



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4

ATLANTA FEDERAL CENTER  
61 FORSYTH STREET  
ATLANTA, GEORGIA 30303-8960

JUN - 1 2007

The Honorable John L. Duncan, Jr.  
United States House of Representatives  
Washington, DC 20515-4202

Dear Congressman Duncan:

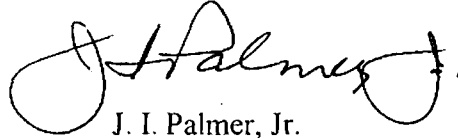
Thank you for your April 12, 2007, letter to Stephen L. Johnson, Administrator of the U.S. Environmental Protection Agency (EPA), on behalf of Mr. David A. Burkhalter, II concerning the potential environmental effects from vehicular emissions associated with development of the proposed Route 475 (Knoxville Parkway) in Loudon, Anderson, and Knox Counties, Tennessee. Your letter was forwarded to me for a response.

As noted in Mr. Burkhalter's letter, the Tennessee Department of Transportation (TDOT) and Federal Highway Administration (FHWA) are currently developing a Supplemental Draft Environmental Impact Statement (SDEIS) for the Route 475 project. On April 3, 2006, EPA submitted scoping comments regarding specific issues and concerns that should be addressed in the SDEIS. For your reference, I have enclosed a copy of that letter. In this letter, EPA raised similar issues to those mentioned by Mr. Burkhalter in his letter (*i.e.*, references to the Mobile Source Air Toxics rule). Based on information from TDOT, we anticipate the finalization and release of the SDEIS for public comment later this year or in early 2008.

We appreciate Mr. Burkhalter's concerns that mobile sources emit air toxics that can cause cancer and other serious health effects. Projects that result in air toxics emissions and particulate matter from mobile sources, particularly diesel exhaust, pose heightened concerns for human health. Once the SDEIS is released, our staff will review this document to determine the extent to which it adequately discloses potential air toxics emission impacts and approaches to mitigate these impacts for each alternative, including the proposed "Orange Route." In addition, air quality in the Knoxville area does not meet national standards for fine particulate matter. As a result, TDOT and FHWA must follow an interagency consultative process that includes review and analysis of project impacts to ensure that new air quality violations are not created. The conclusions reached by the interagency consultation process should be included in the Final EIS. For specific information regarding the status of the Route 475 SDEIS, Mr. Burkhalter may contact Mr. Tom Love, TDOT Environmental Planning Office, at (615) 741-5364.

If you have questions or need additional information from EPA, please contact me or the Region 4 Office of Congressional and Intergovernmental Relations at (404) 562-8327.

Sincerely,

A handwritten signature in black ink, appearing to read "J. I. Palmer, Jr.", with a large, stylized initial "J" and a flourish at the end.

J. I. Palmer, Jr.  
Regional Administrator

Enclosure

cc: Bobby Blackmon, FHWA, Tennessee Division  
Gerald Nicely, Commissioner, TDOT  
Paul Sloan, Deputy Commissioner, TDEC



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APR 03 2006

Charles Bush  
Transportation Manager II  
Tennessee Department of Transportation  
James K. Polk Building  
505 Deaderick Street, Suite 900  
Nashville, Tennessee 37243-0334

**SUBJECT:** Early Coordination on the Supplemental Draft Environmental Impact Statement for Proposed Route 475 (Knoxville Parkway) in Loudon, Anderson, and Knox Counties, Tennessee

Dear Mr. Bush:

The U.S. Environmental Protection Agency (EPA) received your letter dated December 22, 2005, requesting comments on potential environmental impacts that should be addressed in the Supplemental Draft Environmental Impact Statement (EIS) being prepared for the proposed Route 475 (Knoxville Parkway) in Loudon, Anderson, and Knox Counties, Tennessee. In accordance with this request, we wish to provide some comments regarding specific issues and concerns that should be addressed in the subject document. All comments are based on a limited review of the information included in your letter and that included in the Knoxville Parkway website. These comments are made pursuant to the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act (CAA).

On December 18, 2001, the Tennessee Department of Transportation (TDOT) and the Federal Highway Administration (FHWA) signed a Draft EIS for the Route 475 project that assessed the impacts of three potential highway corridors (Blue, Green and Orange). Public hearings were held in February and March 2002, to allow review and comment on the Draft EIS. EPA submitted extensive comments on the Draft EIS on March 14, 2002 (the original letter was incorrectly date-stamped as "March 14, 2001"), including concerns about the project alternatives, wetland and aquatic resources (i.e., stream channelization, floodplains, and water quality), contaminated sediments, air quality, noise, relocation impacts and indirect and cumulative impacts associated with the proposed project. Since that time, EPA has not received any response to our comments or any formal correspondence or updates related to this project until your most recent letter. Therefore, EPA is resubmitting our comments on the Draft EIS for your consideration as you develop the Supplemental Draft EIS. The following are additional comments that should be addressed in the document:

#### Future Projected Traffic

The Supplemental Draft EIS should include a thorough analysis of future traffic conditions on the proposed facility, with a particular emphasis on estimating future truck traffic. The traffic analysis should identify the current percentage of truck traffic that utilizes I-40/I-75 through

Knoxville and an estimation of additional truck traffic or percentage of future traffic that will utilize the new facility. This information is critical for the purposes of completing updated air quality (see below) and noise impacts assessment and should be split out and reported directly.

