

**PM_{2.5} CONFORMITY DETERMINATION
MOBILE AIR SOURCE TOXICS ANALYSIS**

**BOCK ROAD BRIDGE OVER HENSON CREEK
BRIDGE REPLACEMENT – BRIDGE NO. P0309
PRINCE GEORGE'S COUNTY, MARYLAND**

PREPARED BY: PRINCE GEORGE'S COUNTY

April 30, 2009

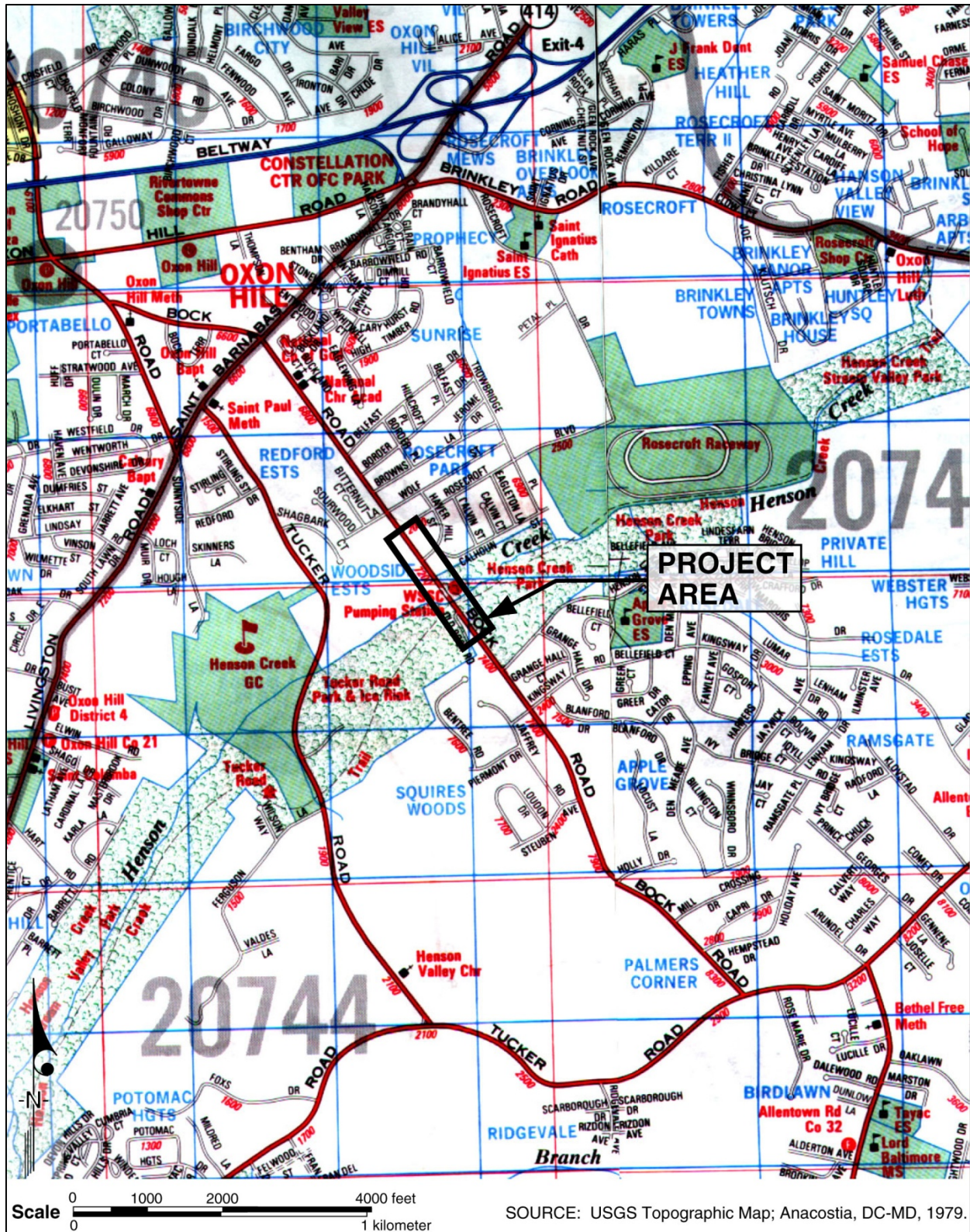
Project Description

The proposed scope of work includes the replacement of Bridge No. P0309 on Bock Road over Henson Creek in Prince George's County, Maryland and the construction of a hiker/biker/equestrian trail beneath the bridge. Bock Road is an Urban Collector roadway that carries traffic between St. Barnabas Road and Tucker Road in Oxon Hill, MD (see **Figure 1**). The average daily traffic (ADT), recorded in 2007 was 11,263 vehicles per day with 450 diesel trucks, the future projected ADT for 2027 is 18,030 with 721 diesel trucks under both build and no-build conditions.

Bridge No. P0309 is a 109-foot long 28-foot wide, three-span bridge over Henson Creek with two 12-foot lanes and a 4-foot concrete sidewalk. The approach roadway is also 28 feet wide. Built in 1959, the bridge is currently in a state of distress with a Bridge Sufficiency Rating of 28.

The project entails replacing the existing bridge to provide two 12-foot wide traffic lanes, two 11-foot shoulders, and two 4-foot bicycle lanes for a total clear roadway width of 54 feet. The bridge will also carry two 5-foot sidewalks with non-mountable curbs. The vertical alignment will be raised to allow a hiker/biker/equestrian trail to pass underneath, eliminating the current at-grade crossing and thereby enhancing safety and access. The roadway approaches to the bridge (approximately 800 linear feet south of the proposed bridge and approximately 600 linear feet north of the proposed bridge) will also be widened as consistent with the proposed bridge. Designing the bridge with a 54-foot clear roadway width will accommodate potential future traffic. While Bock Road will ultimately be widened to four travel lanes based on future traffic projections, there are no current plans to widen Bock Road at this time.

