Appendix C Avoidance, Minimization, and/or Mitigation Summary

C.1 Avoidance and Minimization Measures

Traffic Impacts

Transportation management measures will be in place to minimize impacts on emergency services and transit operators. All work affecting traffic lanes will be at night and off-peak hours. Stage construction and temporary concrete barriers will be required. Construction of viaducts and other structures will require detouring/shifting traffic around the areas under work. A public awareness campaign, portable changeable message signs, and Construction Zone Enhanced Enforcement Program (COZEEP) will be included in the project. Lane closure charts will be developed during the PS&E phase of the project

Visual/ Aesthetics

All disturbed areas will be replanted with trees, shrubs, grasses, and new irrigation will be installed. The concrete retaining walls will have an aesthetic treatment to compensate for the additional height and visual impact. Integral brown color will be added to reduce glare and visual boredom. The chain link fence will have a dark coating to make it inconspicuous.

With the above project features, there would be no negative impacts to the visual environment.

Cultural Resources

If cultural materials are discovered during construction, all earth-moving activity within and around the immediate discovery area would be diverted until a qualified archaeologist could assess the nature and significance of the find.

If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall cease in any area or nearby area suspected to overlie remains, and the County Coroner contacted. Pursuant to Public Resources Code Section 5097.98, if the remains are thought to be Native American, the coroner will notify the Native American Heritage Commission (NACH), who will then notify the Most Likely Descendent (MLD). At this time, the person who discovered the remains will contact the Caltrans District 3 Archaeologist so that they may work with the Most Likely Descendent on the respectful treatment and disposition of the remains. Further provisions of Public Resources Code 5097.98 are to be followed as applicable.

Hydrology/Floodplain

The mixed-flow connector and the San Juan Road Bridge will be designed to minimize their impacts on the floodplain.

Water Quality

The SWRCB has issued Caltrans a Statewide NPDES Permit (Board Order 99-06-DWQ). This permit regulates the storm water and non-storm water discharges associated with project construction activities and discharges associated with normal maintenance and operations of Caltrans facilities. The permit also serves as a State of California Waste Discharge Requirement. Compliance with this permit requires that the appropriate BMPs are employed that achieve the performance standards of Best Available Technology Economically Achievable/Best Conventional Pollutant Control Technology to reduce or eliminate storm water pollution. To limit any sediments and pollutants from impacting drainages as well as diminish erosion in the project area, BMPs will be implemented during construction.

Construction Activity Permitting: Caltrans' NPDES permit is linked to the Construction General Permit; Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction Activities (Order No. 99-08 DWQ) which regulates discharges from construction sites. By law, all storm water discharges associated with construction activity where clearing, grading, and excavation results in soil disturbance of at least 1 acre of total land area, such as this project, must comply with the provisions of this NPDES Permit and develop and implement an effective Storm Water Pollution Prevention Plan (SWPPP). Caltrans' requires the submission of a Notification of Construction (NOC) to the RWQCB at least 30 days prior to construction and prepare the SWPPP prior to the beginning of construction. Implementation of the SWPPP starts with the commencement of construction and continues through the completion of the project. Upon completion of the project, Caltrans must submit a Notice of Completion of Construction (NOCC) to the RWQCB to indicate that construction is complete.

Construction Dewatering Permit: Construction dewatering activity is defined as pumped or drained discharges of groundwater and/or storm water from excavations or other points of accumulation associated with a construction activity. Dewatering discharges cannot be considered as an automatic conditionally exempt discharge through the permit, but rather it may be conditionally exempt once the proposed discharge is reported, reviewed, and approved on case-by-case basis by the Central Valley RWQCB. Otherwise, Caltrans must implement the appropriate BMPs to meet the conditions of the Central Valley RWQCB to ensure dewatering is not a source of pollutants in the storm drain system or surface water once it is discharged. The project is not anticipating dewatering. However, any dewatering that may take place due to the number of irrigation ditches within the project limits will be coordinated with Central Valley RWQCB during the PS&E phase through the Caltrans district NPDES coordinator.

The proposed project is not expected to cause substantial downstream erosion or siltation. However, the practices outlined in the Storm Water Management Plan and Statewide Storm Water Practice Guidelines ensure that certain minimum design elements be incorporated into projects to maintain or improve water quality. The key elements are as follows:

- Prevent Downstream Erosion – design of drainage facilities to avoid causing or contributing to downstream erosion. Drainage outfalls, when appropriate, will discharge to suitable control measures.