#### Air Quality – Transportation Conformity

The Knoxville area, including Anderson, Knox, and Loudon Counties, are designated nonattainment for the 8-hour ozone standard effective June 2004. Additionally, these three counties were designated nonattainment for the particulate matter (PM) 2.5 standard effective April 2005. Because the project is located in these nonattainment areas, the discussion on this area's status with regard to those standards should be included in the Supplemental Draft EIS. In addition, it should be confirmed that the project is included in the most recent air quality conformity analysis for the Knoxville 8-hour ozone and PM2.5 nonattainment areas.

Also, the Supplemental Draft EIS should include a localized, project-specific impact analysis related to compliance with the PM2.5 standard. On March 10, 2006, EPA approved a new transportation conformity rule (71 FR 12468) that establishes requirements for project-level conformity determinations in PM2.5 nonattainment and maintenance areas. This rule requires that PM2.5 "hot-spot analyses" be included in project-level conformity determinations for new transportation projects with significant diesel traffic, such as major highway projects and projects at congested intersections that handle significant diesel traffic. This hot-spot analysis is necessary to ensure that a new air quality violation is not created and that any existing violation is not worsened. A quantitative analysis is not required until EPA issues a new motor vehicle emissions model capable of estimating local emissions as well as future hot-spot modeling guidance. Qualitative analyses will apply for any project-level approvals after April 5, 2006. Therefore, the Supplemental Draft EIS should include an analysis to determine the project's impact to localized violations of the PM2.5 standard, especially since this project is anticipated to be heavily used by trucks.

On March 29, 2006, EPA and FHWA released joint guidance on how to perform qualitative hot-spot analyses in PM2.5 and PM10 nonattainment and maintenance areas. This guidance provides information for State and local agencies to meet the PM2.5 and PM10 hot-spot analysis requirements established in the March 10, 2006, final transportation conformity rule. This guidance can be found at EPA's website: <http://www.epa.gov/otaq/stateresources/transconf/policy.htm>. It should be noted that interagency consultation is a requirement for project-level conformity determinations and should be used to develop the methodologies and to review the planning assumptions for the PM2.5 hotspot requirement. There is an active Knoxville Interagency Consultation group established. Michael Conger, Senior Transportation Engineer with the Knoxville Regional Transportation Planning Organization, serves as the facilitator for this interagency consultation group and can likely assist in arranging an interagency discussion on this project-level conformity determination. Mr. Conger's phone number is (865) 215-3813.

#### Air Quality – Air Toxics

The Clean Air Act requires EPA to control hazardous air pollutants (or "air toxics") from mobile and stationary sources. EPA identified a group of 21 mobile source air toxics (MSATs), which are set forth in an EPA final rule, Control of Emissions of Hazardous Air Pollutants from Mobile Sources (66 FR 17235, March 29, 2001). Most recently, EPA has published another

proposal to further control mobile source air toxics (71 FR 15804, March 29, 2006). In this proposal, EPA identifies seven MSATs of greatest concern because of their contribution to cancer and/or noncancer risk: benzene, 1,3-butadiene, formaldehyde, acrolein, polycyclic organic matter, naphthalene, and diesel exhaust (specifically, diesel particulate matter and diesel exhaust organic gases). There is heightened concern for human health from projects that result in air toxics emissions and particulate matter from mobile sources, particularly diesel exhaust. A large number of human epidemiology studies show increased lung cancer associated with diesel exhaust and significant potential for non-cancer health effects.

