
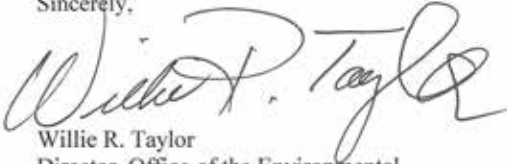



## **FEDERAL AGENCY COMMENTS AND RESPONSES**

Code	Comment Document
1	<p><b>From:</b> Lewis, Charles [mailto:chip.lewis@bia.gov] <b>Sent:</b> Thursday, October 09, 2014 11:35 AM <b>To:</b> Yedlin, Rebecca (FHWA) <b>Cc:</b> Rodney McVey; Garry Cantley; Cecilia Martinez <b>Subject:</b> South Mountain Freeway Final Environmental Impact Statement (FEIS)</p> <p>Rebecca,</p> <p>We are in receipt of the subject FEIS delivered to this office on September 26, 2014.</p> <p>The Bureau of Indian Affairs - Western Region (BIA) has no additional comment or concern with the document.</p> <p>Thank you for partnering with BIA as a cooperating agency, and as stated in our July comments on the administrative draft, for the deference shown to the Gila River Indian Community in the document.</p> <p>Best of luck moving forward to project implementation.</p> <p>Chip Lewis</p> <p>-- Chip Lewis Environmental Protection Specialist DOI-BIA/WRO/DOT (602) 379-6782</p>


Code	Issue	Response
1		Comment noted.

Code	Comment Document
	<div><div><div><div>United States Department of the Interior</div><div>OFFICE OF THE SECRETARY</div><div>Washington, DC 20240</div><div>NOV 13 2014</div></div></div><div>9042.1 PEP/NRM</div><div>ER-13/0257F</div><div><div>Mr. Alan Hansen</div><div>Team Leader</div><div>Planning, Environment, Air Quality</div><div>and Right-of-Way (PEAR)</div><div>USDOT-FHWA</div><div>Arizona Division</div><div>4000 N. Central Avenue</div><div>Phoenix, Arizona 85012</div></div><div>Dear Mr. Hansen:</div><div><div>1</div><div><p>The Department of the Interior (the Department) has reviewed the <i>South Mountain Freeway (Loop 202) Final Environmental Impact Statement and Section 4(f) Statement</i>. The Department agrees that South Mountain Park and Preserve (SMPP) is a Land and Water Conservation Fund (LWCF) assisted site that will be directly impacted by the subject project. These documents assess the direct use of park land for freeway purposes to be 31.3 acres. We agree with the conclusions stated. We note that the “Measures to Minimize Harm” on the <i>Section 4(f) Statement</i> pages 5-23, 5-24, and 5-25 have annotated a commitment to provide replacement land for the converted park land. The Department concurs with the assessment of the impacts to the LWCF-assisted resource and acknowledges the mitigation commitment.</p><p>Should you have questions in regards to the LWCF comments, please contact Bob Anderson, Chief, Recreation Grants Division, National Park Service Midwest Regional Office at (402) 661-1540. We appreciate the opportunity to provide these comments.</p><div><div>Sincerely,</div><div></div><div><div>Willie R. Taylor</div><div>Director, Office of the Environmental</div><div>Policy and Compliance</div></div></div></div><div>cc: Karla S. Petty</div></div></div>

Code	Issue	Response
1		Comment noted.

Code	Comment Document
	<div><div><b>UNITED STATES ENVIRONMENTAL PROTECTION AGENCY</b> <b>REGION 9</b> 75 Hawthorne Street San Francisco, CA 94105-3901</div><p>December 22, 2014</p><p>Karla Petty Arizona Division Administrator Federal Highway Administration 4000 North Central Avenue, Suite 1500 Phoenix, AZ 85012</p><p>Subject: Final Environmental Impact Statement for the South Mountain Freeway Project, Maricopa County, Arizona [CEQ#20140275]</p><p>Dear Ms. Petty:</p><p>The U.S. Environmental Protection Agency has reviewed the Final Environmental Impact Statement (EIS) for the South Mountain Freeway Project. Our review and comments are provided pursuant to the National Environmental Policy Act, the Council on Environmental Quality Regulations (40 CFR Parts 1500-1508), and our NEPA review authority under Section 309 of the Clean Air Act.</p><p>As described in the Final EIS, the South Mountain Freeway Project is a proposal to build a new 8-lane freeway extending approximately 22 to 24 miles from the Interstate 10 and Santan Freeway interchange westward through the community of Ahwatukee, paralleling the Gila River Indian Community (GRIC) border, and turning north to reconnect with Interstate 10 west of downtown Phoenix. The Final EIS has identified a preferred alternative which runs primarily along the existing Pecos Road alignment on the eastern end and connecting to 59<sup>th</sup> Avenue on the western end.</p><div><div>1</div><p>On July 23, 2013, EPA provided comments to FHWA on the Draft EIS for this project and rated the document as “3 – Inadequate Information.” Our rating was based upon a lack of information important to analyzing the project’s potentially significant impacts on air quality, including assessment and disclosure of potential PM10 hotspot impacts and confirmation of whether the project meets the Clean Air Act’s Transportation Conformity requirements. We appreciate the new information which has been incorporated into the Final EIS and would like to thank FHWA for working closely with EPA over the past year to develop the analysis of PM10 and the determination of Transportation Conformity. We understand that, based upon lessons learned during the South Mountain Freeway NEPA process, FHWA and ADOT are working on improving their approach to the interagency consultation process to initiate earlier consultation on technical issues, such as modeling inputs, receptors, meteorological data and background concentrations, along with making determinations as to whether proposed projects are projects of air quality concern. We look forward to coordinating with FHWA and ADOT following this new approach for future projects.</p><p>Based upon our review of the Final EIS, EPA has a few remaining comments regarding the Transportation Conformity analysis and assessment of PM10 hotspot impacts. We have continuing</p></div></div>

Code	Issue	Response
1	Introduction	<p>The Arizona Department of Transportation and Federal Highway Administration thank the U.S. Environmental Protection Agency for working closely with the two agencies to develop the most advanced and thorough air quality evaluation completed for an environmental impact statement for a transportation project in Arizona to date. With the U.S. Environmental Protection Agency’s guidance, the Arizona Department of Transportation and Federal Highway Administration continue their efforts to improve the interagency consultation process, including initiating earlier consultation on technical issues for future projects.</p> <p>The Arizona Department of Transportation and Federal Highway Administration acknowledge the “3 – Inadequate” rating the U.S. Environmental Protection Agency assigned to the Draft Environmental Impact Statement because of a lack of information important to analyzing the project’s potentially adverse impacts on air quality. The Arizona Department of Transportation and Federal Highway Administration proactively engaged in a collaborative process with the U.S. Environmental Protection Agency to address this issue, leading to the positive outcome noted in the paragraph above.</p> <p>The history leading to this positive outcome is worth describing. The air quality conformity analysis in the Draft Environmental Impact Statement followed the Federal Highway Administration’s policy guidance, <i>Clarification of Transportation Conformity Requirements for FHWA/FTA Projects Requiring Environmental Impact Statements</i>. That guidance establishes that demonstration of transportation conformity must be disclosed in the Final Environmental Impact Statement. This is important to note because the Arizona Department of Transportation and Federal Highway Administration chose to discuss conformity in the Draft Environmental Impact Statement even though the guidance did not require this (in doing so, noting that the analyses would be updated upon receipt of updated socioeconomic data for disclosure in the Final Environmental Impact Statement). Consequently, the Arizona Department of Transportation and Federal Highway Administration were held to a higher standard, and the U.S. Environmental Protection Agency elected to use that higher standard by applying a sufficiency rating prematurely, given that a conformity analysis is not required until the Final Environmental Impact Statement stage in the environmental impact statement process.</p> <p>However, the Arizona Department of Transportation and Federal Highway Administration acknowledge the benefits of the collaborative process prompted by the rating, as exemplified by the U.S. Environmental Protection Agency e-mail dated August 21, 2014 (see Appendix D of the Record of Decision). In that e-mail, the agency confirmed that the updated air quality analysis adequately demonstrated that the project met the Clean Air Act’s transportation conformity requirements (further verified in the comment letter on the following pages from the U.S. Environmental Protection Agency, which confirmed the determination of transportation conformity).</p> <p>The Arizona Department of Transportation and Federal Highway Administration provide further responses and clarifications to the detailed comments outlined in the U.S. Environmental Protection Agency’s letter in the following pages.</p> <p>The Arizona Department of Transportation and Federal Highway Administration appreciate the continued opportunity to engage the U.S. Environmental Protection Agency on this and other future roadway projects in Arizona.</p>

Code	Comment Document
	<p>concerns regarding the analysis and discussion provided in the Final EIS regarding possible near-roadway health impacts along the proposed new freeway corridor, including impacts to children and sensitive receptors. Additionally, we have continuing concerns with the analysis of the No Action Alternative, as well as impacts to both aquatic resources and wildlife connectivity. These issues and recommendations for the Record of Decision, are addressed in the enclosed detailed comments.</p> <p>We appreciate the opportunity to review this Final EIS and look forward to working with FHWA and ADOT to address our concerns on this, and future, roadway projects in Arizona. If you have any questions, please contact me, or your staff may continue to coordinate with Clifton Meek at (415) 972-3370 or meek.clifton@epa.gov. Please send a copy of the Record of Decision and associated response to comments on the Final EIS to the address above (mail code ENF 4-2).</p> <p>Sincerely,</p> <p></p> <p>Lisa B. Hanf, Assistant Director Enforcement Division</p> <p>Enclosures:</p> <ul style="list-style-type: none"><li>(1) EPA Detailed Comments on the South Mountain Freeway Final EIS</li><li>(2) EPA's Additional Information on Assessing Near-Roadway Health Effects</li></ul> <p>cc via email: Alan Hansen, Federal Highway Administration Rebecca Yedlin, Federal Highway Administration John Halikowski, Arizona Department of Transportation Ralph Ellis, Arizona Department of Transportation Chaun Hill, Arizona Department of Transportation Kathleen Tucker, U.S. Army Corps of Engineers Kelly Wolff-Krauter, Arizona Game and Fish Department Steve Spangle, U.S. Fish and Wildlife Service Gregory Mendoza, Gila River Indian Community Dennis Smith, Maricopa Association of Governments</p> <p>2</p>