- Stabilize Disturbed Soil Areas – design would incorporate stabilization of disturbed areas (when appropriate) with seeding, vegetative or other types of cover.

- Maximize Existing Vegetative Surfaces – design would limit footprints of cuts and fills to minimize removal of existing vegetation.

With the preceding measures in place through the design of the project , along with BMPs during construction, the project as planned would not create a substantial increase in downstream erosion or siltation.

Paleontology

A Paleontological Monitoring and Curation Plan would be implemented. This plan contains guidance in the following areas:

- The contract and task order requirements for monitoring and mitigation.
- The general field and laboratory methods proposed.
- Any relevant curation requirements.
- An overview of report content and format.
- Proposed report distribution.
- The staff qualifications needed to implement the PMP.

When the final grading plans are prepared, a qualified paleontologist responsible for conducting the mitigation will review the final depths of disturbance, assess the potential for disturbance of known and potentially fossiliferous strata, and adjust the mitigation plan if needed.

Hazardous Waste

During project construction activities, removing ACMs must be accomplished by an appropriately certified contractor in a way that contains, collects, and disposes of the small quantity of ACM in accordance with state and federal law. Appropriate Special Provisions for this work should be included in the project's construction contract; the Contractor is responsible to do this notification in a timely manner.

Surplus excavated soil if any, along I-80 with the exception of Truxel Road ramps, will not be disposed of outside the project limits without being sampled and tested to determine the level of ADL contamination in order to ensure that the waste soil is appropriately disposed of as a hazardous, regulated or unregulated waste, or whether the soils are suitable for reuse or disposal with no restrictions.

Caltrans will ensure that a Health and Safety Plan is implemented and addresses the potential effects of the various chemical compounds that could be encountered within the project area. The Health and Safety Plan will include evaluations of the suspected chemical hazards, including symptoms of exposure and emergency treatment, appropriate use of personal protection equipment, and air monitoring.

The Contractor shall prepare a project specific "Lead Compliance Plan" pursuant to Title 8 of the California Code of Regulations - Section 1532.1, to prevent or minimize worker exposure to lead.

Any removed yellow traffic stripe material will be tested prior to disposal at an appropriate waste facility. Appropriate Special Provisions for this work shall be included in the project's construction contract.

The routine use of hazardous materials, such as gasoline or diesel fuel for construction equipment, will be required by the project. Equipment to clean up fuel leaks and spills will be available at each project construction location. The Contractor will be required to safely store materials and immediately clean up spills if they occur.

Air Quality

Most of the construction impacts to air quality are short-term in duration and, therefore, will not result in adverse or long-term conditions. Implementation of the following measures will reduce any air quality impacts resulting from construction activities:

- The Contractor shall comply with *Caltrans Standard Specifications* Section 14-9.01 and Section 10 of *Caltrans Standard Specifications* (2006).
- Water or dust palliative will be applied to the site and equipment as frequently as necessary to control fugitive dust emissions.
- Soil binder will be spread on any unpaved roads used for construction purposes, and all project construction parking areas.
- Trucks will be washed off as they leave the right of way as necessary to control fugitive dust emissions.
- Construction equipment and vehicles shall be properly tuned and maintained. Low-sulfur fuel shall be used in all construction equipment as provided in California Code of Regulations Title 17, Section 93114.

- Develop a dust control plan documenting sprinkling, temporary paving, speed limits, and expedited revegetation of disturbed slopes as needed to minimize construction impacts to existing communities.
- Locate equipment and materials storage sites as far away from residential and park uses as practical. Keep construction areas clean and orderly.
- To the extent feasible, establish ESAs for sensitive air receptors within which construction activities involving extended idling of diesel equipment would be prohibited.
- Use track-out reduction measures such as gravel pads at project access points to minimize dust and mud deposits on roads affected by construction traffic.
- Cover all transported loads of soils and wet materials prior to transport, or provide adequate freeboard (space from the top of the material to the top of the truck) to reduce PM_{10} and deposition of particulate during transportation.
- Remove dust and mud that are deposited on paved, public roads due to construction activity and traffic to decrease particulate matter.
- To the extent feasible, route and schedule construction traffic to reduce congestion and related air quality impacts caused by idling vehicles along local roads during peak travel times.
- Install mulch or plant vegetation as soon as practical after grading to reduce windblown particulate in the area.
- If NOA is found during construction, rules and regulation of the Sacramento Metropolitan Air Quality Management District regarding NOA must be adhered to when handling this material.