Consequently, EPA recommends that the Supplemental Draft EIS disclose potential MSAT emission impacts resulting from each of the build alternatives (including construction activities) for purposes of comparison, including a discussion of the resulting cancer and non-cancer health effects associated with emissions of, at a minimum, benzene, 1,3-butadiene, formaldehyde, acrolein, and diesel exhaust (specifically, diesel particulate matter and diesel exhaust organic gases). If additional air toxics are associated with the project which may substantively impact the study area, they should be included in the analysis as well. The specific human populations to be assessed should include the general population as well as sensitive receptor populations such as schools, healthcare facilities (e.g., hospitals), elderly populations, and environmental justice communities. Both regional and near roadway impacts (typically within 200 meters of the project) should be considered. Such analyses would include, for example: (1) the disclosure of all locations at which exposures to sensitive receptors may increase because of construction, widening or moving roads and ramps, increased traffic, increased diesel traffic, or increased loads on engines; and (2) an assessment of the factors that could influence the degree of adverse impact on the population such as the amount of construction activity, proximity of construction to people, etc. Analytical approaches that will lead to an understanding of potential increases (or decreases) in exposures to these target populations will typically require the development of emissions inventories for the various build alternatives and may also require dispersion modeling. The analysis should assess the cumulative impact posed by the project in combination with exposures to chemicals that result from other sources which impact the study area.

#### Aquatic Resources – Surface Water

EPA has concerns about degradation of water quality in various waterways from erosion, siltation and other pollutants associated with road construction and operations. The Supplemental Draft EIS should analyze the potential for significant impacts to water quality from construction activities and indirect impacts associated with development and land use change in the study area. There are several rivers and streams in the project area which appear on the Tennessee Department of Environment and Conservation (TDEC) 2004 303(d) list of impaired waterbodies from several different pollutants and sources. EPA encourages FHWA and TDOT to consult with TDEC, Division of Water Pollution Control regarding the status of development of Total Maximum Daily Loads (TMDL) for these waterways and how the proposed new alignment segments could affect implementation of restoration efforts in these watersheds. Although many of the TMDL studies for these waterbodies have not been initiated, they will most likely be finalized before construction starts on the project. The proposed project could have a significant impact on the future ability of de-listing these waterbodies from Tennessee's 303(d) list.

The Supplemental Draft EIS should include a thorough description of all streams and rivers that have the potential to be impacted by the project. Stream types should be delineated according to the Rosgen classification of natural rivers which is based on the fluvial geomorphic condition of rivers and their valleys. Impacts to rivers and streams, in terms of linear feet impacted and type of impact (e.g., channelization) should be included in the Draft Supplemental EIS. Mitigation for major projects, such as the Knoxville Parkway, can often require extensive and complex measures that can prove to be very expensive in terms of initial capital costs and subsequent time delays. To the extent that these costs can be determined they should be included in the total project costs for each of the build alternatives.

In addition, EPA has selected the Beaver Creek Watershed, a small sub-watershed in the Lower Clinch River Basin, as a priority watershed in Tennessee for protection, restoration and investment of resources to improve overall water quality. The proposed Knoxville Parkway will traverse large portions of this watershed. EPA is concerned about the potential for the project (construction and operations) to negatively impact restoration objectives that are under development in this area. There also might be opportunities for TDOT to implement specific best management practices or other on-site mitigation that could assist in achieving some of these restoration goals. EPA recommends consultation with the Beaver Creek Task Force to determine the potential for positive and negative impacts to this important resource as a result of the project.

#### Aquatic Resources – Groundwater

EPA is concerned about impacts from the project to karst features in the study area, including caves, sinking basins, sink holes and subsurface drainage ways. Karst regions experience a very high, rapid degree of interaction between groundwater and surface water, with little buffering or filtration capacity. The karst topography of the area is characterized by high groundwater flow and can be highly susceptible to contamination. Current technical capacity for mitigating adverse impacts to the ground/surface water resources and aquatic biota in karst terrain is very limited. Therefore, all possible efforts should be employed to avoid karst resource areas in the siting of the proposed roadway. EPA recommends inclusion of maps identifying important karst features and recharge areas to determine their relationship to the various build alternatives. This will be important for the consideration of impacts to these areas. The Draft Supplemental EIS should include a more thorough analysis of the effects of the various alternatives to these areas and public water supply systems that rely on this groundwater, as well as descriptions of any special design considerations planned for karst areas.

#### Indirect and Cumulative Impacts

Since a part of the purpose and need for the Knoxville Parkway is to facilitate economic development, it is assumed that implementation of any of these alternatives would provide impetus for increased development. The Draft EIS states as much. While the direct impacts of transportation projects may not be significant, the indirect effects of the project on land use and the subsequent environmental effects can be both temporally and geographically more extensive. The analysis of these changes and the subsequent environment impacts is important to understand the total impact of the federal action on the natural, cultural and socioeconomic environment. Consideration of secondary and cumulative impacts requires the assessment of an area's ability to

absorb additional development, the loss of businesses or residences, or if the watershed can absorb the loss of additional wetlands.