Code	Issue	Response



Code	Comment Document
	<p>U.S. EPA DETAILED COMMENTS ON THE FINAL ENVIRONMENTAL IMPACT STATEMENT FOR THE SOUTH MOUNTAIN FREEWAY PROJECT, MARICOPA COUNTY, ARIZONA, DECEMBER 22, 2014</p> <p><u>Air Quality</u></p> <p><b>2</b> <b>Transportation Conformity</b></p> <p>Since completing our review of the Draft EIS for the South Mountain Freeway project in July 2013, EPA has been working closely with FHWA to address project-level Transportation Conformity requirements, including the need to analyze the “worst-case intersection” with the highest total PM10 concentrations. Both Chapter 4 of the Final EIS and the Air Quality Technical report describe the worst-case intersection, where the new roadway would connect to I-10 west of Phoenix, as being analyzed for the purposes of conformity requirements, while both the 40<sup>th</sup> Street and Broadway Road intersections are characterized as being analyzed for NEPA purposes only. However, the results of the Transportation Conformity analysis demonstrate that the 40<sup>th</sup> Street Interchange is the location with the highest total PM10 concentrations. EPA’s PM10 hot-spot guidance states, “it may be appropriate in some cases to focus... on the locations of highest air quality concentrations,” and thus it is important that the 40<sup>th</sup> Street interchange also be characterized as being analyzed for conformity purposes. EPA recommends that this be clarified in the Record of Decision (ROD).</p> <p><u>Mobile Source Air Toxics</u></p> <p><b>3</b> While we appreciate the expanded discussion of Mobile Source Air Toxics (MSATs) in the Final EIS, we have continuing concerns about the characterization of near-roadway emissions directly adjacent to the new freeway corridor. On page 4-79, the Final EIS states that total MSAT emissions are estimated to decline by as much as 91 percent in the study area; however, this is the case only because the document presents an estimated value of MSAT emissions that combines the impact of the new freeway alignment with emissions from the adjacent, and existing, I-10 freeway, as well as other roadways in the area. This methodology does not provide the information needed to characterize the MSAT emissions anticipated solely along the new freeway corridor.</p> <p>The carbon monoxide and PM10 analyses indicate that concentrations of criteria pollutants along the new freeway corridor will increase relative to current levels, which suggests that MSAT emissions along the corridor would increase as well. The potential increase indicated by these analyses would occur despite the fact that per-vehicle emissions are declining substantially over time as a result of EPA regulations. Therefore, the conclusion that MSAT emissions will decrease by as much as 91 percent pertains only to the overall study area, and does not apply to the potential impacts that may be experienced directly adjacent to the project corridor. A refinement to the existing discussion, by limiting the scope of analysis to the near-roadway corridor, would allow for conclusions to be made about possible site-specific increases in emissions. Specifically, what impacts will receptors experience directly adjacent to the new roadway and how does this compare with impacts they may experience currently, in the absence of an adjacent high-volume freeway? This analysis is relevant given the historical interest in potential impacts from the proposed freeway, and will aid in more meaningful disclosure, even when considering the context provided in the Final EIS that previous risk assessments suggest these increases are not likely to pose a significant health risk to populations along the corridor.</p> <p>In addition to recommending an updated discussion of near-roadway health effects in the ROD, EPA is also providing the attached additional information for FHWA and ADOT to consider when discussing</p> <p>1</p>

Code	Issue	Response
2	Air Quality	<p>Based on the U.S. Environmental Protection Agency’s guidance, and in consultation with the Arizona Department of Transportation, Federal Highway Administration, and U.S. Environmental Protection Agency, the Interstate 10 interchange was selected for detailed hot-spot modeling for the purpose of demonstrating project conformity. The Interstate 10 interchange (W59 Alternative) is the freeway-to-freeway interchange between the South Mountain Freeway and Interstate 10 (Papago Freeway) at the north end of the project area. It was selected because it has the highest traffic volumes of any interchange in the project area and is expected to experience poor levels of service during peak hours. Additional analyses were conducted at other locations (Broadway Road interchange and 40th Street interchange) for National Environmental Policy Act purposes and to provide information about projected concentrations at other representative locations along the corridor. The hot-spot analysis showed that the modeled particulate matter (PM<sub>10</sub>) concentrations were highest at the Interstate 10 interchange (12.9 micrograms per cubic meter) when compared to the Broadway Road interchange (5.3 micrograms per cubic meter) and the 40th Street interchange (3.8 micrograms per cubic meter). When the non-project influences (background value) are added to these modeled values, the 40th Street interchange is the location with the highest total concentration followed by the Interstate 10 interchange and the Broadway Road interchange. The clarification requested by the U.S. Environmental Protection Agency has been added to the Record of Decision in the section, <i>Conformity with Air Quality Plans</i>, beginning on page 68.</p> <p>All of the locations analyzed, Interstate 10, 40th Street, and Broadway Road, resulted in total concentrations below the National Ambient Air Quality Standards, so this change requested by the U.S. Environmental Protection Agency does not affect the project’s conformity determination.</p>
3	Mobile Source Air Toxics	<p>As explained in the Final Environmental Impact Statement and response to comments, Federal Highway Administration mobile source air toxics emissions assessments in the agency’s National Environmental Policy Act documents are designed to evaluate emissions changes within a study area, including roadway segments where traffic volumes change as a result of the project. The U.S. Environmental Protection Agency’s risk estimates for mobile source air toxics pollutants are based on 70-year lifetime exposure. As explained in the Final Environmental Impact Statement and response to comments, it is more likely that a person will be within a study area for 70 years than at a fixed location near the proposed corridor for 70 years. Thus, emissions changes in a study area are a more reliable indicator of potential changes in health risk. Emissions from Interstate 10 and other roadway segments affected by the project are included because people will be exposed to changes in emissions from those roadway segments as well as those from the South Mountain Freeway. While the U.S. Environmental Protection Agency has repeatedly requested estimates of emissions along the project corridor itself, it has never explained why this is believed to be more representative of changes in 70-year health risk than a study area-level analysis.</p> <p>The Federal Highway Administration acknowledges that emissions will be higher on average along the project corridor when the project is built, compared with the No-Action Alternative. However, emissions will likely decrease elsewhere in the Study Area. While the Federal Highway Administration did not calculate any site-specific emissions changes for the South Mountain Freeway or any other roadway segments, the <i>Traffic Overview</i> report provides an indication of where this could occur. For example, Table 19 in the <i>Traffic Overview</i> report shows that traffic</p>

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	<p>and analyzing uncertainty, risk comparison, and literature sources associated with the health effects of MSATs.</p> <p><u>Analysis of the No Action Alternative</u></p> <p>In our comment letter on the Draft EIS, EPA noted the need to analyze the No Action Alternative using updated socioeconomic projections that do not assume completion of the South Mountain Freeway. In the Final EIS, there continues to be a lack of analysis regarding the projected differences in land use and emissions if no freeway were to be built. While we understand that FHWA and ADOT used the information available to them from General Plan documents, we continue to recommend that the likely differences in land use, emissions, and congestion impacts between the Action and No Action alternatives be fully disclosed. Methods exist to complete these types of projections and “scenario planning”, and such analyses can help the public and decision-makers better understand the timing and location of induced growth and traffic impacts that may occur as a result of the action alternatives.</p> <p>As stated in the Final EIS, the traffic analyses for South Mountain Freeway were completed by distributing the Arizona Department of Administration population and employment projections for Maricopa County to smaller geographic areas,</p> <p>“using the latest available data, including general plans for local jurisdictions, and a state-of-the-art land use model system called AZ-SMART. The nationally-recognized UrbanSim microsimulation model was integrated into AZ-SMART and used to allocate county projections of population and employment to regional market areas based upon the pre-existing location of these activities, land consumption, and transportation system accessibility.”</p> <p>These socioeconomic projections were then aggregated to Traffic Analysis Zones using AZ-SMART.</p> <p>As noted in EPA’s comments on the Draft EIS, the underlying general plans used in these analyses assume that the South Mountain Freeway is complete. For example, the Estrella Village Core Plan (Adopted by Phoenix City Council Feb. 4, 2009) states: “Bisecting the core is the proposed Loop 202 that will connect the existing loop 202 in the southeast valley to I-10. This plan is based upon the assumption that the freeway will be an integral part of development within the core.” These assumptions are reflected on Page 4-7 of the Final EIS, which states: “Versions of the proposed action most closely aligned with the W59 and E1 Alternatives have been accounted for in long-range planning by municipalities (most notably, the City of Phoenix).” Additionally, the Final EIS states on page 4-14 that the “Phoenix <i>General Plan</i> for Laveen Village has designated areas for commercial development that cannot support the projected densities without implementation of the proposed action;” and further, on page 4-19, that the “land use plan designations associated with [the Laveen and Estrella village] cores are predicated, in part, on proximity to the freeway corridor.” These statements contradict other conclusions in the document that suggest land-use and development trends in the project area would be maintained regardless of whether the South Mountain Freeway is built. On the contrary, these general plans suggest that future land-use and development trends in areas surrounding the freeway are dependent on the freeway being built and, as such, have explicitly assumed completion of the proposed action.</p> <p>As a result, in the Final EIS, there continues to be inconsistency in the modeling inputs that result in an inability to make comparisons of the traffic operations and emission changes between the No Action Alternative and Preferred Alternative. The “No Action” scenario includes population and employment projections that assume the “Preferred Alternative” is built, with the build and no-build scenarios both using the same forecast of future population and employment. To model traffic volumes, speed, and</p> <p>2</p>

