP to contribute to cumulative impacts related to biological resources.

The projects cited in this comment are included in the list of projects in Section 3.25 as follows:

- SR-91/SR-71 Interchange Improvement Project: Table 3.25.1, Project ID Number 5
- New Lane on SR-91 between SR-55 and SR-241: Table 3.25.1 (there is no Project ID Number because it is west of the project study area)
- SR-91 Eastbound Lane Addition Project: Table 3.25.1, Project ID Number 3
- Army Corps Projects: Table 3.25.2, Project ID Numbers 47 and 48

O-10-13

Refer to Section 3.2, Growth, starting on page 3.2-1 in the EIR/EIS, which provides a detailed evaluation of the potential for the SR-91 CIP to result in growth-inducing

impacts. That analysis concluded that the SR-91 CIP would not result in growth-inducing impacts.

O-10-14

Refer to Section 2.3.8, Alternatives Considered but Eliminated from Further Discussion Prior to the Draft Environmental Document, starting on page 2-140 in the EIR/EIS, which describes a broad range of alternatives considered for the SR-91 corridor but not carried forward for evaluation in the Draft EIR/EIS.

O-10-15

Refer to Section O.5.5, Common Response Regarding Chino Hills State Park, on page O-18 for mitigation developed in consultation with State Parks. Refer also to Appendix E, Environmental Commitments Record, in the EIR/EIS for the total program of avoidance, minimization, and mitigation measures included in the SR-91 to address project effects related to parks, wildlife movement, and biological resources.

O-10-16

Because Coal Canyon is in Orange County, the Western Riverside County MSHCP does not apply. However, the SR-91 CIP is not expected to result in substantial permanent impacts to wildlife movement at Coal Canyon, as described in the "Wildlife Corridors" subsection on page 3.17-21 in Section 3.17.3.2 in the EIR/EIS.

As described in the "Wildlife Corridors" subsection on page 3.17-21 in Section 3.17.3.2 in the EIR/EIS, the project is not expected to result in substantial permanent impacts to wildlife movement at Coal Canyon. While not substantial, some permanent impacts are expected and will contribute to the cumulative impacts to wildlife movement at Coal Canyon. Based on present and reasonably foreseeable future actions, combined with the potential impacts of this project, some of the cumulative projects are expected to include design features that beneficially affect wildlife movement and some are expected to adversely affect wildlife movement as discussed in Section 3.25.5.9, Natural Communities, Plant Species, and Animal Species, on page 3.25-30 in the EIR/EIS. As an example of a known future beneficial project, the Department is proposing to install some planting in State right-of-way at Coal Canyon as a separate, unrelated project. Should this separate, unrelated project not take place, the SR-91 CIP will install plantings at Coal Canyon to improve the function of this wildlife corridor. To address project-related temporary, permanent, and cumulative impacts, Measures NC-6 through NC-14 and NC-16, which are described starting on page 3.17-29 in the EIR/EIS, are included in the project to

minimize or avoid impacts to, and improve, wildlife movement through the region, including Coal Canyon.

O-10-17

As discussed starting on page 3.25-30 in Section 3.25.5.9, the proposed project is expected to beneficially affect wildlife movement in the region based on design features and Measures NC-6 through NC-14 and NC-16. Therefore, a comprehensive mitigation package resulting in the acquisition of land and permanent preservation of resources is not warranted.

O-10-18

There is no intent stated or implied in the EIR/EIS on either page 3.25-40 or anywhere else that RCTC and/or the Department has not complied with the requirements of CEQA and NEPA to identify project contributions to cumulative impacts and to provide for mitigation to address the project's contribution to cumulative impacts. Section 3.25, Cumulative Impacts, starting on page 3.25-1 in the EIR/EIS, provides analysis of the potential for the SR-91 Build Alternatives to contribute to cumulative impacts for all the environmental parameters evaluated in the EIR/EIS. The text on page 3.25-40 was intended to indicate that no one agency or party should be responsible tor mitigating the total effects of all cumulative projects; further, it can be very difficult to coordinate mitigation for multiple projects, particularly when there are multiple lead agencies. Nonetheless, the EIR/EIS includes substantial mitigation (refer to Appendix E, Environmental Commitments Record, for all the project mitigation measures) to address the impacts of the SR-91 CIP Build Alternatives, including the potential contribution of those impacts to cumulative impacts when considered with the effects of other cumulative projects in the area.

O-10-19

The measures described in Section O.5.5, Common Response Related to Chino Hills State Park, on page O-18 and in Appendix E, Environmental Commitments Record, in the EIR/EIS will minimize, avoid, and mitigate the adverse impacts of the SR-91 CIP on natural and human resources. Any mitigation ratios will be developed in consultation with the resources agencies.

Mitigation under CEQA and NEPA is typically roughly proportionate to the severity/ amount/type of impact to avoid an unconstitutional taking from the project proponent. The requirement for rough proportionality of mitigation to impact results from the United States Supreme Court interpretations of the Constitution's Fifth Amendment taking clause. In two similar cases (*Tigard vs. Dolan* and *Nollan vs. California*

Coastal Commission), the court found that the degree of exactions (i.e., mitigation requirements) for a proposal must bear a reasonable relationship to the actual impacts of the proposed project. As such, the 20:1 mitigation ratio noted in this comment, which is not based on other mitigation ratios in the area or the experiences of RCTC and the Department in mitigating project effects, would be inconsistent with the rough proportionality requirement for mitigation. Refer to Sections O.5.5.5 through 0.5.5.7 starting on page O-24 in Section O.5, Common Responses, for discussion regarding the measures to address the project effects at CHSP.

O-10-20

Refer to response to comment O-10-19, above. The second two items on the bulleted list on page O-23 are included in the project mitigation measures. Sound walls are not proposed at Coal Canyon and are not included in the project.

Although sound walls at Coal Canyon are not proposed as part of the SR-91 CIP, the project does include the following measure to address State Parks' concerns related to fire, light intrusion, and fire risks along that segment of SR-91. The barriers in this measure will provide some reduction in noise effects outside the freeway right-of-way along this segment of SR-91.

UES-4 **Fire Prevention Adjacent to CHSP.** The final design of the SR-91 CIP Build Alternatives will include closing gaps so there is the equivalent of a continuous barrier 30 to 36 inches high on the edge of the shoulder on both westbound and eastbound SR-91 from SR-71 to SR 241, as follows:

- **Initial Phase:** The 36-inch-high concrete barrier on westbound SR 91 between SR-71 and Green River Road already included in the design alternatives will meet the requirements for this barrier.
- **Ultimate Project:** Close gaps to provide an equivalent continuous barrier 30 to 36 inches high on the edge of shoulder on SR-91 in both directions between Green River Road and SR-241, which will meet Caltrans standards applicable at the time.

O-10-21

Refer to responses to comments O-10-1 through O-10-20, above.