As highlighted in our original comments on the Draft EIS, the Supplemental Draft EIS should include an estimation of land use change and overall growth changes from additional population and employment with and without the project. This should include an estimation of additional residential, commercial, and industrial land uses in the project area and the attendant increase in impervious surfaces. Many studies have shown that imperviousness in watersheds is one of the greatest factors contributing to the decline of sensitive aquatic species and overall water quality. Ideally, the specific differences in land use change and subsequent environmental impacts should be quantified and compared between alternatives, as much as possible. In addition, if there are important existing natural resources, such as high quality wetlands or wildlife habitat, in the vicinity of proposed access points for any of the alternatives, these areas should be identified for potential acquisition as mitigation sites. Other mitigation for indirect water quality impacts might include opportunities to expand riparian buffers adjacent to impacted streams and rivers in the project vicinity.

We appreciate the opportunity to provide additional comments on this proposed action. Please contact Ben West at (404) 562-9643 to discuss some of our recommendations or if you have questions on our comments.

Sincerely,

A handwritten signature in black ink, appearing to read "Heinz J. Mueller", with a horizontal line extending to the right.

Heinz J. Mueller, Chief  
NEPA Program Office  
Office of Policy and Management

Enclosure

cc: Federal Highway Administration – Tennessee Division



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 4  
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ATLANTA, GEORGIA 30303-8920

March 14, 2002

Mr. Charles E. Bush  
Tennessee Department of Transportation  
Environmental Planning and Permits Division  
900 James K. Polk Building  
505 Deaderick Street  
Nashville, TN 37243-0034

**SUBJ: Draft Environmental Impact Statement (DEIS) - Route 475 (Knoxville Beltway)  
From Interstate 75 South of Knoxville to Interstate 75 North of Knoxville;  
CEQ# 02202**

Dear Mr. Bush:

Pursuant to Section 309 of the Clean Air Act and Section 102(2)(C) of the National Environmental Policy Act (NEPA), EPA Region 4 has reviewed the subject document. The DEIS examines the Federal Highway Administration (FHWA), U.S. Department of Transportation (USDOT) and Tennessee Department of Transportation (TDOT) proposal to construct a 39-mile, full access-controlled, four-lane, divided highway on mostly new location.

Based on the information provided in the subject document, EPA primarily has environmental concerns or comments regarding alternatives, wetland and aquatic resources (i.e., stream rechanneling, floodplains, and water quality), contaminated sediments, air quality, noise, relocation impacts and cumulative impacts associated with the proposed project. Therefore, we have concentrated our comments on these impact areas for FHWA/TDOT's consideration in the development of the Final Environmental Impact Statement (FEIS).

**ALTERNATIVES ANALYSIS:** The DEIS examines a range of alternatives including the no-action alternative and three build alternatives (Blue, Green and Orange) with five to twelve interchanges. The Blue alternative is located entirely on new alignment, while the Orange and Green alternatives use a combination of existing and new alignment. Consequently compared to the Orange and Green alternatives, the Blue alternative will result in potential soil and sediment contamination issues, more forest and agricultural habitat removal, increased wetland impacts, increased floodplain encroachment, increased numbers of Clinch river crossings, and increased residential displacement. In addition, the average daily traffic projected for the Blue alternative for 2005 and 2025 is less than half that of the other two alternatives.



Recommendations: TDOT did not select a preferred alternative in the DEIS; therefore, EPA has rated each alternative separately. A preferred alternative should be identified in the FEIS. The Blue alternative (which is entirely on new alignment) appears to have more adverse impacts to the natural environment than either the Green or Orange alternatives (which utilize some existing alignment). The Green and Orange Alternatives have greater community effects including substantial noise impacts that need to be addressed.

**Transportation System Management (TSM) Alternative** - One of the justifications for not widening I-75 where TDOT identifies the problem as congestion is that the right-of-way (ROW) costs are too high. What are the project ROW costs for the alternatives? Is this really an issue considering the amount of new property needed in the Blue and Orange alternatives?

Recommendation: The rationale for eliminating the TSM alternative as a viable alternative is not clearly substantiated. The document should provide adequately document why the TSM alternative would not meet the purpose and need of the proposed project.

**NATURAL RESOURCES:** Approximately 1,480, 1,020 and 980 acres of upland and bottomland forest habitat and 23.7, 1.3 and 0.76 acres of open water will be impacted by the Blue, Orange and Green alternatives respectively. Habitat and biodiversity loss in the southeast is a major environmental concern and therefore, EPA encourages TDOT to reduce the amount of acreage as much as possible. The loss of forested and open water areas particularly along the Blue Alternative would result in substantive impacts to wildlife and terrestrial habitat. Every effort should be made to minimize the loss of forested areas, especially those with mature hardwood trees and large water bodies. Reforestation efforts may include planting hardwood trees in the right-of-way or other areas to the extent possible.

