

CHAPTER V - ENVIRONMENTAL STUDIES

6.0 Physical environment

6.1 Noise Assessment

6.1.1 Regulations, Guidance and Policy

A noise impact assessment shall be conducted in compliance with Title 23 of the Code of Federal Regulation, Part 772—Procedures for the Abatement of Highway Traffic Noise and Construction Noise; the National Environmental Policy Act (NEPA) of 1969 as amended; the US Department of Transportation, Federal Highway Administration's (FHWA) Highway Traffic Noise: Analysis and Abatement Guidance (FHWA, Jan. 2011); Measurement of Highway-Related Noise (FHWA, May 1996); Federal Highway Administration's Traffic Noise Model (FHWA TNM), User's Guide (Version 2.5 Addendum) Final Report April 2004; Federal Highway Administration's 23 CFR 772 Final Rule and NEPA Reevaluations and Georgia Department of Transportation Highway Noise Abatement Policy for Federal-Aid Projects.

6.1.2 Applicability

A noise impact assessment or noise screening assessment will be completed for every federal-aid highway project in the state of Georgia authorized under Title 23 United States Code. This includes federal-aid projects that are administered by GDOT, Local Public Agencies (LPAs), and roadways operated by others on behalf of the state of Georgia.

In accordance with 772.15, federal funds may be used for noise abatement measures when traffic noise impacts have been identified and abatement measures have been determined to be feasible and reasonable pursuant to 772.13(d).

For a Tiered Environmental Impact Statement (EIS), coordination with the FHWA Georgia Division Office is required for guidance regarding the application of a Type I designation. Typically, the Type I designation is made under the Tier 2 environmental document.

6.1.3 Project Classification

The federal rule 23 CFR 772 defines three project categories which are used to decide whether or not noise abatement should be considered in a formal study. They are Type 1, Type II or Type III.

Type I Project

Only Type I projects are considered for noise analysis and abatement. If any segment or component of an alternative meets the definition of a Type I project, then the entire alternative is considered to be Type I.

A Type I project is defined as follows:

- (1) The construction of a highway on new location; or,

- (2) the physical alteration of an existing highway where there is either:
- (i) Substantial Horizontal Alteration. A project that halves the distance between the traffic noise source and the closest receptor between the existing condition to the future build condition; or,
 - (ii) Substantial Vertical Alteration. A project that removes shielding therefore exposing the line-of-sight between the receptor and the traffic noise source. This is done by either altering the vertical alignment of the highway or by altering the topography between the highway traffic noise source and the receptor; or,
- (3) the addition of a through-traffic lane(s). This includes the addition of a through-traffic lane that functions as a (high occupancy vehicle (HOV) lane, High-Occupancy Toll (HOT) lane, bus lane, or truck climbing lane; or,
- (4) the addition of an auxiliary lane, except for when the auxiliary lane is a turn lane; or,
- (5) the addition or relocation of interchange lanes or ramps added to a quadrant to complete an existing partial interchange; or,
- (6) restriping existing pavement for the purpose of adding a through-traffic lane or an auxiliary lane, except for when the auxiliary lane is a turn lane; or,
- (7) the addition of a new or substantial alteration of a weigh station, rest stop, ride-share lot or toll plaza.

Each of the above criteria is discussed in detail in FHWA's Highway Traffic Noise: Analysis and Abatement Guidance (January 2011).

Type II Project

Federal regulation defines a Type II project as "A Federal or Federal-aid highway project for noise abatement on an existing highway." Georgia does not have a Type II program.

Type III Project

Type III projects are defined as a federal or federal-aid highway project that does not meet the classifications of a Type I or Type II project. Type III projects do not require the preparation of a noise study or abatement of highway noise impacts.

6.1.4 Definitions

The definitions below are from the GDOT noise policy and have further defined certain criteria for use in Georgia and may vary from the definitions contained in 23 CFR 772.

Benefited Receptor: The recipient of an abatement measure that receives a noise reduction at or above the minimum threshold of 5 dB(A).

Common Noise Environment: A group of receptors within the same Activity Category in Table 1 below that are exposed to similar noise sources and levels; traffic volumes, traffic mix, and traffic speed; and topographic features. Generally, common noise environments occur

between two secondary noise sources, such as interchanges, intersections, and cross-roads.

Date of Public Knowledge: The date of approval of the NEPA document (Categorical Exclusion [CE], the Finding of No Significant Impact [FONSI], or the Record of Decision [ROD]), as defined in 23 CFR part 771.

Design Year: The future year used to estimate the probable traffic volume for which a highway is designed (*Georgia highways are typically designed to function for 20 years beyond the year a project is opened to traffic.*)

Existing Noise Levels: The worst noise hour resulting from the combination of natural and mechanical sources and human activity usually present in a particular area.

Feasibility: The combination of acoustical and engineering factors considered in the evaluation of a noise abatement measure.

Impacted Receptor: The recipient that has a traffic noise impact.

L10: The sound level that is exceeded 10 percent of the time (the 90th percentile) for the period under consideration, with L10(h) being the hourly value of L10.

Leq: The equivalent steady-state sound level which in a stated period of time contains the same acoustic energy as the time-varying sound level during the same time period, with Leq(h) being the hourly value of Leq.

Multifamily Dwelling: A residential structure containing more than one residence. Each residence in a multifamily dwelling shall be counted as one receptor when determining impacted and benefited receptors.

NEPA Document: The CE, FONSI or ROD as defined in 23 CFR 771.

