CHAPTER 3 CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) EVALUATION

The proposed project could have an adverse impact on the environment, and must satisfy the requirements of both the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). This combined Environmental Assessment (EA)/Environmental Impact Report (EIR) has been prepared in accordance with NEPA and CEQA.

Determination of significance under NEPA regulations involves consideration of context (setting) and intensity of the impact. The context to be considered may include society as a whole (human, national), the affected region, the affected interests, or the locality. Short and long term effects are relevant, though NEPA does not require individual significant effects to be specifically identified in an EA. For a site-specific action, such as the proposed tunnel project, significance would depend upon the effects upon the affected region or locale. Under NEPA, the degree to which a resource is impacted is used to determine whether a NEPA Environmental Impact Statement (EIS) or some other lower level of NEPA documentation would be required. For the purposes of the impact discussion in this document, determination of significant or potentially significant impacts is made only in the context of CEQA.

3.1 Determining Significance Under CEQA

The CEQA Guidelines Section 16064 (b) broadly defines a significant effect on the environment as a substantial or potentially substantial adverse change in the physical environment. One of the basic purposes of the CEQA is to inform state, regional, and local governmental decision makers and the public of impacts of proposed activities, and in particular, those impacts that are either significant or potentially significant.

Determining and documenting whether an activity may have a significant effect on the environment plays a critical role in the CEQA process. CEQA requires specific significant impacts to be determined in an EIR. Determination of significance under CEQA guidelines begins by eliminating impacts that are obviously insignificant. Those impacts whose significance is uncertain or potentially significant undergo studies. The studies determine if the impacts result in substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. A social or economic change may be considered in determining whether the physical change is significant. CEQA requires substantial evidence—"facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts"—in determining significance. Serious public controversy over the environmental effects of a project shall, however, be treated as an indicator of significance. Additionally, CEQA distinguishes four mandatory findings of significance:

- Potential to substantially degrade the environment, reduce the habitat of a fish and wildlife species, cause fish or wildlife populations to drop below self-sustaining levels, threaten or eliminate a plant or animal community, reduce the number or range of an endangered, rare, or threatened species, or eliminate important examples of the major periods of California history or prehistory;
- Potential to achieve short-term environmental goals to the disadvantage of long-term environmental goals;
- Environmental effects that are individually limited but cumulatively considerable; and
- Environmental effects will cause substantial adverse effects on human beings, either directly or indirectly.

3.1.1 CEQA Environmental Checklist

The CEQA Environmental Significance Checklist (Appendix A) identifies physical, biological, social, and economic factors that might be affected by the proposed project. This checklist is not a National Environmental Policy Act (NEPA) requirement. The findings for the CEQA checklist were determined in consultation with the technical studies prepared for this project listed in Appendix G. The CEQA impact levels include potentially significant impact, less than significant impact with mitigation, less than significant impact, and no impact. In many cases, background studies performed in connection with the project indicate no impacts. A "no impact" reflects this determination.

3.1.2 Discussion of Significant Impacts Under CEQA

3.1.2.1 SIGNIFICANT ENVIRONMENTAL EFFECTS OF THE PROPOSED PROJECT

The proposed project will not have any significant environmental effects. Chapter 2 discusses various environmental settings that may be affected by the Caldecott Improvement Project.

3.1.2.2 UNAVOIDABLE SIGNIFICANT ENVIRONMENTAL EFFECTS

The proposed project will not have any environmental effects that would remain significant even after mitigation measures are taken.

3.1.3 Mitigation Measures For Significant Impacts Under CEQA

The CEQA Checklist identified only the following items as a "Potentially Significant Impact" or "Less Than Significant With Mitigation Incorporation."

3.1.3.1 AESTHETICS

b) *Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?*

c) *Substantially degrade the existing visual character or quality of the site and its surroundings?*

To lessen visual effects, the following mitigation measures are proposed:

- Vines and/or shrubs would be planted to cover or completely screen views of new soundwalls and retaining walls constructed as part of this project.
- Soundwalls and retaining walls would be designed with Art Deco features to compliment the existing and new tunnel portal structures;
- Soundwalls would be designed with surface texture and stain to enhance the rural character of the corridor to blend with existing facilities;
- Areas where vegetation is removed for project construction shall be revegetated with similar types of tree and shrub species. Areas of particular concern for revegetation include the hillsides surrounding the new tunnel portal and the area between State Route 24 and Caldecott Lane; and
- Existing oak trees in areas affected by project construction shall be replaced with No. 15 (15-gal) size oak trees of same or approved species at a 5:1 ratio.