**WETLAND/AQUATIC RESOURCES:** Wetland resources are delineated to identify potential jurisdictional wetlands occurring along each proposed alternate and to characterize the wetland resources in terms of type, size, and functional value. The DEIS states that the wetlands were delineated according to the 1987 Manual, and classified on the basis of the Cowardin and the hydrogeomorphic (HGM) classification systems. The basic premise of HGM is that different wetland types perform different functions in the landscape. However, the *Wetland Technical Appendix* ascribes the same functions to all wetlands in order to evaluate wetland functions along each proposed alignment (i.e., flood management). Consequently, wetland functions for the proposed project do not appear have been properly assessed. For example, seep wetlands do not usually perform flood management functions, and therefore it is not accurate to ascribe this function a 'poor' rating for such wetlands. It is more appropriate to indicate that this function is '*not applicable*' if the same suite of functions will be addressed across all wetland types.

Recommendations: The FEIS should use the functions attributed to the various HGM wetland classes as a basis for hypothesizing the capability of a given site to perform the functions inherent to a wetland in that hydrogeomorphic setting.

The DEIS indicates that the proposed project will impact 18.8, 9.0 and 3.8 acres of jurisdictional wetlands for the Blue, Orange and Green alternatives, respectively. It is unclear whether the amount of wetland acreage impacted by the Green alternative is accurately reflected in the summary table on page S-6 and 3-42. The DEIS states the Green alternative will impact 3.8 acres of bottomland hardwood wetlands. However, according to the Wetland Data Summary on page 3-41, there are two categories that include wetland impacts for the Green alternative (the Green alternative - which indicates that 3.82 acres of wetlands will be impacted and the Green/Orange alternative - which indicates that 8.97 acres would be impacted). It appears as though these two categories should be combined for total wetland impacts along the Green alignment.

Recommendations: Documentation of wetland impacts in the DEIS is unclear and should be clarified. The category labels for the Wetland Data Summary should be modified to reflect simply a Blue alternative, an Orange alternative, and a Green alternative (page 3-41). As written, it appears as though there are two categories that include information on the Green alternative, suggesting that wetland impacts under the green alternative could be 3.8 or 12.79 acres. This information should be clarified and included in the data summary table on page S-6 as well as the Green totals on page 3-42.

**Stream Resources Impacted:** While there is a summary of the number of linear feet of streams that will be channelized in the DEIS, and a table in Attachment 2 of the *Ecological Resources Technical Appendix*, it is difficult to independently determine or assess the extent of stream channelization and modification. Topographic maps produced by the U.S. Geologic Survey do not necessarily equate to the limits of jurisdiction for streams as waters of the United States.

Recommendations: The FEIS should clarify that the presence or absence of such map features were not the only means of identifying potentially jurisdictional lotic waters.

The document states that between 2.2 and 0.6 miles of floodplains encroachment will occur within the 500-ft corridor for the Blue and Orange/Green alternative, while 1,100, 800 and 135 feet of stream rechannelization will occur for the Orange, Green and Blue alternatives, respectively. The characterizations of streams and floodplains in the *Ecological Reports Technical Appendix* are difficult to interpret. The State of Tennessee has a standard operating procedure for biological sampling (TDEC, 1996), and another widely accepted standard for rapid assessments is included in EPA's Rapid Bioassessment Protocols (Barbour *et al.*, 1999). However, the specific protocols used to collect the biological and physical data for the proposed project are unspecified. Although the *Appendix* refers to and/or relies upon, biological studies undertaken by the Tennessee Valley Authority (TVA), TVA's methods are not described, nor are their data included in the *Appendix*. The summary of TVA's sampling suggests that the coverage of TVA's efforts may not be applicable or sufficient for the entire study corridor (pages ER-6 and ER-7). In addition, the summary tables in Attachment 1 of the *Appendix* present information per stream name and sample point, but these sample points are not identified on any figures accompanying the document. Therefore, it is difficult to access trends on either an ecoregion, or per proposed alignment basis.

Recommendations: The FEIS should clearly identify and/or discuss the sampling protocols utilized to collect biological information presented in the document. All sample locations and 303(d) listed waters should be clearly illustrated on figures and/or maps.

Chemical, physical, and biological information on the streams in the study area is broadly summarized in tabular form, and the *Appendix* does not include any quality assessment metrics or comparison of streams within the study corridor relative to subcoregion reference streams identified by the State of Tennessee (Arnwine *et al.*, 2000; Arnwine and Denton, 2001). Further, information concerning the physical habitat/structure of streams within the study corridor could be improved using physical habitat assessment methods from Barbour *et al.* (1999) [updated from Plafkin *et al.* (1989)], which are also components of the State's reference stream monitoring and documentation.