Figure 1. Project Location Map



Transportation Conformity

Prince George's County, Maryland, is in the Washington, DC-MD-VA Particulate Matter (PM)_{2.5} nonattainment area. This area was designated as nonattainment for PM_{2.5} on January 5, 2005 by the US Environmental Protection Agency (EPA). This designation became effective on April 5, 2005, 90 days after EPA's published action in the Federal Register. Transportation conformity for the PM_{2.5} standards applied on April 5, 2006, after the one-year grace period provided by the Clean Air Act.

On March 10, 2006, EPA issued amendments to the transportation Conformity Rule to address localized impacts of particulate matter: "PM_{2.5} and PM₁₀ Hot-Spot Analyses in Project-level Transportation Conformity Determinations for the New PM_{2.5} and Existing PM₁₀ National Ambient Air Quality Standards" (71 F 12468). These rule amendments require the assessment of localized air quality impacts of Federally-funded or approved transportation projects in PM₁₀ and PM_{2.5} nonattainment and maintenance areas deemed to be *projects of air quality concern*¹.

Projects that require hotspot analysis for PM_{2.5} are those that are *Projects of Air Quality Concern* as enumerated in 40 CFR 93.123(b)(1):

- (i) *New or expanded highway projects that have a significant number of or significant increase in diesel vehicles;*
- (ii) *Projects affecting intersections that are at Level-of-Service D, E, or F with a significant number of diesel vehicles, or those that will change to Level-of-Service D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project;*
- (iii) *New bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location;*
- (iv) *Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location; and*
- (v) *Projects in or affecting locations, areas, or categories of sites which are identified in the PM₁₀ or PM_{2.5} applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violations.*