Implementation of these mitigation measures would reduce the adverse visual effects of the build alternatives.

3.1.3.2 HYDROLOGY AND WATER QUALITY

a) *Violate any water quality standards or waste discharge requirements?*

To minimize the project's impacts on water quality standards or waste discharge requirements, the following mitigation measures are proposed:

Best Management Practices (BMPs) will be incorporated into this project to reduce the discharge of pollutants during and after construction as well as permanently to the Maximum Extent Practicable (MEP). These BMPs fall into three categories, Temporary Construction Site BMPs, Design Pollution Prevention BMPs, and Permanent Treatment BMPs.

(a) Temporary Construction Site BMPs

Construction Site BMPs are implemented during construction activities to reduce pollutants in storm water discharges throughout construction. One critical construction activity, dewatering, will be necessary for this project because of the likelihood of encountering groundwater during tunnel excavation. Early discussion will be initiated regarding the handling and disposal of this water during the design phase. Groundwater will be recycled for use on the boring operation. Excess groundwater will be treated and discharged into an existing sanitary sewer inlet. This sanitary sewer system is under the jurisdiction of the City of Oakland and ultimately flows to an EBMUD wastewater treatment facility. . Dewatering BMPs and temporary holding devices, Baker Tanks, will be included in the contract documents to meet the dewatering requirements. Grading of existing slopes will be required. However, the use of retaining structures, especially in excavation areas, will minimize the amount of grading required. Temporary silt fences, stockpile cover, stabilized construction entrance/exit and temporary soil stabilizers are some of the temporary erosion and water pollution control measures that will be utilized in combination to prevent and minimize soil erosion and sediment discharges during construction. Given a projected disturbance of greater than 0.4hectares (1 acre), Storm Water Pollution Prevention Plan (SWPPP) will be developed during construction. This dynamic document addresses the deployment of various erosion and water pollution control measures that are required commensurate to changing construction activities.

Settlement tanks are proposed in combination with other sediment removal measures to treat groundwater and reduce sediment loads to acceptable thresholds for discharge into existing storm drain system. Addition of carbon dioxide gas to groundwater will reduce pH prior to discharge. Inspection of vehicles and equipment, use of adsorbent spill pads on spill fluid spills, use of oil/water separator and monitoring of total petroleum hydrocarbon (TPH) and treatment of groundwater prior to discharge will reduce the potential impact from TPH. Treatment of the groundwater and non-stormwater from the construction site may include use of the following technologies: sediment tanks, pH adjustment using carbon dioxide gas, weir tanks, sand filtration, coagulating/flocculating using polymers, cartridge filters and procedural Best Management Practices (BMPs) for pollution preventions.

Proper handling and disposal method will be determined based on the background chemical levels in groundwater and the typical chemical constituents expected from tunnel boring operations. The proposed disposal method is to: discharge to a City of Oakland sanitary sewer or storm drain. The existing sanitary sewer line is located near the eastbound Broadway Off-ramp, just prior to the Tunnel entrance, and ultimately flows to an EBMUD wastewater treatment facility. This existing sanitary sewer inlet currently receives Tunnel wash water.

Discharge to storm drain may require a separate NPDES Permit if Region 2 determines that the quantity and quality of discharge do not qualify for coverage under the Statewide NPDES Permit.

The following options will be considered for reuse of treated groundwater to maximize its utilization for the highest beneficial use: dust control, on-site irrigation and concrete batch plant.

(b) Permanent Design Pollution Prevention BMPs

Design Pollution Prevention BMPs are permanent measures to improve storm water quality by reducing erosion, stabilize disturbed soil areas, and maximize vegetated surfaces. Erosion control measures will be provided on all disturbed areas.

As earlier noted, the use of retaining wall structures will minimize the amount of open disturbed soil. Erosion control measures will utilize a combination of source and sediment control measures to prevent and minimize erosion from soil disturbed areas. Source controls will utilize erosion control netting in combination with hydroseeding. The biodegradable netting is effective in providing good initial mechanical protection while seed applied during the hydroseeding operation germinates and establishes itself. Other forms of source control such as tacked straw will also be used when applicable. Sediment controls such as biodegradable fiber rolls are used to retain sediments and to help control runoff from disturbed slope areas.

Outlet protection and velocity dissipation devices placed at the downstream end of culverts and channels are also permanent Design Pollution Prevention BMPs that reduce runoff velocity and control erosion and scour. The need of these devices for this project will be further investigated during the design phase.