Recommendations: Biological data should be reviewed for adequacy of coverage and technical quality assurance. Deficiencies in either coverage or quality should be amended with current sampling following an identified and accepted protocol. Biological community and habitat quality metrics, such as those discussed in Arnwine *et al.* (2000), Arnwine and Denton (2001), or Barbour *et al.*, (1999) should be calculated and presented in the FEIS. EPA wetland staff is available to further discuss these methods with FHWA and TDOT, as appropriate.

**Water Quality:** The *Ecological Resources Technical Appendix* includes information regarding 303(d) listed waters in each of the proposed route alternatives. However, the FEIS should clearly identify the locations of these streams on figures included in the document. Additional discussion should include the cause(s) for each water's listing, and the affect the proposed project may have on those causes. The FEIS should also include a complete discussion of the impacts to water quality with specific mitigation measures for stream and other water quality impacts.

**Wetland/Aquatic Resource Mitigation:** The DEIS includes no discussion of potential compensatory mitigation measures for unavoidable impacts to wetland or stream resources. The document merely states that while some mitigation may be feasible for some of the alternatives, actual mitigation measures can not be determined until a preferred alignment is selected.

Recommendations: A draft compensatory mitigation plan should be developed in the FEIS that compensates for predicted wetland and stream losses that remain following efforts to avoid and minimize such impacts. The conceptual plans should identify the concepts and general guidelines of technically sound mitigation projects consistent with Federal and State guidelines.

In general, *wetland restoration* is EPA's preferred mitigation option for impacts to wetlands. Wetland restoration is normally considered an action that successfully restores all three wetland parameters (hydric soils, hydrophytic vegetation, and wetland hydrology) to an area that was formerly a wetland, but where at least one of the aforementioned parameters has been removed. At a minimum, any restored site must meet the criteria outlined in the 1987 COE wetland delineation manual for a jurisdictional wetland (or the Clean Water Act definition of a water of the U.S.). However, site selection and the specific restoration measures employed should be designed to replace the aquatic ecosystem functions lost or impaired due to the proposed project,

and this may entail more than simply the three parameters. *Enhancement* is the second EPA preference for mitigation for impacts to wetlands. Enhancement measures should address a suite of functions, as opposed to only a single function, and the enhancement measures themselves should not adversely affect other wetland functions currently performed or capable of being performed by the mitigation site. EPA does not view the conversion of one wetland type to another as enhancement.

All wetland mitigation projects should first include documentation of baseline conditions in order to establish measurable performance criteria to quantify the success of the mitigation project. Consideration should be given to both the watershed where impacts and mitigation will be occurring, as well as specific landscape settings (geomorphology) and likely water sources (hydrology) intended to sustain the mitigation site(s).

*Stream restoration* is EPA's preferred mitigation option for impacts to streams. Stream restoration includes actions taken to correct previous alterations that have destroyed, diminished, or impaired the character and function of streams or rivers. Restoration is the process of converting an unstable, altered, or degraded stream channel to its natural or stable condition, with consideration of recent and future watershed conditions. This process may include restoration of the stream's geomorphic dimension, pattern and profile and/or biological and chemical integrity, including transport of water and sediment produced by the streams' watershed in order to achieve dynamic equilibrium. Other components of stream mitigation may include riparian buffer restoration and preservation of appropriately buffered streams. As with wetland mitigation, documentation of baseline conditions is critical in order to assess the needs of the stream system targeted and to help identify success criteria, performance standards, and monitoring elements of the mitigation project.

While mitigation for otherwise disparate impacts may be clustered to provide the maximum level of ecological benefit, impacts in "special designation" areas or watersheds may require mitigation in the subject watersheds where impacts are occurring. The FEIS should state whether wetland impacts associated with the proposed project fall within the service areas of wetland mitigation banks operated by the TDOT and/or other entities and whether these banks could provide the credits necessary to offset the proposed wetland impacts.

**Secondary and Cumulative Impacts on Aquatic Resources:** Although the DEIS states that one of the purposes of the proposed beltway is economic development, the DEIS does not adequately assess the potential secondary and cumulative impacts of the new roadway on wetlands, streams, fish and wildlife habitat and water quality. In addition, the DEIS does not evaluate how the beltway may further stimulate development/encroachment into stream and river floodplains.

**Recommendations:** The FEIS should discuss how potential development activities at each interchange and along the frontage areas of the beltway are proposed to be addressed in terms of the additional impacts that may occur to wetlands, streams, fish and wildlife habitat, and water quality.

**NOISE:** An operating speed of 65 mph was used in the noise calculations along all segments of the build alternatives to be constructed on new alignment. It is unclear as to how this relates to the traffic noise generated by the 70 mph speed limit proposed for the project alignments.