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3 (cont.)		<p>volumes on nearly all sections of Interstate 10 analyzed will decrease with the project; Table 20 shows that traffic volumes on nearly all affected sections of arterial streets will also decrease. It is reasonable to assume that since traffic volumes decrease relative to the No-Action Alternative, mobile source air toxics emissions will also decrease. Tables 23 and 24 of the <i>Traffic Overview</i> report show that travel times will decrease for all representative trips, meaning that mobile source air toxics exposures for these travelers will also likely decrease (since they are spending less time in traffic exposed to emissions). Thus, while people will be exposed to higher concentrations of mobile source air toxics during the portion of their 70-year lifetime that they are located adjacent to the project corridor, they will also be exposed to lower concentrations of mobile source air toxics while they are located elsewhere in the Study Area. Again, a study area analysis best captures the overall likelihood of changes in health outcomes attributable to the project, as compared with the corridor-only analysis that the U.S. Environmental Protection Agency is requesting.</p> <p>Likewise, estimates of “site-specific increases in emissions” do not provide useful information about changes in health risk. As noted in the response to the U.S. Environmental Protection Agency’s comments on the Draft Environmental Impact Statement, there is no “emissions budget” for the corridor (or locations along the corridor) that defines an acceptable level of emissions and no other guideline to help the Federal Highway Administration, U.S. Environmental Protection Agency, or the public to determine whether a given amount of emissions represents a potential health risk. Because no meaningful information about changes in health outcomes can be obtained from stand-alone site-specific emissions estimates, and because site-specific emissions changes are not representative of 70-year lifetime exposure changes, the Federal Highway Administration disagrees that estimates of site-specific emissions “will aid in more meaningful disclosure.”</p> <p>Finally, to address the fact that emissions will increase along the project corridor, the Final Environmental Impact Statement includes a summary of past health risk studies for similar projects. The Federal Highway Administration considers this information more relevant and meaningful for communicating likely health risk than simply reporting an emissions number for the corridor. As explained in the Final Environmental Impact Statement and air quality technical report, all of these studies identified very low health risk, well below the U.S. Environmental Protection Agency’s “Action Level” for addressing risk.</p>



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4	<p>and analyzing uncertainty, risk comparison, and literature sources associated with the health effects of MSATs.</p> <p><b>Analysis of the No Action Alternative</b></p> <p>In our comment letter on the Draft EIS, EPA noted the need to analyze the No Action Alternative using updated socioeconomic projections that do not assume completion of the South Mountain Freeway. In the Final EIS, there continues to be a lack of analysis regarding the projected differences in land use and emissions if no freeway were to be built. While we understand that FHWA and ADOT used the information available to them from General Plan documents, we continue to recommend that the likely differences in land use, emissions, and congestion impacts between the Action and No Action alternatives be fully disclosed. Methods exist to complete these types of projections and “scenario planning”, and such analyses can help the public and decision-makers better understand the timing and location of induced growth and traffic impacts that may occur as a result of the action alternatives.</p> <p>As stated in the Final EIS, the traffic analyses for South Mountain Freeway were completed by distributing the Arizona Department of Administration population and employment projections for Maricopa County to smaller geographic areas,</p> <p>“using the latest available data, including general plans for local jurisdictions, and a state-of-the-art land use model system called AZ-SMART. The nationally-recognized UrbanSim microsimulation model was integrated into AZ-SMART and used to allocate county projections of population and employment to regional market areas based upon the pre-existing location of these activities, land consumption, and transportation system accessibility.”</p> <p>These socioeconomic projections were then aggregated to Traffic Analysis Zones using AZ-SMART.</p> <p>As noted in EPA’s comments on the Draft EIS, the underlying general plans used in these analyses assume that the South Mountain Freeway is complete. For example, the Estrella Village Core Plan (Adopted by Phoenix City Council Feb. 4, 2009) states: “Bisecting the core is the proposed Loop 202 that will connect the existing loop 202 in the southeast valley to I-10. This plan is based upon the assumption that the freeway will be an integral part of development within the core.” These assumptions are reflected on Page 4-7 of the Final EIS, which states: “Versions of the proposed action most closely aligned with the W59 and E1 Alternatives have been accounted for in long-range planning by municipalities (most notably, the City of Phoenix).” Additionally, the Final EIS states on page 4-14 that the “Phoenix <i>General Plan</i> for Laveen Village has designated areas for commercial development that cannot support the projected densities without implementation of the proposed action;” and further, on page 4-19, that the “land use plan designations associated with [the Laveen and Estrella village] cores are predicated, in part, on proximity to the freeway corridor.” These statements contradict other conclusions in the document that suggest land-use and development trends in the project area would be maintained regardless of whether the South Mountain Freeway is built. On the contrary, these general plans suggest that future land-use and development trends in areas surrounding the freeway are dependent on the freeway being built and, as such, have explicitly assumed completion of the proposed action.</p> <p>As a result, in the Final EIS, there continues to be inconsistency in the modeling inputs that result in an inability to make comparisons of the traffic operations and emission changes between the No Action Alternative and Preferred Alternative. The “No Action” scenario includes population and employment projections that assume the “Preferred Alternative” is built, with the build and no-build scenarios both using the same forecast of future population and employment. To model traffic volumes, speed, and</p>
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Code	Issue	Response
4	No-Action Alternative	<p>The Arizona Department of Transportation and Federal Highway Administration appreciate the U.S. Environmental Protection Agency’s suggestion to use alternative methods to describe the No-Action Alternative and the possibility that future impacts could be different than those presented in the No-Action Alternative analysis in the Final Environmental Impact Statement (if these alternative methods were used). Specifically, the agency suggests that impacts on land use, emissions, and traffic congestion would be different if such alternative methods to describe the No-Action Alternative were used. The comment assumes land use patterns, growth rates, and induced travel patterns would be different (from what is described in the Final Environmental Impact Statement) if the freeway were not in place. In essence, the agency is suggesting that the description of the No-Action Alternative (and its related impacts) in the Final Environmental Impact Statement is misleading.</p> <p>The Arizona Department of Transportation and Federal Highway Administration agree that scenario planning methods have application in some instances; however, in this case, the Arizona Department of Transportation and Federal Highway Administration believe that the methods used to describe the No-Action Alternative as presented in the Draft and Final Environmental Impact Statements are appropriate. At a basic level, the National Environmental Policy Act requires consideration of reasonable alternatives—meaning the No-Action Alternative should be reasonable as well. Speculation about what an alternative and the conditions surrounding the alternative in the future would look like is not appropriate; the effects of alternatives must be reasonably foreseeable. Under this premise, the description of the No-Action Alternative in the Final Environmental Impact Statement is appropriate. The description of this alternative is presented in the section, <i>Alternatives Studied in Detail</i>, in the Final Environmental Impact Statement on page 3-40. Its features include: not extending State Route 202L west of Interstate 10 (Maricopa Freeway), assuming all other projects in the <i>Regional Transportation Plan</i> are completed, and using population, employment, and housing projections officially approved by the Maricopa Association of Governments.</p> <p>The Arizona Department of Transportation and Federal Highway Administration believe that the depiction of impacts caused by the No-Action Alternative are, therefore, appropriate and correctly presented throughout the Final Environmental Impact Statement. In defining the transportation problem in Chapter 1, <i>Purpose and Need</i>, of the Final Environmental Impact Statement, the analysis illustrates the severity of the breakdown in the transportation network if no action were taken in the area. This is further supported by the impact analyses presented throughout Chapter 4, <i>Affected Environment, Environmental Consequences, and Mitigation</i>, of the Final Environmental Impact Statement. To summarize, durations and physical lengths of congestion would worsen, travel times would become longer over the same distances, congestion would continue to spill over into the arterial street network, and monetary costs to the State and its residents would increase.</p> <p>Further justification of why the No-Action Alternative description in the Final Environmental Impact Statement is most appropriate includes:</p> <ul style="list-style-type: none"><li>• At certain points in the Phoenix metropolitan area’s history, growth rates prior to planning for the region’s freeway system exceeded growth rates after planning for and construction of the regional freeway system began. Chapter 1, <i>Purpose and Need</i>, and the sections, <i>Land Use</i> and <i>Economic Impacts</i>, in Chapter 4, establish cost of living, livability, mild climate, technological advancement (affordable air conditioning), employment opportunities, a development-oriented regulatory</li></ul>



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	<p>emissions by removing the road segments representing the South Mountain Freeway corridor, while leaving the socioeconomic inputs constant does not provide an accurate comparison of these alternatives, as is required under NEPA.</p> <p>Since the AZ-SMART model itself includes statistical sub-models of population and employment which include “transportation system accessibility,” to conclude that a project as large as the South Mountain Freeway will do nothing to change where people and jobs are located in the future is not supported by an understanding of land-use transportation linkages. Both the text of the general plans and the statistical models in AZ-SMART point to the conclusion that future population and employment projections in the traffic analysis zones are based on whether or not the South Mountain Freeway is built. While the zoning regulations within general plans may not change as a result of highway accessibility, the development of land parcels within each General Plan area depend on forecast travel time (or other AZ-SMART accessibility factors).</p> <p>We understand that General Plans are voter-approved documents, and as such it is not feasible to modify them for an analysis of the No Action alternative. However, it is possible to use AZ-SMART/UrbanSim to develop alternative socioeconomic forecasts at the Traffic Analysis Zone level that represent transportation infrastructure present in the No Action alternative. In this way, future population and employment forecasts can be estimated, given current General Plans, but in the absence of the new freeway. These projections would then be suitable for modeling the environmental impacts of the No Action alternative, including traffic patterns, congestion, and near roadway health impacts. This analytical concern does not affect the transportation conformity hot-spot analyses for CO and PM10, as they are both based on “Build” scenarios only.</p> <p><u>Children’s Environmental Health and Safety</u></p> <p>We appreciate the additional information and analysis provided in the Final EIS regarding noise impacts to schools adjacent to the proposed freeway. However, the Final EIS does not address other issues specific to children’s environmental health and safety. Further, the conclusion in the Final EIS that children are inherently accounted for in the analyses conducted for the population as a whole does not meet the intent of Executive Order 13045 on Children’s Health and Safety. The order directs that each federal agency shall make it a high priority to identify and assess environmental health and safety risks that may disproportionately affect children, and shall ensure that its policies, programs, activities, and standards address these risks. It applies to all significant decisions made by federal agencies and is not specific to actions which are regulatory in nature, as suggested on Page B20 of the response to comments in the Final EIS. Additionally, based on current EPA policy and guidance, an analysis of impacts to children’s health should be included in a NEPA analysis if there is a possibility of disproportionate impacts on children related to the proposed action.<sup>1,2</sup></p> <p>Many studies have now shown that people who live, work, or attend school near major roads have an increased incidence and severity of health problems that may be related to air pollution from roadway</p> <p><small>1 U.S. EPA. April 4, 1996. Memorandum: Interim OFA Program Guidance on Implementing the EPA Policy on Evaluating Health Risks to Children. Available at: <a href="http://www.epa.gov/compliance/resources/policies/nepa/children-health-risks-pg.pdf">http://www.epa.gov/compliance/resources/policies/nepa/children-health-risks-pg.pdf</a>.</small></p> <p><small>2 U.S. EPA. August 28, 2012. Memorandum: Addressing Children’s Health through Reviews Conducted Pursuant to the National Environmental Policy Act and Section 309 of the Clean Air Act. Available at <a href="http://www.epa.gov/compliance/resources/policies/nepa/NEPA-Children's-Health-Memo-August-2012.pdf">http://www.epa.gov/compliance/resources/policies/nepa/NEPA-Children's-Health-Memo-August-2012.pdf</a>.</small></p>