Wetlands and Other Waters of the US

The proposed project footprint was designed to minimize the addition of paved and disturbed areas where possible. The proposed interchange modification includes flyover connectors which have a much smaller footprint than standard ramp connectors, decreasing potential impacts to wetlands. Work within bridge areas, with the exception of the San Juan Bridge, has been designed within the limits of the existing structures.

In order to avoid permanent impacts to the East Natomas DC, the replacement of the San Juan Bridge was redesigned to follow the existing alignment. This design change avoided 0.006 acres of impacts to the East Natomas DC which is classified as ‘Other Waters of the US and under the jurisdiction of the USACE.

Roadside ditches that are affected by this project will be re-graded at the toe of slope of the widened structure.

Environmentally Sensitive Areas (ESAs) will be identified around Wetlands and Other Waters of the US that will not be affected by the project. ESA fencing will be installed to prevent unintentional impacts to these areas.

Burrowing Owl

A qualified biologist shall survey suitable habitat in the ESL and adjacent areas for burrowing owls no more than 30 days prior to the start of construction. If burrowing owls or signs of burrowing owls are detected, CDFG shall be contacted to determine the best course of action.

Swainsons' Hawk

The project design avoids impacts to nesting habitat of this species. The proposed interchange modification includes flyover connectors which have a much smaller footprint than standard ramp connectors which decreased the impact to Swainson's hawk foraging habitat. Due to the extended period of time between the circulation of this document and construction of the project, surveys will be conducted by a qualified biologist with sufficient time prior to construction to consult with CDFG regarding a 2081 Incidental Take Permit if any Swainson's hawks have begun nesting within the ESL and the nest tree will be affected by the project.

Giant Garter Snake

Environmental study areas (ESAs) will be established and marked by highly visible ESA fencing prior to the start of construction within giant garter snake potential habitat areas. These areas will separate the work area from the remaining giant garter snake upland habitat and the giant garter snake aquatic habitat. Contractor encroachment, including the staging/operation of heavy equipment or casting of excavation materials, into ESAs will be prohibited. ESA provisions shall be implemented as a first order of work, and remain in place until all construction activities are complete.

The following measures listed in the "Standard Avoidance and Minimization Measures During Construction Activities in Giant Garter Snake *(Thamnophis gigas)* Habitat" (USFWS 2005a) outlined below.

1) When feasible, avoid construction activities within 200 feet from the banks of giant garter snake aquatic habitat. Confine movement of heavy equipment to existing roadways to minimize habitat disturbance.

2) Construction activity within habitat should be conducted between May 1 and October 1. This is the active period for giant garter snakes and direct mortality is lessened, because snakes are expected to actively move and avoid danger. Between October 2 and April 30 contact the Service's Sacramento Fish and Wildlife Office to determine if additional measures are necessary to minimize and avoid take.

3) Confine clearing to the minimal area necessary to facilitate construction activities. Flag and designate avoided giant garter snake habitat within or adjacent to the project area as ESAs, as outlined above. These areas should be avoided by all construction personnel.

4) Construction personnel should receive Service-approved worker environmental awareness training. This training instructs workers to recognize giant garter snakes and their habitat(s).

5) 24-hours prior to construction activities, the ESL will be surveyed for giant garter snake. Surveys of the ESL will be repeated if a lapse in construction activity of two weeks or greater has occurred. If a snake is encountered during construction, activities shall cease until appropriate corrective measures have been completed or it has been determined that the snake will not be harmed. Report any sightings and any incidental take to the Service immediately by telephone at (916) 414-6600.

6) Any dewatered habitat should remain dry for at least 15 consecutive days after April 15 and prior to excavating or filling of the dewatered habitat.

7) After completion of construction activities, remove any temporary fill and construction debris and, wherever feasible, restore disturbed areas to pre-project conditions. Restoration work may include such activities as replanting species removed from banks or replanting emergent vegetation in the active channel.

8) Follow the conservation measures in Table 27 to minimize the effects of loss and disturbance of habitat on giant garter snakes. Replacement ratios are based on the acreage and on the duration of disturbance.