**Comparison of Noise Impacts:** The document presented a summary number of sensitive receptors which would experience traffic noise impacts for each of the alternatives. However, it is unclear how many of the residences approach or exceed the FHWA Noise Abatement Criteria (NAC) and/or experience a substantial increase in noise (i.e., FHWA criterion of 15 dBA or greater). Therefore, this information should be incorporated into the FEIS.

**Noise Abatement:** A large number of residences (126 to 450) will be impacted by substantial noise level increases or by noise levels that exceed the NAC. The DEIS describes three noise mitigation measures that were considered for the proposed project. The noise barrier evaluation indicates that barriers are only cost effective (less than \$25,000 per residence) for 127 condominium units along the Green alignment. The average cost per receptor was approximately \$4,250 for a noise wall. As a result, there are an additional 323, 298, and 126 residences along the Green, Orange and Blue alternatives respectively that remain unmitigated for noise. From a noise perspective, the Blue alternative has fewer substantive noise impacts than the Orange and Green Alternatives. However, the noise impacts for all of the alignments are of concern.

**Recommendations:** If noise walls are not cost effective for most of the residences along the three alignments, consideration should be given to the construction of other noise barriers such as earthen berms, development of vegetative screens as part of highway landscaping to provide at least a visual separation from the project ROW, shifting horizontal and vertical alignments to minimize excessive residential and commercial noise impacts, and sound proofing of any significantly affected public facilities to help mitigate highway related noise impacts. It is also our understanding that the type of highway surfacing material used can affect noise impacts. As a rule, the noise impacts of the proposed project -- particularly significant resultant and incremental impacts -- should not be left unmitigated. When a preferred alternative is selected, every effort should be made to further reduce the noise impacts associated with the proposed project.

The FEIS should summarize how many of the residences approach or exceed the NAC and/or experience a substantial increase in noise. For each receptor, the incremental increase in noise levels (i.e., projected noise levels minus existing noise levels) should be calculated and included in Tables 4-9 through 4-10.

**AIR QUALITY:** The Green and Orange alternatives which are the southern alignments of the beltway, are in Knox County. This portion of the proposed project is in an ozone maintenance area and as such, needs to demonstrate that the Knox County transportation plan conforms with the State Implementation Plan (SIP). In anticipation of this proposed project, Knox county did include this project in the transportation plan and the plan appears to conform to the air quality SIP. It is described in the Long Range Transportation Plan (LRTP) as a new four-lane road.

While the document discusses the air quality impacts of the projects, it does not reference potential 8-hour ozone nonattainment areas which may include other counties in addition to Knox (such as Anderson Co. - Page 4-22). Even though there is uncertainty about the designation of 8-hour areas, it is clear that emission targets may be tighter in the future.

**Secondary and Cumulative impacts:** When considering cumulative impacts, the FEIS should consider whether the additional roadway in combination with other transportation systems and development will contribute to the regional haze which affects the Knoxville and Great Smoky Mountain region.

Recommendations: The FEIS should include information regarding potential 8-hour nonattainment areas.

**CONTAMINATED SEDIMENTS:** According to the document, contaminated soils and sediments (such as radioactive materials along the Clinch River downstream of the DOE facilities of Oak Ridge) may be disturbed during major earth-moving or construction activities along the Blue Alternative. If the Blue alternative is selected as the preferred alternative, TDOT should consult with the State of Tennessee Division of Radiological Health and the Department of Energy regarding past and future sampling of sediments conducted in the areas to be impacted. Historical environmental reports from Department of Energy and Tennessee should be reviewed with an emphasis on baseline radiological and other contaminants of concern in the vicinity of the areas to be impacted.

Recommendations: If the Blue Alternative is identified as the preferred alternative, the FEIS should include an analysis of detailed sediment sampling of the likely effects of disturbing contaminated sediments or pyritic material, and a discussion of appropriate mitigation for any adverse effects. This information should be made available to the public and other resource agencies.

**HAZARDOUS WASTE:** The table that summarizes the potential impacts of the proposed project does not include any information related to potential hazardous and special wastes sites (Table S-1). The FEIS should include this information in the summary table so that the environmental impacts can be assessed more effectively.

**SOCIAL IMPACTS:** According to the document, the proportion of low-income populations (below the poverty level) within the four-county study area is equal to that of the Knoxville MSA and State of Tennessee (13 percent) 1997 Census. The census tracts crossed by the three alternates had a slightly lower proportion of below the poverty level in 1990. Orange alternate for 1990 was less than 12%, while 15% of the population was below the poverty level for the Blue alternate. The green alternate was not assessed for poverty levels with the section on Environmental Justice. In addition, since census data is used from two different periods and then compared relative to one another (i.e., 1997 - MSA vs. 1990 - project alternates), it makes it difficult to accurately compare the poverty levels of the larger reference area to that of the smaller project area (page 4-12).