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4 (cont.)		<p>environment, and key location for industry as primary growth drivers in the Phoenix metropolitan area. Therefore, transportation is not the sole driver of growth.</p> <ul style="list-style-type: none"><li>• As established in the Final Environmental Impact Statement, “pre-freeway” land use planning mimics “post-freeway” land use planning. In 1979, the <i>Phoenix Concept Plan 2000</i> was adopted by the City of Phoenix. The plan called for 25 Phoenix urban villages. Of those, it established 9 villages with instructions for village planning committees to prepare 25-year concept plans. The Laveen and Estrella Villages were included in the list of 25 suggested villages, although they were not among the 9 villages adopted in the initial plan. However, the intent was that Laveen and Estrella Villages would be developed at a later point in time. The freeway system considered in the plan included only Interstate 10, Interstate 17, and U.S. Route 60—it did not include the regional freeway system.</li></ul> <p>The <i>Phoenix Concept Plan 2000</i> was replaced by the <i>Phoenix General Plan, 1985–2000</i> (see Appendix D for both documents). The resolution adopting the <i>General Plan</i> directed the village planning committees to continue in the City of Phoenix’s planning process. The resolution included Laveen and Estrella as villages. Planning for the Laveen and Estrella Villages was completed around the same time as the initial planning for the regional freeway system, including the South Mountain Freeway. Therefore, the land use planning and transportation planning were conducted in parallel, not with one effort depending on the other.</p> <p>To conclude that land use patterns would look different than they do today (as inferred in the U.S. Environmental Protection Agency’s comment) is not consistent with past planning patterns. It is more reasonable to argue that the City of Phoenix would have continued to plan for the urban village core concept as has been envisioned since the late 1970s.</p> <p>The U.S. Environmental Protection Agency suggests that scenario planning be used to better inform decision makers. In this case, scenario planning would be speculative for the following reasons:</p> <ul style="list-style-type: none"><li>• Factors affecting growth vary (see above), and to assume only transportation as a growth driver would be speculative.</li><li>• Continuation of “pre-freeway” historical land use planning patterns is reasonable to expect. The section, <i>Land Use</i>, documents the growth scenario under the No-Action Alternative and notes that the area would develop in a similar fashion with or without the project. This is supported by:<ul style="list-style-type: none"><li>› The Study Area already has good connecting transportation infrastructure (although congested) to support continued development without the freeway. It is also close to downtown Phoenix. Existing infrastructure plus location would result in growth without the freeway as described in the <i>Purpose and Need</i> chapter. The freeway is not opening up the area to development because existing roads (for example, Pecos Road, Baseline Road, and 51st Avenue) provide access.</li><li>› To date, approximately 67 percent of the land in the Study Area has already been developed in accordance with the City of Phoenix’s <i>General Plan</i> and zoning ordinance. It is assumed that such development would not be torn down and land uses redistributed if the freeway were not built.</li></ul></li></ul> <p>As documented in the section, <i>Land Use</i>, in Chapter 4 of the Final Environmental Impact Statement, agricultural (22 percent) and open space (11 percent) land uses in the Study Area represent only 33 percent of land area (it should be noted the 11 percent of open space is mostly not developable because of topographic challenges and floodplain constraints), while the remainder of the area is in some form of “built” land use. Distribution of zoning further supports the conclusion—12 percent of the Study Area is zoned for agricultural and open space uses while 88 percent is zoned for other more intensive land uses.</p>

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4 (cont.)		<p>› Factors contributing to historical and projected growth are well-documented in the Final Environmental Impact Statement in Chapter 1, <i>Purpose and Need</i>, and in the sections, <i>Land Use</i> and <i>Economic Impacts</i>, in Chapter 4. The freeway will be built in an area planned for urban growth as established in local jurisdictions’ land use planning activities for at least the last 25 years (see the section, <i>Induced Growth</i>, beginning on page 4-182 of the Final Environmental Impact Statement).</p> <p>› The sections, <i>Induced Travel</i> and <i>Induced Growth</i>, beginning on pages 4-179 and 4-182, respectively, of the Final Environmental Impact Statement, establish that the freeway would contribute to minimal induced travel demand (which has, to a large degree, been accounted for in the Maricopa Association of Governments’ model).</p> <p>› Section 93.110 of the U.S. Environmental Protection Agency’s conformity rule requires that population and employment projections (which establish growth rates and distribution) used in a conformity analysis be the most recent estimates that have been officially approved by the Maricopa Association of Governments (as the metropolitan planning organization for the Maricopa County nonattainment and maintenance areas). In accordance with the Governor’s Executive Order 2011-04, county-level population projections used for all State agency planning purposes were updated by the Arizona Department of Administration in December 2012, based on the 2010 U.S. Census. To use projections other than the approved demographic trends would be inconsistent with the projections required for use in the transportation conformity assessment.</p> <p>Even if one could argue the only reason the development has occurred as it has is because of the planned freeway (which is not the case—see above) for the last 30 years (in other words, if the freeway had not been planned, development would somehow have been different), the argument is irrelevant. Existing development is now there and, therefore, it is reasonable to assume that the land use distribution and related development will be there in the future.</p> <p>The analysis documented in the Final Environmental Impact Statement leads to the conclusion that the No-Action Alternative and action alternative land uses would be similar, and thus, no “scenario planning” is required. Scenario planning could have application if the area was not developed, but the manner in which the No-Action Alternative was determined and presented in the Final Environmental Impact Statement is “state-of-the-practice.” Defining the No-Action Alternative as including all projected socioeconomic growth and planned transportation projects in the <i>Regional Transportation Plan</i> except the proposed action is common practice. The approach taken in the Final Environmental Impact Statement has standard application in the transportation industry. In Arizona, this method to describe the No-Action Alternative has been commonplace in National Environmental Policy Act documents dating back to at least 1990. Further, the environmental impact statements for Legacy Parkway and Mountain View Corridor in Utah had a similar approach of using local land use plans, growth projections, and interviews with City representatives to determine whether the No-Action Alternative land use would be different than with the proposed action. All of these projects were in similar high-growth regions, and the conclusions were that the areas would develop with or without the project, although the timing may change.</p> <p>The No-Action Alternative as defined in the Final Environmental Impact Statement is appropriate. It satisfies reasonableness, withstands a hard look, and was fully disclosed.</p>

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	<p>emissions by removing the road segments representing the South Mountain Freeway corridor, while leaving the socioeconomic inputs constant does not provide an accurate comparison of these alternatives, as is required under NEPA.</p> <p>Since the AZ-SMART model itself includes statistical sub-models of population and employment which include “transportation system accessibility,” to conclude that a project as large as the South Mountain Freeway will do nothing to change where people and jobs are located in the future is not supported by an understanding of land-use transportation linkages. Both the text of the general plans and the statistical models in AZ-SMART point to the conclusion that future population and employment projections in the traffic analysis zones are based on whether or not the South Mountain Freeway is built. While the zoning regulations within general plans may not change as a result of highway accessibility, the development of land parcels within each General Plan area depend on forecast travel time (or other AZ-SMART accessibility factors).</p> <p>We understand that General Plans are voter-approved documents, and as such it is not feasible to modify them for an analysis of the No Action alternative. However, it is possible to use AZ-SMART/UrbanSim to develop alternative socioeconomic forecasts at the Traffic Analysis Zone level that represent transportation infrastructure present in the No Action alternative. In this way, future population and employment forecasts can be estimated, given current General Plans, but in the absence of the new freeway. These projections would then be suitable for modeling the environmental impacts of the No Action alternative, including traffic patterns, congestion, and near roadway health impacts. This analytical concern does not affect the transportation conformity hot-spot analyses for CO and PM10, as they are both based on “Build” scenarios only.</p> <p><b>Children’s Environmental Health and Safety</b></p> <p>We appreciate the additional information and analysis provided in the Final EIS regarding noise impacts to schools adjacent to the proposed freeway. However, the Final EIS does not address other issues specific to children’s environmental health and safety. Further, the conclusion in the Final EIS that children are inherently accounted for in the analyses conducted for the population as a whole does not meet the intent of Executive Order 13045 on Children’s Health and Safety. The order directs that each federal agency shall make it a high priority to identify and assess environmental health and safety risks that may disproportionately affect children, and shall ensure that its policies, programs, activities, and standards address these risks. It applies to all significant decisions made by federal agencies and is not specific to actions which are regulatory in nature, as suggested on Page B20 of the response to comments in the Final EIS. Additionally, based on current EPA policy and guidance, an analysis of impacts to children’s health should be included in a NEPA analysis if there is a possibility of disproportionate impacts on children related to the proposed action.<sup>1,2</sup></p> <p>Many studies have now shown that people who live, work, or attend school near major roads have an increased incidence and severity of health problems that may be related to air pollution from roadway</p> <p><sup>1</sup> U.S. EPA. April 4, 1996. Memorandum: Interim OFA Program Guidance on Implementing the EPA Policy on Evaluating Health Risks to Children. Available at: <a href="http://www.epa.gov/compliance/resources/policies/nepa/children-health-risks-pg.pdf">http://www.epa.gov/compliance/resources/policies/nepa/children-health-risks-pg.pdf</a>.</p> <p><sup>2</sup> U.S. EPA. August 28, 2012. Memorandum: Addressing Children’s Health through Reviews Conducted Pursuant to the National Environmental Policy Act and Section 309 of the Clean Air Act. Available at <a href="http://www.epa.gov/compliance/resources/policies/nepa/NEPA-Children's-Health-Memo-August-2012.pdf">http://www.epa.gov/compliance/resources/policies/nepa/NEPA-Children's-Health-Memo-August-2012.pdf</a>.</p>