As discussed in the examples of the preamble to the March 10, 2006 Final Rule for PM_{2.5} and PM₁₀ Hot-Spot Analyses in Project-Level Transportation Conformity Determinations (71 FR 12491), for projects involving the expansion of an existing highway, 40 CFR 93.123(b)(1)(i) has been interpreted as applying only to projects that would involve a significant increase in the number of diesel transit buses and diesel trucks on the existing facility. This has been further clarified in a proposed rule amendment as "*EPA is proposing to clarify this provision as 'New*

¹ Criteria for identifying *projects of air quality concern* is described in 40 CFR 93.123(b)(1), as amended.

highway projects that have a significant number of diesel vehicles, and expanded projects that have a significant increase in the number of diesel vehicles.”²

Prince George’s County has prepared the following analysis of the bridge rehabilitation:

- As shown in **Table 1**, the proposed Bock Road bridge replacement is not anticipated to add any additional traffic or diesel trucks over no-build conditions in Design Year 2027.
- The Bock Road Bridge Replacement Project does not meet any of the criteria set forth in 40 CFR 93.123(b)(1), as amended, to be considered a project of “air quality concern”. The project consists of a bridge replacement on an existing connector highway used primarily by gasoline vehicles. Bock Road is a two lane roadway with estimated truck traffic of 4%. Although the wider bridge span would accommodate future widening of Bock Road, the bridge replacement project will not increase capacity and future truck traffic under both build and no-build conditions is also estimated to be 4%. Therefore, it has been determined that a PM_{2.5} Hot-spot Analysis is not required for this project based the projected level of traffic shown in the design year 2027 (18,030 ADT with 751 diesel trucks, compared with 11,263 ADT with 450 diesel trucks in 2007). Conformity means that the transportation activity will not cause new air quality violations, worsen existing violations, or delay timely attainment of the relevant national ambient air quality standards (NAAQS). Based on review and analysis of the traffic data, it has been determined that the Bock Road Bridge widening project meets the requirements set forth in 40 CFR 93.109 for conformity.
- Upon its construction, the Bock Road Bridge Replacement Project will not provide additional travel lanes over existing conditions. However, the 54-foot clear roadway width will eventually accommodate future traffic projections, and it is anticipated that Bock Road will ultimately be widened from two lanes to four lanes. In accordance with FHWA guidance, "40 CFR 93.123(b)(1)(i) should be interpreted as applying only to projects that would involve a significant increase in the number of diesel trucks on the facility". The No-Build and Build volumes and truck percentages for the project are expected to be equal because the current project is a pedestrian safety and bridge replacement project. There are no plans to widen Bock Road at this time. No additional capacity is being added as part of this bridge replacement project and as such, the no-build and build volumes remain the same for design year 2027.

² Transportation Conformity Rule Amendments to Implement Provisions Contained in the 2005, Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) [Federal Register: May 2, 2007 (Volume 72, Number 84)] [Proposed Rules] [Page 24489]

- Section 176(c) of the Clean Air Act and the federal conformity rule require that transportation plans and programs conform to the intent of the air quality state implementation plan (SIP) through a regional emissions analysis in PM_{2.5} nonattainment areas. The National Capital Region 2005 Constrained Long Rang Transportation Plan (CLRP) and the 2006-2011 Transportation Improvement Program (TIP) has been determined to conform to the intent of the SIP. The U.S. Department of Transportation made a PM_{2.5} conformity determination on the CLRP and TIP on February 21, 2006, and thus, there is a currently conforming transportation plan and TIP accordance with 40 CFR 93.114. The current conformity determination is consistent with the final conformity rule found in 40 CFR Parts 51 and 93. Conformity to the purpose of the SIP means that the transportation activity will not cause new air quality violations, worsen existing violations, or delay timely attainment of the relevant NAAQS.
- Based on review and analysis as discussed above, it is determined that the Bock Road Bridge Replacement Project meets the Clean Air Act and 40 CFR 93.109 requirements for particulate matter. These requirements are met without a hot-spot analysis because the project **has not been found to be a project of air quality concern** as defined under 40 CFR 93.123(b)(1). The project will not cause or contribute to a new violation of the PM_{2.5} NAAQS, or increase the frequency or severity of an existing violation.
- By email dated [redacted], this Bock Road Bridge Replacement Project Conformity Determination was approved by FHWA, and forwarded to EPA, MDE, and MWCOG for Interagency Consultation. **Add conformity agreement language/dates here.** This Conformity Determination will be... **add language on how it will be made available to the public**...for a 15 day public review and comment period. Please see attachment for interagency comments and approvals.