On page 4-16, under the potential impact on communities and neighborhoods, the document states that, "there are a number of small residential neighborhoods plus two commercial areas where concentrated potential displacements would occur under each alternate." These areas are said to have been identified in the *Conceptual Stage Relocation Plan Technical (CSRPT) Appendix*. However, it is unclear where the CSRPT appendix is located. There should be a map indicating the general areas where these relocations could occur with a listing of the number of potential relocatees along each alternate. This map should be located in the FEIS.

**Recommendations:** The FEIS should incorporate information regarding the poverty level for the Green alternate within the EJ section. This information was later found in the section under Relocation Impacts. EPA commends the fact that more recent census information was contained in the document, however it would be helpful to also include the MSA census information for 1990 so it could be compared to the project level data for 1990.

**Residential Impacts:** The DEIS indicates that the proposed project will result in 122, 87, and 68 residential and business relocations for the Blue, Orange and Green alternative respectively. While the blue alternative results in the greatest number of relocations, it also results in the smallest number of residences that will be subjected to noise impacts.

**OTHER ROADS/INTERCHANGES:** The DEIS mentions several local roads that would be relocated or closed as I-475 is built. These local roads should be clearly identified on maps contained in the FEIS. At a minimum, these maps should be developed and provided for display during the public hearings on this project. It does not appear that the environmental effects of construction of the interchanges, as well as any other road relocations, have been included in the DEIS. It appears that only areas within the "500-foot study corridor" were analyzed. It seems likely that direct effects will occur in areas outside this 500-foot corridor.

**CULTURAL RESOURCES:** EPA recognizes that issues exist regarding potential adverse effects to cultural resources from the proposed project. Information provided in the DEIS identifies cultural and historic resources which could potentially be impacted by the three alignments. There are 30, 24 and 19 known archeological sites that may be impacted by the Blue, Orange and Green alternatives respectively and one historic property may be impacted by the Blue alternate. EPA defers to the State Historic Preservation Office to address potential adverse archeological and historical effects associated with the proposed project. We recommend that FHWA include the results of the consultation process and/or the summary of the Phase II report in the FEIS. This will ensure that any adverse effects to cultural/historic resources, and possible mitigation measures for adverse effects, are identified for each alignment, and taken into consideration when selecting the preferred alternative.

**SECONDARY AND CUMULATIVE IMPACTS:** *Indirect Effects -- Section IV.A.1, Land Use Impacts*, qualitatively describes the likely indirect effects of building the road, such as "conversion of woodlands, farmland and open areas as a result of subsequent development encouraged by the new highway." However, no attempts are made to analyze the potential environmental effects of these indirect effects. At a minimum, the FEIS should include an analysis of likely development in the vicinity of proposed interchanges, with disclosure of the


extent of natural resources in this area likely to be impacted. Additional mitigation for these impacts should be included in the FEIS. The magnitude of required mitigation would depend on the extent of these potential impacts and the quality of the resources identified. Coordination with specific counties or municipalities should occur to discuss these effects and strategies to minimize these effects through appropriate land use control.

**EPA DEIS RATING:** In the absence of a declared preferred alternative, EPA has rated all of the build alternatives individually. Based on our review of this project, we have assigned a rating of EO-2 (environmental objections, more information requested) to the Blue alternative due to its higher impacts on multiple natural environmental factors and residential displacements (as discussed above) relative to the Green and Orange alternatives. We rate the Green and Orange alternatives EC-2 (environmental concerns, more information requested). EPA's review of all these alternatives has identified environmental impacts that should be avoided or minimized to fully protect human health and the environment. Although the Green and Orange alternatives have fewer natural environmental impacts, they would result in substantial residential noise and community impacts which should be addressed and further mitigated if these alternatives are considered. The overall rating for the DEIS is EO-2 since no preferred alternative was identified.

**SUMMARY:** Our concerns may be addressed in the FEIS by the selection of an environmentally preferred alternative and by appropriately addressing environmental concerns and recommendations. We request that the above noted information be provided in the FEIS. As discussed above, impacts have also been identified (i.e., aquatic, noise, terrestrial habitat impacts) that should be further avoided or minimized to protect the human environment. Any unavoidable impacts should be mitigated to the fullest extent feasible.

Thank you for the opportunity to comment on this DEIS. If you have any questions regarding these comments or if we can be of further assistance in this matter, please contact me or Ntale Kajumba at (404) 562-9620.

Sincerely,



Heinz J. Mueller, Chief  
Office of Environmental Assessment  
Environmental Accountability Division

cc: Mr. Charles S. Boyd



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