(c) Permanent Treatment BMPs

Since this project is considered a major reconstruction project, with an estimated disturbed soil area over 1.2 hectares (3 acres) for all alternatives except the No-Build, it is not exempt from the consideration process for evaluating whether incorporating permanent Treatment BMPs are feasible. Treatment BMPs are permanent devices and facilities, which treat storm water runoff. Caltrans approved Treatment BMPs include: Biofiltration Systems (Biofiltration Strips and Swales), Infiltration Basins, Detention Basins, Traction Sand Traps, Dry Weather Flow Diversions, Media Filters, Gross Solids Removal Devices (GSRDs), Multi-Chamber Treatment Trains, and Wet Basins. Those most feasible in the Bay Area are Biofiltration Systems, Infiltration Basins, Detention Basins, Dry Weather Flow Diversions, Media Filters, Multi-Chamber Treatment Trains, and Wet Basins.

For either alternative, it is proposed to include a Dry Weather Flow Diversion device to accommodate tunnel washing and for emergency spills. Dry Weather Flow Diversion Devices direct flow through a pipe or channel to a local municipal sanitary sewer system for conveyance and treatment at a local wastewater treatment plant during dry weather. As previously mentioned, the existing tunnels currently have these devices to route tunnel washings to EBMUD, and similarly, the new bore will propose this device as well.

On both the Alameda County and the Contra Costa County sides of the tunnel, biofiltration systems, media filters, infiltration basins, and detention basins were evaluated as possible types of permanent Treatment BMPs and may be feasible to treat roadway runoff. During the design phase, the feasibility of these measures will be further investigated.

3.1.3.3 NOISE

d) *A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?*

The impact from construction activities would be temporary and would be minimized by implementing provisions in Section 7-1.01I, “Sound Control Requirements” of the Caltrans Standard Specifications. Abatement measures will include:

- A temporary noise barrier will be constructed at the construction staging area along Caldecott Lane. This barrier will be placed to break the line of sight from the staging area to as many as possible of the adjacent residences. The barrier will incorporate sound absorbing materials to control sound build up and reflections at the construction side;
- The concrete batch plant at the staging areas will be enclosed as required to attenuate the noise of the operating batch plant, such that the existing ambient noise levels are not increased as a result of the operation of the batch plant;
- In general, idling vehicles will be within the construction staging area and behind the temporary noise barrier;
- Temporary tunnel ventilation fans will be enclosed within a sound isolating structure;
- Noise from construction equipment will be required to be kept under the level 86 dBA at 15.2 meters (50 feet). This noise level restriction is commonly used on state projects and is consistently achievable; and
- Noise monitoring of construction activities will be conducted by the Department or its Contractor as needed to verify compliance with the noise limits.

In addition the following activities will not be allowed at night (dusk to dawn):

- Off-hauling of excavated material by trucks,
- Blasting, and
- Vehicle back-up alarms (Strobe lights or flagpersons will be utilized to the extent possible under California Occupational Health & Safety Administration (CAL OSHA) regulations), in accordance with state safety regulations.

Measurements of existing ambient noise levels have been made at several locations adjacent to the Caldecott Tunnel. These measurements included both daytime and nighttime noise. Ambient noise levels varied throughout the day. Peak noise levels were recorded from single events such as vehicular traffic (e.g., trucks, motorcycles). The ambient noise levels were then compared to expected noise levels from construction activities.

This analysis indicates that if noise from construction activities (including single events) does not exceed 86 dBA at a distance of 15.2 meters (50 feet)(which can be attained and monitored through the previously mentioned measures) and a temporary noise barrier is constructed, construction noise at the measurement locations is expected to be no louder than existing ambient noise.

For the staging area on the east side ambient readings were taken in the Grizzly Terrace area, which is the location with the most exposure to potential noise from construction. No temporary soundwall is proposed at this location because the analysis has determined that the residences will not receive noise above the existing ambient noise levels because of normal dissipation in noise over a distance.

3.1.3.4 CULTURAL RESOURCES - PALEONTOLOGY

c) *Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?*

To minimize the projects impacts on paleontological resources, a Paleontological Mitigation Plan (PMP) for the project will include, among other things, the following components:

- A pre-excavation site survey, literature review, repository review;
- Monitoring and salvage of fossils uncovered by earth moving activities;
- Recording associated specimen/sample data and corresponding geologic and geographic site data;
- Collection of sediment samples for microfossil analysis;
- Processing sediment samples to salvage microfossils;
- Preparation of fossils to the point of identification;

- Identification of fossils to the lowest taxonomic level possible;
- Accession and curation of fossil specimens into the designated repository; Archiving associated specimen and site data at the fossil repository; and
- Preparation of the final paleontological mitigation report.