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5	Children’s Health	<p>While the U.S. Environmental Protection Agency has provided ample evidence that <i>air pollution</i> has the potential for greater adverse impacts on children compared with the population at large, this does not imply that the project will have disproportionate impacts on children. The project itself will affect all near-road populations equally; it does not include elements that would lead to higher air pollutant concentrations near children compared with other receptors. For example, a review of the project maps at &lt;smfonlinehearing.com/maps/&gt; indicates that while some schools are near the project corridor, the proposed freeway is not located closer to schools than it is to other nearby receptors. Also, the particulate matter receptor diagrams presented in Figure 22 of the Record of Decision (and previously published in the air quality technical report, which the U.S. Environmental Protection Agency has reviewed) show that particulate matter (PM<sub>10</sub>) impacts from the project decrease rapidly as distance from the roadway increases.</p> <p>The U.S. Environmental Protection Agency’s comment focuses entirely on children’s health impacts related to air pollution. The project study area is designated as attainment for the sulfur dioxide, nitrogen dioxide, lead, and particulate matter (PM<sub>2.5</sub>) National Ambient Air Quality Standards. The carbon monoxide and particulate matter (PM<sub>10</sub>) hot-spot analyses (developed in consultation with the U.S. Environmental Protection Agency) demonstrate that no violations of those National Ambient Air Quality Standards will occur, and the project is included in the regional emissions analysis of a conforming plan and transportation improvement program, meeting the conformity requirements related to the ozone National Ambient Air Quality Standards. The U.S. Environmental Protection Agency and Federal Highway Administration agree that the project has met all applicable Clean Air Act and regulatory requirements related to compliance with the National Ambient Air Quality Standards.</p> <p>Clean Air Act Section 109(b)(1) requires the U.S. Environmental Protection Agency to promulgate primary National Ambient Air Quality Standards at levels that allow an adequate margin of safety and that are requisite to protect the public health. As noted by the U.S. Environmental Protection Agency in its 2013 rulemaking for particulate matter, Clean Air Act Section 109’s legislative history demonstrates that the primary standards are “to be set at the maximum permissible ambient air level ... which will protect the health of any [sensitive] group of the population” (78 <i>Federal Register</i> 3086 and 3090) (quoting S. Rep. No. 91-1196, 91st Cong., 2 Sess. 10 [1970]) (alterations in original). Accordingly, the Final Environmental Impact Statement’s National Ambient Air Quality Standards-based evaluation of criteria air pollutants includes a health-based review of sensitive populations, including children and seniors, given the National Ambient Air Quality Standards’ inherent consideration of those factors. Furthermore, the National Ambient Air Quality Standards-based assessment ensures adequate consideration of health-based issues as “[t]he requirement that primary standards provide an adequate margin of safety was intended to address uncertainties associated with inconclusive scientific and technical information ... and to protect against hazards that research has not yet identified” (78 <i>Federal Register</i> 3090). By definition, if a project demonstrates that all National Ambient Air Quality Standards are met, as this project has done, then there cannot be any adverse National Ambient Air Quality Standards-related effects on the health of children or any other segment of the population.</p> <p>For mobile source air toxics, the net emissions impacts of the project affect children in the same manner that they affect the remainder of the population. Emissions will likely be higher along the project corridor and lower elsewhere in the</p>



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	<p>traffic.<sup>3</sup> Further, reviews of the literature have concluded that near-roadway traffic emissions may not only trigger and exacerbate asthma symptoms, but also contribute to the development of asthma in children.<sup>4,5</sup> As such, the construction of a new 8-lane freeway with diesel truck volumes of up to 17,000 per day in an area with a large population of children constitutes a need to analyze, disclose, and mitigate impacts to children.</p> <p>Given the connection between roadways and childhood asthma, the data on existing asthma rates and asthma severity among children living, playing, and attending school and daycare near the proposed project should be considered to determine if targeted mitigation measures, such as improved heating, ventilating, and air conditioning (HVAC) systems, may be appropriate to avoid exacerbating asthma symptoms or instigating the onset of new symptoms. Include any determination of targeted mitigation in the ROD.</p> <p><b>Impacts to Aquatic Resources</b></p> <p>EPA acknowledges that much additional field work has been completed between the Draft EIS and Final EIS to determine the extent of jurisdictional waters in the project area, and the Final EIS identifies that projected impacts to Waters of the U.S. have been reduced substantially from the 26 acres of impacts reported in the Draft EIS to under 3 acres in the Final EIS. The preferred alternative involves placing a roadway bridge over the Salt River and the construction of piers in the channel, as well as potential filling of 51 ephemeral washes that originate in the Phoenix South Mountain Park and drain to the south or west, with a potential hydrological connection to the Gila River. As discussed in our comments on the Draft EIS, ephemeral washes perform a diversity of hydrologic and biogeochemical functions that directly affect the integrity and functional condition of higher-order waters downstream.<sup>6</sup> A commitment to maintain these natural washes, in their present location and natural form, and including adequate natural buffers to the maximum extent practicable, should be included in the ROD. Further, we encourage FHWA and ADOT to continue working with the Army Corps of Engineers throughout project design to further avoid and minimize impacts to Waters of the U.S.</p> <p><b>Clean Water Act Compliance</b></p> <p>We understand that potential disturbances of greater than 0.5 acres may be necessary where the project crosses large individual washes, thus requiring an Individual Permit (IP) under Section 404 of the Clean Water Act. When applying for the Section 404 permit, FHWA and ADOT must demonstrate that the proposed action is the least environmentally damaging practicable alternative (LEDPA), while also</p> <p>3 HEI Panel on the Health Effects of Traffic-Related Air Pollution. 2010. Traffic-Related Air Pollution: A Critical Review of the Literature on Emissions, Exposure, and Health Effects. HEI Special Report 17. Health Effects Institute, Boston, MA.</p> <p>4 Anderson H, Favarato G, Atkinson R. 2011a. Long-term exposure to air pollution and the incidence of asthma: meta-analysis of cohort studies. <i>Air Qual Atmos Health</i>. doi:10.1007/s11869-011-0144-5.</p> <p>5 Anderson H, Favarato G, Atkinson R. 2011b. Long-term exposure to outdoor air pollution and the prevalence of asthma: meta-analysis of multi-community prevalence studies. <i>Air Qual Atmos Health</i>. doi:10.1007/s11869-011-0145-4.</p> <p>6 See Levick, L., J. Fonseca, D. Goodrich, M. Hernandez, D. Semmens, J. Stromberg, R. Leidy, M. Scianni, D. P. Guertin, M. Tluczek, and W. Kepner. 2008. <i>The Ecological and Hydrological Significance of Ephemeral and Intermittent Streams in the Arid and Semi-arid American Southwest</i>. U.S. EPA and USDA/ARS Southwest Watershed Research Center, EPA/600/R-08/134, ARS/233046, 116 pp.</p>
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5 (cont.)		<p>Study Area. Regardless of the alternative selected, emissions are expected to decline by over 80 percent in the project study area over the life of the project. In addition, the summary of health risk assessments for past highway projects presented in the Final Environmental Impact Statement suggests that the mobile source air toxics health risks for this project are negligible, especially for the very short exposure time frames (as a fraction of a 70-year lifetime) occurring at schools and day care centers.</p> <p>The Federal Highway Administration also reviewed a recent sampling of the U.S. Environmental Protection Agency’s own National Environmental Policy Act documents to gain a better understanding of the U.S. Environmental Protection Agency’s preferred approach for addressing children’s health under the National Environmental Policy Act. Specifically, the Federal Highway Administration reviewed the two U.S. Environmental Protection Agency Final Environmental Impact Statements posted online at the U.S. Environmental Protection Agency’s environmental impact statement database at &lt;yosemite.epa.gov/oeca/webeis.nsf/AdvSearch?openform&gt;. It also reviewed the 24 environmental assessments/findings of no significant impact posted online at &lt;yosemite.epa.gov/oeca/WebEIS.nsf/viAllNepa?openview&gt;.</p> <p>Executive Order 13045, “Protection of Children from Environmental Health Risks and Safety Risks,” was issued on April 23, 1997. The U.S. Environmental Protection Agency released its “309” guidance (“Addressing Children’s Health through Reviews Conducted Pursuant to the National Environmental Policy Act and Section 309 of the Clean Air Act”) on August 14, 2012. All of the National Environmental Policy Act documents the Federal Highway Administration reviewed were finalized by the U.S. Environmental Protection Agency after its 309 guidance was released.</p> <p>The South Mountain Freeway Final Environmental Impact Statement includes a full page of discussion of impacts on children’s health. An example document from the U.S. Environmental Protection Agency with a more extensive discussion of children's health than what is provided in the South Mountain Freeway Final Environmental Impact Statement was not found. Since the approach Federal Highway Administration has used in addressing children’s health in this National Environmental Policy Act document far exceeds the approach the U.S. Environmental Protection Agency has used in its own National Environmental Policy Act documents, the Federal Highway Administration considers the Final Environmental Impact Statement discussion sufficient.</p>