Table 43 Summary of Giant Garter Snake Conservation Measures

EFFECTS:	EFFECTS:	CONSERVATION MEASURE:
Temporary (1 season)	Temporary impacts will not exceed 20 acres and no permanent impacts.	Restoration
Temporary (2 seasons)	Temporary impacts will not exceed 20 acres and no permanent impacts.	Restoration plus 1:1 replacement
Temporary (More than 2 seasons)	Temporary impacts will not exceed 20 acres and no permanent impacts.	3:1 Replacement (or restoration plus 2:1 replacement)
Permanent loss	The project will not exceed three acres of giant garter snake habitat and will impact less than one acre of aquatic habitat.	3:1 Replacement

Giant garter snake habitat includes two acres of surrounding upland habitat for every one acre of aquatic habitat. The two acres of upland habitat also may be defined as 218 linear feet of bankside habitat that incorporates adjacent uplands to a width of 200 feet from the edge of each bank. Each acre of created aquatic habitat should be supported by two acres of surrounding upland habitat. Compensation may include creating upland refuges and locations for the snake to hibernate for the giant garter snake that are above the 100-year floodplain. A

season is defined as the calendar year period between May 1 and October 1, the active period for giant garter snake when mortality is less likely to occur.

Giant Garter Snake Habitat Restoration: Following project completion, all areas temporarily disturbed during construction will be restored following the "Guidelines for Restoration and/or Replacement of Giant Garter Snake Habitat", outlined below.

6) Re-grade the area to pre-project contour, or a contour that would improve restoration potential of the site.

7) Replant and hydroseed the restoration area. Recommended plantings consist of a) wetland emergents, b) low-growing cover on or adjacent to banks, and c) upland plantings/hydroseeding mix to encourage use by other wildlife. Riparian plantings are not appropriate because shading may result in lack of basking sites. Native plantings are encouraged except where non-natives will provide additional values to wildlife habitat and will not become invasive in native communities.

8) Emergent wetland plants recommended for giant garter snake habitat are California bulrush, cattail, and water primrose. Additional wetland plantings may include common tule, Baltic rush or duckweed.

9) Cover species on or adjacent to the bank may include California blackberry or California wild grape along with the hydroseeding mix recommended below.

10) Upland plantings/hydroseeding mix: Disturbed soil surfaces such as levee slopes should be hydroseeded to prevent erosion. The Service recommends a mix of at least 20-40 percent native grass seeds such as annual fescue, California brome, blue wild rye, and needle grass; 2-10 percent native forb seeds, five percent rose clover and five percent alfalfa. Approximately 40-68 percent of the mixture may be non-aggressive European annual grasses such as wild oats, wheat and barley. Aggressive non-native grasses will not be included in the hydroseed mix. Mixes of one hundred percent native grasses and forbs may also be used, and are encouraged.

Migratory Birds

The following avoidance and minimization measures will be implemented to minimize potential effects to special-status animal species:

01 – Establish Environmentally Sensitive Areas
02 – Limit Vegetation Removal
03 – Containment Measures/Construction Site Best Management Practices
04 – Minimize Disturbance to Jurisdictional Waters
05 – Restore Wetland, Riparian, and Stream Habitat Disturbed by Construction

06 – Dewatering Activities
07 – Restrict Timing of In-Stream Activities
09 – Restrict Timing of Woody Vegetation Removal
10 – Nesting Bird Surveys
11 – Pre-construction Pond Turtle Surveys
12 – Pre-construction Burrowing Owl Surveys
15 – Pre-construction Roosting Bat Surveys
16 – Bird and Bat Exclusion Measures

Invasive Species

In compliance with the Executive Order on Invasive Species, E.O. 13112, and subsequent guidance from the Federal Highway Administration, the landscaping and erosion control included in the project will not use species listed as noxious weeds. In areas of particular sensitivity, extra precautions will be taken if invasive species are found in or adjacent to the construction areas. These include the inspection and cleaning of construction equipment and eradication strategies to be implemented should an invasion occur.

C.2 Mitigation Measures

Visual Impacts

Nineteen acres of new trees, shrubs and irrigation systems will be installed between the property line and the new auxiliary lanes as compensation for the loss of vegetation and highway planting.

Swainsons' Hawk

Compensatory mitigation for impacts to Swainson's hawk foraging habitat will follow the Staff Report Regarding Mitigation for Impacts to Swainson's Hawks in the Central Valley of California (DFG, 1994). As outlined, impacts to foraging habitat shall be mitigated for at a 1:1 ratio for impacts within one mile of an active nest, thus 9.85 acres of Swainson's hawk foraging habitat mitigation will be needed.

Giant Garter Snake

Compensatory mitigation shall be determined according to the "Standard Avoidance and Minimization Measures During Construction Activities in Giant Garter Snake Habitat" (USFWS 2005a). Temporary impacts are expected to last for one season and will be revegetated following the measures outlined in Section 2.26.10.