Monitoring Earth Moving

Paleontologists will monitor earth moving in all areas of construction thought to be underlain by potentially fossiliferous sediments.

The Caltrans Resident Engineer (RE) has the authority to redirect excavations away from fossils in order to protect and preserve them. A Field Paleontologist will follow and monitor all heavy equipment operations, flag any newly discovered fossil sites and temporarily divert earth moving around the site, as necessary, until the fossil(s) has been evaluated and, if warranted, excavated. The flagged fossil site should be avoided by a minimum of 3 meters (10 feet) on all sides. During tunnel boring operations, a Field Paleontologist will monitor spoils as needed, and salvage any fossil specimens discovered.

Field Paleontologist. The Field paleontologist(s) will:

- conduct day-to-day monitoring of all earth moving activities;
- flag newly discovered fossil sites and temporarily divert earth-moving equipment around the site, as necessary, until the fossil(s) has been evaluated and, if warranted, salvaged;
- salvage fossils uncovered by earth moving;
- collect potentially fossiliferous sediment samples;
- collect sediment samples to recover microfossils;
- record associated specimen/sample and corresponding geologic and geographic site data; and
- conduct initial (field) processing of fossiliferous sediment samples for microvertebrate fossils.

Fossil Site Avoidance. If an unusually large or particularly significant fossil (e.g., nearly complete skeleton, new species, or an unusual concentration of smaller fossils (such as a fossil leaf flora, a fish fauna, or a microvertebrate site) is discovered during earth moving (road construction), the Field Paleontologist will:

- enclose the fossil site with brightly colored survey flagging tape, establishing an exclusion zone to temporarily divert earth moving around the site until the specimen or specimens can be evaluated and, if warranted, the fossil(s) salvaged;
- advise all heavy equipment operators to avoid the site until further notice; and
- notify the appropriate project personnel of the fossil discovery and of the necessity to avoid the site.

Fossil Treatment. All fossil specimens salvaged as a result of the PMP will be treated in full compliance with Society of Vertebrate Paleontology (SVP) standard guidelines for mitigating adverse construction-related environmental impacts on paleontological resources and SVP standard guidelines for the acceptance of a mitigation program fossil collection by a qualified repository.

Curation Agreement. A curation agreement with an approved paleontological repository will be in place before construction begins.

Full implementation of and compliance with mitigation measures will ensure that adverse impacts to paleontological resources will be kept to an insignificant level as required by CEQA. It is possible that full implementation of and compliance with these mitigation measures may result in beneficial

impacts, including the recovery and preservation of fossils that would not have been exposed without these project-related excavations and, therefore, would not have been available for scientific study or for public display in museums.

3.2 Climate Change

3.2.1 Regulatory Setting

While climate change has been a concern since at least 1988, as evidenced by the establishment of the United Nations and World Meteorological Organization's Intergovernmental Panel on Climate Change (IPCC), the efforts devoted to greenhouse gas[1] (GHG) emissions reduction and climate change research and policy have increased dramatically in recent years. In 2002, with the passage of Assembly Bill 1493 (AB 1493), California launched an innovative and pro-active approach to dealing with GHG emissions and climate change at the state level. AB 1493 requires the Air Resources Board (ARB) to develop and implement regulations to reduce automobile and light truck GHG emissions; these regulations will apply to automobiles and light trucks beginning with the 2009 model year.

On June 1, 2005, Governor Arnold Schwarzenegger signed Executive Order S-3-05. The goal of this Executive Order is to reduce California's GHG emissions to: 1) 2000 levels by 2010, 2) 1990 levels by the 2020 and 3) 80% below the 1990 levels by the year 2050. In 2006, this goal was further reinforced with the passage of Assembly Bill 32 (AB 32), the Global Warming Solutions Act of 2006. AB 32 sets the same overall GHG emissions reduction goals while further mandating that ARB create a plan, which includes market mechanisms, and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." Executive Order S-17-06 further directs state agencies to begin implementing AB 32, including the recommendations made by the state's Climate Action Team.

Climate change and GHG reduction is also a concern at the federal level; however, at this time, no legislation or regulations have been enacted specifically addressing GHG emissions reductions and climate change.