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	<p>traffic.<sup>3</sup> Further, reviews of the literature have concluded that near-roadway traffic emissions may not only trigger and exacerbate asthma symptoms, but also contribute to the development of asthma in children.<sup>4,5</sup> As such, the construction of a new 8-lane freeway with diesel truck volumes of up to 17,000 per day in an area with a large population of children constitutes a need to analyze, disclose, and mitigate impacts to children.</p> <p>Given the connection between roadways and childhood asthma, the data on existing asthma rates and asthma severity among children living, playing, and attending school and daycare near the proposed project should be considered to determine if targeted mitigation measures, such as improved heating, ventilating, and air conditioning (HVAC) systems, may be appropriate to avoid exacerbating asthma symptoms or instigating the onset of new symptoms. Include any determination of targeted mitigation in the ROD.</p> <p><b>Impacts to Aquatic Resources</b></p> <p>EPA acknowledges that much additional field work has been completed between the Draft EIS and Final EIS to determine the extent of jurisdictional waters in the project area, and the Final EIS identifies that projected impacts to Waters of the U.S. have been reduced substantially from the 26 acres of impacts reported in the Draft EIS to under 3 acres in the Final EIS. The preferred alternative involves placing a roadway bridge over the Salt River and the construction of piers in the channel, as well as potential filling of 51 ephemeral washes that originate in the Phoenix South Mountain Park and drain to the south or west, with a potential hydrological connection to the Gila River. As discussed in our comments on the Draft EIS, ephemeral washes perform a diversity of hydrologic and biogeochemical functions that directly affect the integrity and functional condition of higher-order waters downstream.<sup>6</sup> A commitment to maintain these natural washes, in their present location and natural form, and including adequate natural buffers to the maximum extent practicable, should be included in the ROD. Further, we encourage FHWA and ADOT to continue working with the Army Corps of Engineers throughout project design to further avoid and minimize impacts to Waters of the U.S.</p> <p><b>Clean Water Act Compliance</b></p> <p>We understand that potential disturbances of greater than 0.5 acres may be necessary where the project crosses large individual washes, thus requiring an Individual Permit (IP) under Section 404 of the Clean Water Act. When applying for the Section 404 permit, FHWA and ADOT must demonstrate that the proposed action is the least environmentally damaging practicable alternative (LEDPA), while also</p> <p><sup>3</sup> HEI Panel on the Health Effects of Traffic-Related Air Pollution. 2010. Traffic-Related Air Pollution: A Critical Review of the Literature on Emissions, Exposure, and Health Effects. HEI Special Report 17. Health Effects Institute, Boston, MA.</p> <p><sup>4</sup> Anderson H, Favarato G, Atkinson R. 2011a. Long-term exposure to air pollution and the incidence of asthma: meta-analysis of cohort studies. <i>Air Qual Atmos Health</i>. doi:10.1007/s11869-011-0144-5.</p> <p><sup>5</sup> Anderson H, Favarato G, Atkinson R. 2011b. Long-term exposure to outdoor air pollution and the prevalence of asthma: meta-analysis of multi-community prevalence studies. <i>Air Qual Atmos Health</i>. doi:10.1007/s11869-011-0145-4.</p> <p><sup>6</sup> See Levick, L., J. Fonseca, D. Goodrich, M. Hernandez, D. Semmens, J. Stromberg, R. Leidy, M. Scianni, D. P. Guertin, M. Tluczek, and W. Kepner. 2008. <i>The Ecological and Hydrological Significance of Ephemeral and Intermittent Streams in the Arid and Semi-arid American Southwest</i>. U.S. EPA and USDA/ARS Southwest Watershed Research Center, EPA/600/R-08/134, ARS/233046, 116 pp.</p>
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6	Waters of the United States	The Arizona Department of Transportation and Federal Highway Administration understand the importance of maintaining the connectivity and functions provided by ephemeral washes in the desert environment. During final design, the Arizona Department of Transportation reviews each wash to ensure flows are maintained both up- and downstream of the project without substantially changing flow conditions or increasing flow velocities downstream. Many of the washes already have been altered by the existing road network adjacent to the project. The Arizona Department of Transportation is committed to maintaining each wash in its current location, to the extent practicable. For example, a commitment has been made to the Gila River Indian Community that the locations and flows that currently cross the freeway alignment and enter its land will be the same after construction. The Arizona Department of Transportation has also committed to continue coordination with the Gila River Indian Community on design elements of the drainage infrastructure as well as other issues through the project development. Finally, as the project moves into construction, the Arizona Department of Transportation and Federal Highway Administration have committed, as noted in the Final Environmental Impact Statement, to work with the U.S. Army Corps of Engineers in complying with requirements of the Clean Water Act permitting process (these commitments are documented in Table 3, beginning on page 38, of the Record of Decision).
7	Waters of the United States	<p>From project initiation, the Arizona Department of Transportation and the Federal Highway Administration have been working collaboratively with the U.S. Army Corps of Engineers regarding evaluation of waters of the United States to ensure the project complies with the Clean Water Act. According to the Clean Water Act Section 404(b)(1), the U.S. Army Corps of Engineers is required to select the least environmentally damaging practicable alternative after considering cost, existing technology, and logistics in light of the overall project purpose in cases where an individual permit is required. To ensure this process was considered, the U.S. Army Corps of Engineers has been involved in developing the purpose and need and alternatives analysis for the project in accordance with Section 404(b)(1). As the alternative analysis demonstrated, there were no practicable alternatives to avoid impacts on waters of the United States and thus the Arizona Department of Transportation has committed to minimization and mitigation of impacts.</p> <p>The U.S. Army Corps of Engineers is the permitting agency for the Clean Water Act. In a letter dated January 28, 2015 (see Appendix D), the agency defined the permitting strategy for the South Mountain Freeway project. The U.S. Army Corps of Engineers noted that “the eastern segment would be permitted as an individual permit if those wash impacts exceed 0.5 acre and the western segment would be permitted as a nationwide permit. Breaking the segment at the South Mountain 12-digit HUC watershed makes the most sense in that the eastern segment is mostly residential/commercial development with the most ephemeral washes. The western segment is predominantly agricultural lands with minimal jurisdictional washes. Each segment would still meet the definition of single and complete and each segment would have independent utility based on 33 CFR § 330.6(d).” The Arizona Department of Transportation will continue to coordinate with the U.S. Army Corps of Engineers as the project moves forward.</p>

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	<p>not causing or contributing to significant degradation of the aquatic ecosystem. If the project is to be permitted and delivered as a single design-build project, this LEDPA demonstration would apply to the project as a whole, rather than a specific crossing or segment of the project.</p> <p>The Final EIS suggests that the project will likely be permitted using a combination of Nationwide Permits (NWP) and an IP. However, NWP issued in advance of the IP or a grouping of NWP and IPs can be issued only if single and complete/independent utility portions of the project can be determined, with the intent being to avoid piecemealing and/or prejudicing the decision on an individual permit. 33 C.F.R. section 330.6(d) states:</p> <p>"...portions of a larger project may proceed under the authority of the NWP while the district engineer evaluates an individual permit application for other portions of the same project, but only if the portions of the project qualifying for NWP authorization would have independent utility and are able to function or meet their purpose independent of the total project. When the functioning or usefulness of a portion of the total project qualifying for an NWP is dependent on the remainder of the project, such that its construction and use would not be fully justified even if the Corps were to deny the individual permit, the NWP does not apply and all portions of the project must be evaluated as part of the individual permit process."</p> <p>If the South Mountain Freeway project is to be delivered as a single design-build project, EPA recommends pursuing an Individual Permit for the project as a whole, as it would be difficult to justify that multiple smaller segments of the project would meet their purpose independent of the total project.</p> <p><b>Wildlife Connectivity</b></p> <p>The project proposes to construct a new 8-lane freeway through multiple ridgelines of South Mountain Park in an area known to be the last remaining connection for wildlife to move between South Mountain and the Sierra Estrella mountains. We note that ADOT has demonstrated national leadership in prioritizing wildlife on other major freeway projects throughout the state. However, despite the anticipated impacts of the project to wildlife movement, little has been proposed in the Final EIS to address and mitigate for the construction of this significant new barrier to wildlife connectivity, with the exception of a few multiuse crossings and culverts. In response to comments on the Draft EIS, FHWA and ADOT suggest that the corridor will only become more degraded as the surrounding area develops, and that it is not the responsibility of ADOT to mitigate for impacts caused by these future unrelated actions. However, as is made clear in local general plans, the future development of the surrounding area is not an unrelated action and is very much dependent on the construction of the proposed project to facilitate access into these core development areas. As such, EPA continues to recommend that FHWA and ADOT identify measures in the ROD beyond standard freeway mitigation to protect and restore this important wildlife linkage.</p> <p>The South Mountain Project is an important opportunity for ADOT to shift their focus from preservation of wildlife movement corridors to the even more challenging and equally important work of restoring a degraded corridor. Currently, we understand that ADOT is partnering with other state and local stakeholders on the State Route 77 wildlife corridor project outside of Tucson to secure connectivity on state and private lands between the Tortolita and Santa Catalina Mountains. A similar approach could be effective on the South Mountain Freeway project, working with local leaders, developers, and the Gila River Indian Community to purchase mitigation lands and/or obtain</p>
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8	Biology, Plants, and Wildlife	<p>The Arizona Department of Transportation and Federal Highway Administration acknowledge the U.S. Environmental Protection Agency’s concern regarding the project’s impacts on wildlife movement in the Study Area. As the agency noted, the Arizona Department of Transportation has demonstrated national leadership in implementing wildlife connectivity measures on freeways throughout the state. For each project, the Arizona Department of Transportation must prioritize use of transportation funding and does so by considering factors such as potential effects on driver safety, regulatory status of species, the size of wildlife populations in an area, and the likely frequency of use of the crossings.</p> <p>In commenting on this project, the U.S. Environmental Protection Agency states that not enough has been done to mitigate impacts on wildlife connectivity. The agency recommends:</p> <ul style="list-style-type: none"><li>• implementing measures beyond standard mitigation to restore the wildlife linkage</li><li>• shifting the “focus from the preservation of wildlife movement corridors to the even more challenging and equally important work of restoring a degraded corridor” (including freeway overcrossings and enhancements to 51st Avenue)</li></ul> <p>When considering mitigation, the National Environmental Policy Act, in essence, requires:</p> <ul style="list-style-type: none"><li>• considering mitigation to avoid, reduce, minimize, or otherwise mitigate for impacts caused by the proposed action</li><li>• ensuring the level of mitigation is appropriate for the magnitude of the impact</li><li>• considering mitigation for direct and indirect impacts—the project is not obligated to mitigate for impacts caused by others—and recognizing that mitigation of direct impacts contributes to mitigation for cumulative impacts</li></ul> <p>The baseline condition of a resource results from the effects of both past and current actions on that resource. The National Environmental Policy Act does not require a proposed action to improve the baseline condition. The mitigation actions proposed in the Final Environmental Impact Statement and the commitment list in the Record of Decision are appropriate for reasons stated below.</p> <p>The Arizona Department of Transportation and Federal Highway Administration have committed to mitigating the fragmenting effects of the project by enhancing bridges and drainage structures to promote wildlife connectivity between the South Mountains, the Sierra Estrella, and Gila River Indian Community land. The enhancements will include providing fencing to guide wildlife to use the crossing structures at the southwest end of the South Mountains.</p> <p>The U.S. Environmental Protection Agency comment infers that the Arizona Department of Transportation and Federal Highway Administration should do more than the mitigation proposed by restoring the degraded corridor, acknowledging that habitat in the project areas has historically been adversely affected. It is not the obligation of the project to mitigate impacts caused by other unrelated actions. The freeway will be implemented in a historically quickly urbanizing area (most noticeably in the Western Section of the Study Area). Historical and projected growth and the factors contributing to such growth are well-documented in the Final Environmental Impact Statement in Chapter 1, <i>Purpose and Need</i>, and in the Chapter 4 sections, <i>Land Use</i> and <i>Economic Impacts</i>, beginning on pages 4-3 and 4-56, respectively. The freeway will be built in an area planned for urban growth as established in local jurisdictions’ land use planning</p>