Permanent impacts will be compensated for at a 3:1 ratio. A total of 5.28 acres of giant garter snake upland habitat mitigation will be required to fully compensate for project impacts. All

mitigation will be completed within the Sacramento River watershed and will be approved by USFWS.

Wetlands and other waters

Impacts to jurisdictional wetlands and other Waters of the United States will be mitigated at a 1:1 ratio at an USACE approved mitigation bank. An estimated 0.227 acres or mitigation credits will be required to mitigate for project impacts

Appendix D Mobile Source Air Toxics- Information That Is Unavailable Or Incomplete

Information That Is Unavailable or Incomplete

Evaluating the environmental and health impacts from mobile source air toxics (MSATs) on a proposed highway project would involve several key elements, including emissions modeling, dispersion modeling in order to estimate ambient concentrations resulting from the estimated emissions, exposure modeling in order to estimate human exposure to the estimated concentrations, and then final determination of health impacts based on the estimated exposure. Each of these steps is encumbered by technical shortcomings or uncertain science that prevents a more complete determination of the MSAT health impacts of this project.

Emissions

The United States Environmental Protection Agency (USEPA) tools to estimate MSAT emissions from motor vehicles are not sensitive to key variables determining emissions of MSATs in the context of highway projects. While MOBILE 6.2 is used to predict emissions at a regional level, it has limited applicability at the project level. MOBILE 6.2 is a trip-based model—emission factors are projected based on a typical trip of 7.5 miles, and on average speeds for this typical trip. This means that MOBILE 6.2 does not have the ability to predict emission factors for a specific vehicle operating condition at a specific location at a specific time. Because of this limitation, MOBILE 6.2 can only approximate the operating speeds and levels of congestion likely to be present on the largest-scale projects, and cannot adequately capture emissions effects of smaller projects. For particulate matter, the model results are not sensitive to average trip speed, although the other MSAT emission rates do change with changes in trip speed. Also, the emissions rates used in MOBILE 6.2 for both particulate matter and MSATs are based on a limited number of tests of mostly older-technology vehicles. Lastly, in its discussions of PM under the conformity rule, EPA has identified problems with MOBILE 6.2 as an obstacle to quantitative analysis.

These deficiencies compromise the capability of MOBILE 6.2 to estimate MSAT emissions. MOBILE 6.2 is an adequate tool for projecting emissions trends, and performing relative analyses between alternatives for very large projects, but it is not sensitive enough to capture the effects of travel changes tied to smaller projects or to predict emissions near specific roadside locations.

Dispersion

The tools to predict how MSATs disperse are also limited. The USEPA's current regulatory models, CALINE3 and CAL3QHC, were developed and validated more than a decade ago for the purpose of predicting episodic concentrations of carbon monoxide to determine compliance with the National Ambient Air Quality Standards (NAAQS). The performance of dispersion models is more accurate for predicting maximum concentrations that can occur at

some time at some location within a geographic area. This limitation makes it difficult to predict accurate exposure patterns at specific times at specific highway project locations across an urban area to assess potential health risk. The National Cooperative Highway Research Program is conducting research on best practices in applying models and other technical methods in the analysis of MSATs. This work also will focus on identifying appropriate methods of documenting and communicating MSAT impacts in the National Environmental Policy Act (NEPA) process and to the general public. Along with these general limitations of dispersion models, the Federal Highway Administration (FHWA) is also faced with a lack of monitoring data in most areas for use in establishing project-specific MSAT background concentrations.

Exposure Levels and Health Effects

Finally, even if emission levels and concentrations of MSATs could be accurately predicted, shortcomings in current techniques for exposure assessment and risk analysis preclude us from reaching meaningful conclusions about project-specific health impacts. Exposure assessments are difficult because it is difficult to accurately calculate annual concentrations of MSATs near roadways, and to determine the portion of a year that people are actually exposed to those concentrations at a specific location. These difficulties are magnified for 70-year cancer assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over a 70-year period. There are also considerable uncertainties associated with the existing estimates of toxicity of the various MSATs, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population. Because of these shortcomings, any calculated difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with calculating the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against other project impacts that are better suited for quantitative analysis.

Summary of Existing Credible Scientific Evidence Relevant to Evaluating the Impacts of MSATs

Research into the health impacts of MSATs is ongoing. For different emission types, there are a variety of studies that show that some either are statistically associated with adverse health outcomes through epidemiological studies (frequently based on emissions levels found in occupational settings) or that animals demonstrate adverse health outcomes when exposed to large doses.