TABLE 1
Bock Road Bridge Replacement
ADT and Diesel Truck Percentages

	2007	2027 No-Build	2027 Build	Change: No-Build vs. Build	% Change No-Build vs. Build
ADT Volumes	11,263	18,030	18,030	0	0
% Diesel Trucks - ADT	2007 diesel truck percent is 4%. 2027 diesel truck percent would be 4% for No-Build/Build conditions. Actual number of trucks would increase proportionally to increase in overall traffic under build and no-build scenarios.				
Daily Diesel Truck Volumes	450	721	721	0	0

Mobile Source Air Toxics (MSAT) Analysis

FHWA *Interim Guidance on Air Toxic Analysis in NEPA Documents*, dated February 3, 2006 requires analysis of Mobile Source Air Toxics (MSAT) under specific conditions. The Bock Road Bridge Replacement Project would be considered in the category: "*Projects with Low Potential MSAT Effects*", as described in the above referenced interim guidance, Appendix B (1) Minor Widening Projects. An example of this type of project is a minor widening project for which the ultimate Average Annual Daily Traffic (AADT) is predicted to be less than 150,000. The design AADT level for the proposed widening project is estimated to be 18,030 for the year 2027.

MSATs are a subset of the 188 EPA identified hazardous air pollutants (HAPs). Some of the MSAT regulated compounds are present in fuel and are emitted in combustion or evaporative processes. Six of the 21 MSATs were identified as "priority" MSATs in the Final Rule on Controlling Emissions of Hazardous Pollutants from Mobile Sources: benzene, diesel exhaust organic gas, formaldehyde, acetaldehyde, 1,3-butadiene, and acrolein (66 FR 17230). In the process of establishing this rule, the EPA also examined the impacts from projected mobile source control programs (reformulated gasoline, vehicle emission standards, fuel sulfur, and heavy duty vehicle emission controls) and determined that between 2000 and 2027, emissions from the six priority MSATs would be reduced by 57% to 87%. **This would occur despite a projected increase in vehicle miles traveled (VMT) of 64%.**

This report includes a basic qualitative analysis of the likely MSAT emission impacts of this project. Available technical tools do not enable us to predict the project-specific health impacts of the emission changes associated with the Build Alternative. Due to these limitations, the following discussion is included in accordance with Council on Environmental Quality regulations (40 CFR 1502.22(b)) regarding incomplete or unavailable information:

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

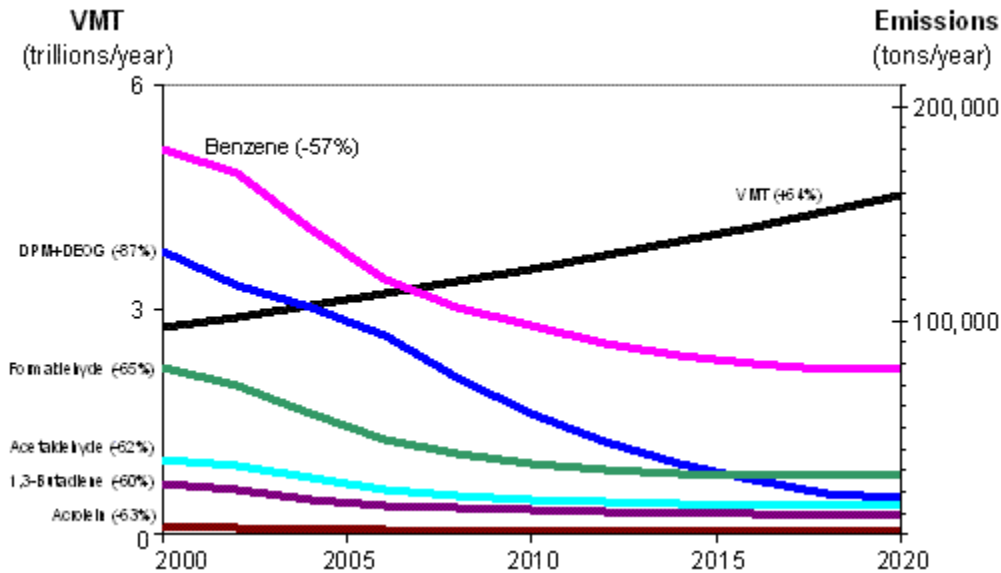
The EPA tools to estimate MSAT emissions from motor vehicles are not sensitive to key variables determining emissions of MSATs in the context of highway projects. The tools to predict how MSATs disperse are also limited. Even if emission levels and concentrations of MSATs could be accurately predicted, shortcomings in current techniques for exposure assessment and risk analysis preclude reaching meaningful conclusions about project-specific health impacts. Research into the health impacts of MSATs is ongoing. For different emission

types, there are a variety of studies that show that some either are statistically associated with adverse health outcomes through epidemiological studies (frequently based on emissions levels found in occupational settings) or that animals demonstrate adverse health outcomes when exposed to large doses. The EPA is in the process of assessing the risks of various kinds of exposures to these pollutants.

As discussed above, technical shortcomings of emissions and dispersion models and uncertain science with respect to health effects prevent meaningful or reliable estimates of MSAT emissions and effects of this project. However, even though reliable methods do not exist to accurately estimate the health impacts of MSATs at the project level, it is possible to qualitatively assess the levels of future MSAT emissions under the project. Although a qualitative analysis cannot identify and measure health impacts from MSATs, it can give a basis for identifying and comparing the potential differences among MSAT emissions, if any from the Build Alternative.

For the Build Alternative in this report, the amount of MSATs emitted would be proportional to the VMT. While there is expected to be an increase in VMT for the Build Alternative, the impact from MSATs is expected to be lower than the existing conditions as a result of EPA's projected vehicle emission and fuel regulations. The No-Build and Build volumes for the project are expected to be equal. Refer to **Figure 3** (as provided in the FHWA *Guidance on Air Toxic Analysis in NEPA Documents, February 2006*).

Figure 2. U.S. Annual Vehicle Miles Traveled (VMT) vs. Mobile Source Air Toxics Emissions, 2000-2020



Notes: For on-road mobile sources. Emissions factors were generated using MOBILE6.2. MTBE proportion of market for oxygenates is held constant, at 50%. Gasoline RVP and oxygenate content are held constant. VMT: Highway Statistics 2000, Table VM-2 for 2000, analysis assumes annual growth rate of 2.5%. "DPM + DEOG" is based on MOBILE6.2-generated factors for elemental carbon, organic carbon and SO₄ from diesel-powered vehicles, with the particle size cutoff set at 10.0 microns.

The Bock Road Bridge Replacement Project will not result in any meaningful changes in the traffic volume or any other factor that would cause and increase in emissions impact. As such FHWA has determined that this project will generate very minimal air quality for the Clean Air Act criteria pollutants and has not been linked with any special MSAT concern.

References

40 CFR 93. *PM_{2.5} and PM₁₀ Hot-Spot Analyses in Project-Level Transportation Conformity Determinations for the New PM_{2.5} and existing PM₁₀ National Ambient Air Quality Standards; Final Rule.* January 25, 2008.

40 CFR 1500 Council on Environmental Quality. *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act.*

Federal Highway Administration. *Interim Guidance on Air Toxic Analysis in NEPA Documents,* February 3, 2006.

Federal Register. (Volume 66, Number 61) Pages 17230, March 29, 2001.