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	<p>conservation easements in a defined corridor between South Mountain and the Sierra Estrella Mountains. Additional mitigation could be achieved through the provision of overcrossings, or enhancements to 51<sup>st</sup> Avenue in order to reduce barrier effects. If such a project were executed to protect these resources, construction of the South Mountain Freeway could provide an opportunity to enhance and restore wildlife connectivity rather than threaten it.</p>
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8 (cont.)		<p>activities for at least the last 25 years (see the section, <i>Induced Growth</i>, beginning on page 4-182 of the Final Environmental Impact Statement). Additionally, the area in question has become much more fragmented during the environmental impact statement process and continues to experience fragmentation independent of the project. It is not reasonable to assume this will not continue or that concerned entities will prevent further fragmentation because that has not occurred to date.</p> <p>The freeway will not provide additional access into core areas of the wildlife linkage because it will be a completely access-controlled facility. Right-of-way fencing will prohibit motorists from leaving the freeway right-of-way to access adjacent land. One multifunctional crossing will be located coincident with an existing Maricopa County trail. The other multifunctional crossings along the freeway will facilitate limited pedestrian access from the Gila River Indian Community to culturally important places and will also allow wildlife movement.</p> <p>As mentioned in the comment, the Arizona Department of Transportation and Federal Highway Administration are willing to partner with other stakeholders to enhance wildlife connectivity across transportation facilities. The example given in the comment of the project to construct a wildlife overpass within a priority wildlife priority linkage on State Route 77 is being undertaken in conjunction with the Regional Transportation Authority and the Pima Association of Governments. The Regional Transportation Authority initiated and funded the addition of the wildlife crossing structures and fencing to a planned Arizona Department of Transportation widening project for the highway.</p> <p>Example measures cited by the U.S. Environmental Protection Agency, such as overcrossings and 51st Avenue enhancements, while not necessary or required, are actions the Arizona Department of Transportation and Federal Highway Administration would consider integrating into the project during later design if such improvements were funded by others and did not negatively affect the freeway’s operational characteristics. This is not dissimilar to looking for transit enhancement opportunities as noted in the Final Environmental Impact Statement. Similarly, the Arizona Department of Transportation and Federal Highway Administration have committed to continued coordination with the U.S. Fish and Wildlife Service and Arizona Game and Fish Department on mitigation cited in the Final Environmental Impact Statement.</p>



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9	<p><b>U.S. EPA ADDITIONAL INFORMATION TO CONSIDER FOR ASSESSING NEAR-ROADWAY HEALTH EFFECTS - FINAL ENVIRONMENTAL IMPACT STATEMENT, SOUTH MOUNTAIN FREEWAY PROJECT, MARICOPA COUNTY, ARIZONA, DECEMBER 22, 2014</b></p> <p>EPA’s July 23, 2013 comments on the Draft EIS included recommendations regarding the assessment of potential near-roadway health effects of the proposed South Mountain Freeway project. While we appreciate that the Final EIS and Response to Comments for the project included an expanded discussion about health risk from highway projects, we believe the following additional information should also be considered in order to understand possible health effects from this project. Further, we recommend the following information be considered when conducting analyses of future roadway projects.</p> <p><b>Sources of Uncertainty</b></p> <p>The discussion under “Health Risk Contributions from Highway Projects” (pp. 4-79 to 4-81) and “The Role of Health Risk Assessment in a National Environmental Policy Act Context” (p. 4-82) are welcome additions to MSAT discussions found in environmental documents for highway projects. However, this discussion describes only those sources of uncertainty that have the potential to lead to a “false positive” statement about health risk (i.e., an overestimation of the risk). Lacking from this discussion is a description of sources of uncertainty that lead to a higher chance of “false negative” statements about health risk. To be balanced, this section should address several notable sources of uncertainty, which create a potential for “false negative” statements of risk.</p> <p>First, exposure to mutagenic carcinogens during early life is associated with elevated risk of lifetime cancer. In EPA’s <i>Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens</i> (<a href="http://www.epa.gov/cancerguidelines/guidelines-carcinogen-supplement.htm">http://www.epa.gov/cancerguidelines/guidelines-carcinogen-supplement.htm</a>), exposures occurring during early childhood are assigned “age-dependent adjustment factors” which adjust the “potency” of the chemical for lifetime cancer risk as such:</p> <ul style="list-style-type: none"><li>• For exposures before 2 years of age (i.e., spanning a 2-year time interval from the first day of birth up until a child’s second birthday), a 10-fold adjustment.</li><li>• For exposures between 2 and &lt;16 years of age (i.e., spanning a 14-year time interval from a child’s second birthday up until their sixteenth birthday), a 3-fold adjustment.</li><li>• For exposures after turning 16 years of age, no adjustment.</li></ul> <p>Second, the discussion here focuses primarily on uncertainty associated with the parameters included in various models along the chain of models between emissions and risk, which is sometimes called “parametric uncertainty.” However, other sources of uncertainty include “model uncertainty” or “epistemic uncertainty” which results from the limitations in available information about the world contained in one or more models. One major source of epistemic uncertainty here is the assumption that risk assessment procedures adequately represent information about public health. Earlier in 2014, the U.S. authors at the U.S. Centers for Disease Control and Prevention (CDC) published a quantitative meta-analysis of studies of the risks of childhood leukemia associated with living near a major roadway, and found positive risks associated with residence after birth, but not before birth (Boothe et al., 2014). At the U.S. incidence rate of childhood leukemia (for age 0-14 years, 8.8 per 100,000 between 2001-2007 in NCI’s SEER database), the CDC’s relative risk of 1.53 suggests a risk enhancement of <math>(8.8 * 0.53 =) 4.7</math> per 100,000 associated with childhood residence near major roadways), or 0.0047 percent. While the etiologic agents responsible for the enhanced leukemia risks in children are unknown, three MSATs included in this FEIS are leukemogens in adults (i.e., benzene,</p>

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9	Health Risk Assessment	<p>The Federal Highway Administration appreciates the U.S. Environmental Protection Agency’s efforts to help us better understand the uncertainties associated with estimating health risk. The discussion of uncertainties in the National Environmental Policy Act document does not focus only on aspects of the risk assessment process that would lead to an overestimation of risk, as stated by the U.S. Environmental Protection Agency. For example, travel models, emissions models, dispersion models, and Integrated Risk Information System risk estimates can all be incorrect in either direction (high or low); the National Environmental Policy Act document does not claim that any of these tools are “biased high” (such that they would lead to an overestimation of risk). However, the National Environmental Policy Act document does point out that some of the assumptions that practitioners use in conducting risk assessments seem to be biased high; the examples used include the common assumptions that someone will be present at a fixed location for an entire 70-year lifetime, and that emissions levels will remain constant for 70 years and never improve. It is difficult to imagine scenarios in which these assumptions would lead to underestimation of risk (someone would have to be present at a location for longer than an entire lifetime, or the U.S. Environmental Protection Agency would have to rescind its emissions control regulations and allow vehicles to pollute more). In any event, the additional information the U.S. Environmental Protection Agency has provided is helpful, and the Federal Highway Administration will consider including it in uncertainty discussions in future National Environmental Policy Act documents.</p> <p>However, while it is always useful to have a better understanding of the uncertainties involved with health risk assessment, the Federal Highway Administration would like to reiterate that analysis uncertainty is only one of many reasons we have elected not to conduct a health risk assessment for this project. In both the Draft and Final Environmental Impact Statements, the Federal Highway Administration has explained the reasons for this decision. These include the following: 1) mobile source air toxics health risk is very low, particularly compared with overall cancer risk or fatal accident risk; 2) health risk assessments are typically based on 70-year lifetime exposure, which is unreasonable in the context of a roadway project; 3) mobile source air toxics health risk is likely to decline further because emissions are projected to drop by more than 80 percent over the life of the project; 4) the project makes almost no difference in study area mobile source air toxics emissions (the analysis projected an 83.98 percent drop in emissions with the project and an 84.03 percent drop in emissions without the project); 5) the project likely has health benefits for roadway users; and 6) health risk assessment as an analysis technique appears to be inconsistent with the guidelines the Council on Environmental Quality has developed for National Environmental Policy Act documents.</p> <p>The comparison of cancer risk as reported by project risk assessments to the risk of death in traffic fatalities was not meant to be an apples-to-apples comparison. Instead, it was meant to provide a tangible, health-based comparison that lay readers could relate to. While childhood leukemia is (thankfully) rare, even at a rate of 47 in a million, traffic fatalities are common enough that most people can relate to that risk. Many people personally know someone who lost his or her life in a traffic accident, and people have a good understanding of that risk and have adapted to it in various ways, whether driving more carefully, wearing a seat belt, or ignoring the risk altogether. Since the South Mountain Freeway Final Environmental Impact Statement represents the first time that the Federal</p>



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	<p>formaldehyde, 1,3-butadiene). In that the majority of pediatric leukemia cases take place within the first 5 years of life, this suggests that a focus on 70-year lifetime cancer risk and the attendant uncertainties described in the text box on Page 4-82 has the potential to understate risk.</p> <p>As such, this section should include a discussion of sources of uncertainty that are more likely to result in a “false negative” statement of health risk (or an underestimate) than a “false positive” (or an overestimate) associated with health risks. In particular:</p> <ul style="list-style-type: none"><li>• In keeping with EPA’s supplemental risk guidelines for early-life exposure to carcinogens, this section should note that early-life exposures to certain MSATs may result in higher risk than those studies reviewed here.</li><li>• CDC’s study should be discussed to illustrate that risk assessment focused exclusively on adults may underestimate cancer risks in children.</li></ul> <p>Overall, the qualitative description of uncertainties on p. 4-82 reach the conclusion that the results of, “health risk assessment would be more influenced by the uncertainty introduced into the process through assumptions and speculation rather than by genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a project. Therefore, outcomes of such a health risk assessment do not provide useful information for decision makers.”</p> <p>Given that epidemiology studies of actual cases of childhood cancer have reported statistically significant associations between disease risk and concentrations of MSATs and other pollutants predicted by similar models (see comments below), this statement seems unjustified. If such information is of sufficient quality for use in cancer epidemiology studies, it seems reasonable that such information would also be relevant to NEPA review and of interest to decision makers.</p> <p><b>Risk Comparison</b></p> <p>The Final EIS states that, “...the incremental risk of cancer from breathing air near a major roadway is several hundred times lower than the risk of fatal accident from using a major roadway” (p. 4-81). However, given CDC’s estimate for childhood leukemia risk (Relative Risk of 1.53, corresponding to excess risk of 4.7 per 100,000 children), this statement should be reworded to reflect risks of a more comparable magnitude. Comparing traffic fatalities to cancer deaths is not a strictly apples-to-apples comparison. The air pollution risks from MSATs are part of the larger impacts of air pollution on public health, which includes deaths from cardiovascular disease and other causes. Recent studies estimate the annual premature mortality attributable to air pollution in the U.S. to be approximately 200,000. As such, we recommend that MSAT risks be compared to this larger quantified air pollution risk, rather than to traffic fatalities in general.</p> <p><b>Literature on MSATs</b></p> <p>The publications described on pages 4-81 to 4-85 represent a small percentage of total articles and publications about MSAT exposures and risks. As such, these publications seem to have been selectively chosen to support FHWA’s conclusion that risk assessment for MSATs is too uncertain to support decision making. In addition to the description of CDC’s meta-analysis, above, which links childhood leukemia rates with living near a major road, where known or likely leukemogens for adults are emitted (e.g., benzene, formaldehyde, and 1,3-butadiene), there are several other studies that discuss how exposure to MSATs affect health including:</p> <p>2</p>