Exposure to toxics has been a focus of a number of EPA efforts. Most notably, the agency conducted the National Air Toxics Assessment (NATA) in 1996 to evaluate modeled estimates of human exposure applicable to the county level. While not intended for use as a measure of or benchmark for local exposure, the modeled estimates in the NATA database

best illustrate the levels of various toxics when aggregated to a national or state level.

The USEPA is in the process of assessing the risks of various kinds of exposures to these pollutants. The USEPA Integrated Risk Information System (IRIS) is a database of human health effects that may result from exposure to various substances found in the environment. The IRIS database is located at http://www.epa.gov/iris. The following toxicity information for the six prioritized MSATs was taken from the IRIS database Weight of Evidence Characterization summaries. This information is taken verbatim from USEPA's IRIS database and represents the Agency's most current evaluations of the potential hazards and toxicology of these chemicals or mixtures.

- Benzene is characterized as a known human carcinogen.
- The potential carcinogenicity of acrolein cannot be determined because the existing data are inadequate for an assessment of human carcinogenic potential for either the oral or inhalation route of exposure.
- Formaldehyde is a probable human carcinogen, based on limited evidence in humans, and sufficient evidence in animals.
- 1,3-butadiene is characterized as carcinogenic to humans by inhalation.
- Acetaldehyde is a probable human carcinogen based on increased incidence of nasal tumors in male and female rats and laryngeal tumors in male and female hamsters after inhalation exposure.
- Diesel exhaust is likely to be carcinogenic to humans by inhalation from environmental exposures. Diesel exhaust as reviewed in this document is the combination of diesel particulate matter and diesel exhaust organic gases.
- Diesel exhaust also represents chronic respiratory effects, possibly the primary noncancer hazard from MSATs. Prolonged exposures may impair pulmonary function and could produce symptoms, such as cough, phlegm, and chronic bronchitis. Exposure relationships have not been developed from these studies.

There have been other studies that address MSAT health impacts in proximity to roadways. The Health Effects Institute, a nonprofit organization funded by EPA, FHWA, and industry, has undertaken a major series of studies to research near-roadway MSAT hot spots, the health implications of the entire mix of mobile source pollutants, and other topics. The final summary of the series is not expected for several years.

Some recent studies have reported that proximity to roadways is related to adverse health

outcomes—particularly respiratory problems.[5] Much of this research is not specific to MSATs, instead surveying the full spectrum of both criteria and other pollutants. The FHWA cannot evaluate the validity of these studies, but more importantly, they do not provide information that would be useful to alleviate the uncertainties listed above and enable us to perform a more comprehensive evaluation of the health impacts specific to this project.

Relevance of Unavailable or Incomplete Information to Evaluating Reasonably Foreseeable Significant Adverse Impacts on the Environment, and Evaluation of Impacts Based upon Theoretical Approaches or Research Methods Generally Accepted in the Scientific Community

Because of the uncertainties outlined above, a quantitative assessment of the effects of air toxic emissions impacts on human health cannot be made at the project level. While available tools do allow us to reasonably predict relative emissions changes between alternatives for larger projects, the amount of MSAT emissions from each of the project alternatives and MSAT concentrations or exposures created by each of the project alternatives cannot be predicted with enough accuracy to be useful in estimating health impacts. (As noted above, the current emissions model is not capable of serving as a meaningful emissions analysis tool for smaller projects.) Therefore, the relevance of the unavailable or incomplete information is that it is not possible to make a determination of whether any of the alternatives would have "significant adverse impacts on the human environment."

In this document, Caltrans, as assigned by FHWA, has provided a qualitative analysis of MSAT emissions relative to the various alternatives, and has acknowledged that (some, all, or identify by alternative) the project alternatives may result in increased exposure to MSAT emissions in certain locations, although the concentrations and duration of exposures are uncertain, and because of this uncertainty, the health effects from these emissions cannot be estimated.

[5] South Coast Air Quality Management District, Multiple Air Toxic Exposure Study-II (2000); Highway Health Hazards, The Sierra Club (2004) summarizing 24 Studies on the relationship between health and air quality); NEPA's Uncertainty in the Federal Legal Scheme Controlling Air Pollution from Motor Vehicles, Environmental Law Institute, 35 ELR 10273 (2005) with health studies cited therein.