3.2.2 Affected Environment

"According to a recent white paper by the Association of Environmental Professionals[2], "an individual project does not generate enough greenhouse gas emissions to significantly influence global climate change. Global climate change is a cumulative impact; a project participates in this potential impact through its incremental contribution combined with the cumulative increase of all other sources of greenhouse gases

The Department and its parent agency, the Business, Transportation, and Housing Agency, have taken an active role in addressing GHG emission reduction and climate change. Recognizing that 98 percent of California's GHG emissions are from the burning of fossil fuels and 40 percent of all

[1] Greenhouse gases related to human activity include: Carbon dioxide, Methane, Nitrous oxide, Tetrafluoromethane, Hexafluoroethane, Sulfur hexafluoride, HFC-23, HFC-134a*, and HFC-152a*.

[2] Hendrix, Micheal and Wilson, Cori. Recommendations by the Association of Environmental Professionals (AEP) on How to Analyze Greenhouse Gas Emissions and Global Climate Change in CEQA Documents (March 5, 2007), p. 2.

human made GHG emissions are from transportation, the Department has created and is implementing the Climate Action Program at Caltrans (December 2006).

One of the main strategies in the Department's Climate Action Program to reduce GHG emissions is to make California's transportation system more efficient. The highest levels of carbon dioxide from mobile sources, such as automobiles, occur at stop-and-go speeds (0-25 miles per hour) and speeds over 55 mph. Relieving congestion by enhancing operations and improving travel times in high congestion travel corridors will lead to an overall reduction in GHG emissions.

The Caldecott Tunnel is the primary bottleneck on State Route 24. Freeway capacity at the tunnels is reduced from eight to six lanes. Congestion related delays caused by the lane reduction have increased travel times and transportation costs. The configuration of the three existing tunnel bores, in which the middle two-lane bore reverses depending on demand (providing only two lanes in one direction), results in delay throughout the peak periods, early evenings, and on weekends. Maintenance workers need to reverse traffic flow twice a day during the week and several times (up to ten times) during a busy weekend. Congestion occurs daily at variable levels.

The alternatives considered included tunnel alternatives, street and highway operations, mass transit, bicycle access, and the No-Build alternative. (40 CFR Section 1502.4) Alternatives were formulated for their ability to meet the project objectives of improving mobility, relieving congestion, maintaining trip reliability, and enhancing the overall safety for motorists and maintenance personnel in the project area. In addition, other factors such as cost, environmental impacts, operational efficiency, and maintainability of the built system were considered. The two-lane alternative and the three-lane alternative both north of the existing tunnels and the No-Build Alternative were carried forward in the DED. The tunnel alternatives best met the need and purpose of the proposed Caldecott Improvement Project. The two-lane alternative was subsequently chosen as the Preferred Alternative.

The construction of the Preferred Alternative will reduce delay, eliminate the need for daily tunnel reversals and reduce congestion in the non-peak direction. Eliminating the daily tunnel reversals will increase safety for Caltrans personnel and the public. To the extent that traffic congestion relief is achieved, the construction of the Preferred Alternative will also have a beneficial effect on the potential for congestion-related accidents and the response time of emergency vehicles.

On a region-wide basis the construction of a fourth bore is projected to decrease total vehicle miles traveled (VMT) by 0.2%. (VMT is the total miles traveled by all motor vehicles in the nine county Bay Area over a typical 24 hour weekday.) This projected reduction is presumably due to travelers taking advantage of the decreased congestion to take a more direct route to their destinations. This change is very small and there are definite limits to the precision of travel demand models so it should not be taken as a guarantee that vehicle miles traveled will decrease by exactly this amount. It's most important significance is that regardless of its actual effect on region wide VMT, the effect should be very small.

The Department recognizes the concern that carbon dioxide emissions raise for climate change. However, modeling and gauging the impacts associated with an increase in GHG emissions levels, including carbon dioxide, at the project level is not currently possible. No federal, state or regional regulatory agency has provided methodology or criteria for GHG emission and climate change impact analysis. Therefore, the Department is unable to provide a scientific or regulatory based conclusion regarding whether the project's contribution to climate change is cumulatively considerable.

The Department continues to be actively involved on the Governor's Climate Action Team as ARB works to implement AB 1493 and AB 32. As part of the Climate Action Program at Caltrans (December 2006), the Department is supporting efforts to reduce vehicle miles traveled by planning

and implementing smart land use strategies: job/housing proximity, developing transit-oriented communities, and high density housing along transit corridors. The Department is working closely with local jurisdictions on planning activities; however, the Department does not have local land use planning authority. The Department is also supporting efforts to improve the energy efficiency of the transportation sector by increasing vehicle fuel economy in new cars, light and heavy-duty trucks. However it is important to note that the control of the fuel economy standards is held by the United States Environmental Protection Agency and ARB. Lastly, the use of alternative fuels is also being considered; the Department is participating in funding for alternative fuel research at the University of California Davis.

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