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		<p>Highway Administration has provided a comparative summary of mobile source air toxics health risk from highway projects, the Federal Highway Administration felt it was important to compare mobile source air toxics health risk to another health risk that readers could easily relate to, since most readers deal with it in some way on a daily basis. The Federal Highway Administration agrees that comparison of mobile source air toxics cancer risk to premature mortality from air pollution in general would also be useful, and will consider this for future National Environmental Policy Act documents.</p> <p>The Federal Highway Administration also agrees that the selection of studies reported in the Final Environmental Impact Statement represents a small fraction of the available articles and research reports regarding near-road air pollution health impacts. Rather than cite the hundreds of available studies individually, the Federal Highway Administration summary attempts to capture the important synthesis works, that is, the collections of related studies that are compared and summarized for policymakers and regulators. However, as spelled out in the Federal Highway Administration's 2012 mobile source air toxics guidance and in the section, <i>MSAT Information Status</i>, on page 4-81 of the Final Environmental Impact Statement, the Federal Highway Administration referenced these studies in the Final Environmental Impact Statement as sources of additional background information on mobile source air toxics health effects and research. These studies are not referenced as sources of further information regarding health risk assessment uncertainties, as implied by the U.S. Environmental Protection Agency's comment. While some of these studies do address the topic of uncertainties, they are provided primarily as sources of general background information on mobile source air toxics for readers interested in learning more about the topic.</p>

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	<div><ul style="list-style-type: none"><li>• A study by EPA authors comparing the performance of multiple dispersion models (RLINE, AERMOD with volume sources, AERMOD with area sources, ADMS, CALINE3, and CALINE4) used measurements from tracer studies in two locations to quantify the performance of each of these models.<sup>7</sup> For CALINE3/4, RLINE, ADMS, and AERMOD, metrics of performance (fractional bias – FB, normalized mean square error – NMSE, correlation – R, and fraction of estimates within a factor of measured values – FAC2) were all published. These metrics suggest good performance of RLINE, AERMOD, and ADMS.</li><li>• An air quality modeling study using AERMOD’s dispersion of benzene, 1,3-butadiene, and toluene compared the outcomes to measurements near a major highway in Raleigh, North Carolina. “The results presented in the paper demonstrate the suitability of the formulation in AERMOD for estimating concentrations associated with mobile source emissions near roadways.”<sup>8</sup></li><li>• In an Italian case-control study, benzene concentrations at children’s residences modeled with the European emissions model (COPERT IV) and CALINE4 dispersion model were associated with the risk of childhood leukemia among 83 cases of leukemia in the years 1998-2009, particularly among myeloid leukemia before age 5 years.<sup>9</sup> This study was not included in the CDC meta-analysis, which focused only on “traffic,” not specific air pollutants. While benzene could be correlated with other toxics, concentrations of air toxics modeled in the way that this document describes “would not necessarily have a strong nexus to the requirements for high-quality information and accurate scientific analysis” (p. 4-82). Yet such models did provide enough quality-based information to address children’s exposure in an epidemiology study. Such a study is not “risk assessment,” but epidemiology based on actual pediatric cancer cases. If such modeling produces enough information that epidemiology models have sufficient power to statistically associate it with the likelihood of real-world pediatric leukemia, it is hard to understand how such information is described as poor quality.</li><li>• A case-control study in California used CALINE4 for quantifying Carbon Monoxide (CO) at pregnant women’s residential addresses and found statistically significant associations with their children’s risk of acute pediatric lymphoblastic leukemia (ALL), germ cell tumors, and retinoblastoma.<sup>10</sup> Notably, the study found negative associations between the mothers’ exposure to CO and the risks of acute myeloid leukemia (AML). This study was published after CDC’s publication cutoff, and notably found pediatric cancer risks associated with <i>in utero</i> exposures– risks which CDC’s meta-analysis found nonsignificant. The study also found that average PM2.5 concentrations during pregnancy also created risks for retinoblastoma in children’s residences with much traffic near their home.</li><li>• A cohort study in Toronto, Canada used “land-use regression (LUR) surfaces” based on Volatile Organic Compound (VOC) measurements in 2002 and 2005 to quantify the exposure for Toronto residents.<sup>11</sup> These VOCs included total hydrocarbons and the MSATs benzene</li></ul></div> <div><p>7 Heist, D.; Isakov, V.; Perry, S.; et al. (2013) Estimating near-road pollutant dispersion: a model inter-comparison. <i>Transportation Research Part D: Transport and Environment</i> 25: 93-105.</p><p>8 Venkatram, A.; Isakov, V.; Seila, R.; Baldauf, R. (2009) Modeling the impacts of traffic emissions on air toxics concentrations near roadways. <i>Atmospheric Environment</i> 43: 3191-3199.</p><p>9 Vincenti, M.; Rothman, K.J.; Crespi, C.M.; et al. (2012) Leukemia risk in children exposed to benzene and PM10 from vehicular traffic: a case-control study in an Italian population. <i>Europe J Epidemiology</i> 27: 781-790.</p><p>10 Heck, J.E.; Wu, J.; Lombardi, C.; et al. (2013) Childhood cancer and traffic-related air pollution exposure in early life. <i>Environmental Health Perspectives</i> 121: 1385-1391.</p><p>11 Villeneuve, P.J.; Jerrett, M.; Su, J.; et al. (2013) A cohort study of intra-urban variations in volatile organic compounds and mortality, Toronto, Canada. <i>Environmental Pollution</i> 183: 30-39.</p></div> <div>3</div>

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	<p>and n-hexane. The exposures (for benzene) were based on a LUR that included distance to expressways and major roads and nearby commercial and industrial land area. The article concluded, “Our exploratory multi-pollutant modeling implicated benzene rather than nitrogen dioxide as the pollutant that may be responsible for the increase in cancer-related mortality, whereas the opposite held true for cardiovascular disease mortality.”</p> <ul style="list-style-type: none"><li>• Formaldehyde exposure has been linked with leukemia in a number of occupational studies, with a particular focus on myeloid leukemia.<sup>12</sup></li></ul> <p>These studies do not represent all the publications available, but provide sufficient evidence that the references provided in the Final EIS are not representative of the range of publications that are available.</p> <p>With respect to the publications by HEI discussed on pages 4-83 to 4-84, saying that “<i>In general, the authors ... were unable to find that highways were the only source of these pollutants</i>” does not describe the hypotheses for which these studies were designed. In fact, Liroy et al. (HEI Report 160) was intentionally selected to reflect emissions of multiple sources of toxics, including one with “industrial sites serviced by heavy truck traffic” that was hypothesized to be a hot-spot and a comparison site with no industrial sites chosen as a comparison site. While the authors did find that the hypothesized “hot spot” had higher concentrations of PM2.5, toluene, xylenes, and PAHs than the comparison site, the comparison site had concentrations of benzene, MTBE, chloroform, carbon tetrachloride, hexane, and acetaldehyde that were as high or higher. HEI’s Research Committee “concurred with the investigators’ conclusion that, by their alternative definition of a hot spot (i.e., having elevated concentrations compared with those of other, more distant areas in New Jersey and across the United States), both neighborhoods could be considered hot spots for PM2.5, benzene, toluene, MTBE, and aldehydes.” In a saturation-sampling substudy, HEI states that “results showed that, even within a possible hot spot, spatial variability in ambient concentrations can be found, suggesting that people in some locations within a neighborhood are likely to be exposed to much higher concentrations than those recorded at a fixed monitoring site in the same neighborhood.”</p> <p>Similarly, in the statement on Research Report 158 (Spengler et al.), the Research Committee noted, “Although the levels of MSATs in the area near the Peace Bridge in Buffalo may not be high relative to those in other locations in the United States, these data contribute to our understanding of how traffic emissions may result in elevated levels of air toxics in a local area.”</p> <p>Likewise, in HEI report 156, the HEI statement reads:</p> <p>“The study’s main conclusions are that (1) on-road concentrations of all pollutants measured, including several MSATs, were higher than those measured at fixed sites away from the roads, (2) gasoline-powered vehicles are the main sources of VOCs (including BTEX) at the near-road sites, and (3) diesel- and gasoline-powered vehicles contribute about 50% to 60% of TC associated with PM.”</p> <p>Across the studies, the Review Committee noted that the design of studies, such as the selection of a high-traffic comparison site in the Liroy et al. study, the lack of control of ventilation inside vehicles (Fujita et al., Study 156), and the lack of “appropriately selected background sites” in the Smith et al. (truck terminals) study creates problems in defining a particular location as a “hot spot,” but nevertheless underscores the potential for emissions from traffic infrastructure to increase the concentrations of numerous toxics and other pollutants in nearby locations.</p> <p><sup>12</sup> Zhang, L.; Steinmaus, C.; Eastmond, D.A.; et al. (2009) Formaldehyde exposure and leukemia: a new meta-analysis and potential mechanisms. <i>Mutation Research</i> 681: 150-168.</p> <p>4</p>

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	<div><p>Overall, the HEI Review Committee made numerous comments about the difficulty of defining a “hot spot.” Within local areas, the studies found generally significant gradients within local areas between source locations and backgrounds (one exception is Smith et al.’s trucking terminal study, where the committee noted a lack of appropriate background monitoring and control of wind conditions). However, the HEI Review Committee introduced the notion of comparing study results to concentrations reported in other studies reporting measurements of air toxics in urban areas, which includes locations with numerous other air pollution sources, as an alternative way of defining “hot spot.” To conclude that the studies found that, “<i>no true hot spots were identified</i>” is to overlook nearly all of the written discussion of the studies by the investigators and the HEI Review Committee.</p></div> <div>5</div>

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