Noise Abatement Criteria: A numerical impact criteria issued by the FHWA, published in 23 CFR 772 as Table 1 included below:

Table 1 to Part 772 - Noise Abatement Criteria

[Hourly A-Weighted Sound Level decibels, dB(A)]

Activity Category	Activity Leq(h)	Evaluation Location	Activity Description
A	57	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67	Exterior	Residential
C	67	Exterior	Active sport areas, amphitheatres, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.

D	52	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	72	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in A-D or F
F	-	-	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing
G	-	-	Undeveloped lands that are not permitted

Source: (Federal Highways Administration) (23 CFR 772)

Note: These sound levels are only to be used to determine impact. These are the absolute levels above which abatement must be considered. Noise abatement is designed to achieve a substantial noise reduction. Noise abatement is not designed to achieve the noise abatement criteria.

Noise Barrier: A structure that is constructed between the highway noise source and the noise sensitive receptor(s) that lowers the noise level, including stand alone noise walls, noise berms (earth or other material), and combination berm/wall systems.

Noise Reduction Design Goal: The optimum desired dB(A) noise reduction determined from calculating the difference between future build noise levels with abatement, to future build noise levels without abatement. *GDOT has selected a design goal of 7 dB(A).*

Permitted: A definite commitment to develop land with an approved specific design of land use activities as evidenced by the issuance of a building permit.

Property Owner: An individual or group of individuals that holds a title, deed, or other legal documentation of ownership of a property or a residence.

Reasonableness: The combination of social, economic, and environmental factors considered in the evaluation of a noise abatement measure.

Receptor: A discrete or representative location of a noise sensitive area(s), for any of the land uses listed in Table 1.

Residence: A dwelling unit. Either a single family residence or each dwelling unit in a multifamily dwelling.

Statement of Likelihood: A statement provided in the NEPA document based on the feasibility and reasonableness analysis completed at the time the environmental document is being approved.

Substantial Construction: In Georgia this is defined as the granting of a building permit, prior to approval of the NEPA document.

Substantial noise increase: One of two types of highway traffic noise impacts. For a Type I project, an increase in noise level of 15 dB(A) in the design year over the existing noise level is considered substantial.

Traffic Noise Impacts: Design year build condition noise levels that approach or exceed the Noise Abatement Criteria (NAC) listed in Table 1 above for the future build condition; or design year build condition noise levels that create a substantial noise increase over existing noise levels. A noise level which approaches the NAC is defined as 1 dB(A) less than the applicable NAC value.

Type II Project: A federal or federal-aid highway project for noise abatement on an existing highway. GDOT does not have a noise abatement program for Type II projects.

Type III Project: A federal or federal-aid highway project that does not meet the classifications of a Type I or Type II project. Type III projects do not require the preparation of a noise study or abatement of highway noise impacts.

Validation: Process of verifying the accuracy of the traffic noise model inputs by measuring noise levels in the field and comparing the measured levels to the noise levels predicted in the model under the same traffic conditions.

6.1.5 Noise Impact Analysis

Objective

There are several objectives the noise assessment will accomplish:

- Document the corridor land use(s) and identify all noise sensitive sites within the corridor;
- Provide baseline noise levels that will be used in determining project impacts;
- Predict future build and no-build sound levels;
- Predict the effects that the proposed project would have on the noise environment;
- Identify impacted locations where noise abatement is feasible and reasonable and likely to be included in the project, and locations where impacts will occur and abatement is not feasible and reasonable;
- Determine best strategies to reach the impacted residents and/or businesses.

Methodology

The Georgia Department of Transportation does not have a customized noise analysis methodology. Federal Highway Administration noise analysis methodologies will be used. Please reference the US Department of Transportation, Federal Highway Administration's Highway Traffic Noise: Analysis and Abatement Guidance (FHWA, Jan. 2011); Measurement of Highway-Related Noise (FHWA, May 1996), and Federal Highway Administration's Traffic Noise Model (FHWA TNM), User's Guide (Version 2.5 Addendum) Final Report April 2004.

Required Information for Modeling

The information described below highlights some standard information and materials that are needed to evaluate highway noise levels. In general the Project Manager or design engineer should provide MicroStation dgn files, contour and elevation data, current aerial photography, and traffic data.

- A. The MicroStation files will contain the main roadway for the existing and proposed condition, the centerline, property lines, right of way limits, structures and contours.

- B. The aerial photography will include all structures located typically 500 feet from the build and no build alignment edge of pavement. The noise study area can be smaller or larger (up to 800 feet) based on the characteristics of the project area. Structures will be shown for both sides of the roadway even if the proposed action occurs in only one direction. The aerials will include a current representation of all facilities in the project corridor at the time of the noise evaluation. All applicable land use categories will be noted for receptors located within the noise study area and show structures on all sides of the roadway.
- C. FHWA guidance requires that Type I or II sound level meters that perform in accordance with ANSI S1.4-1983 be used. Only sound level meters that have a valid certificate of calibration will be used to take readings.
- D. The FHWA, Traffic Noise Model (TNM), version 2.5 is the current model approved for use on federal aid projects (23 CFR 772.17). The noise descriptor Leq will be used. The project noise model will be developed in accordance with the FHWA TNM User's Guide (FHWA, 2004). The noise analyst will model the existing, design year build and design year no build conditions. **Projects completed in STAMINA must be redone in TNM2.5.**
- E. Peak hour traffic data used to develop the model must: 1) be approved by the GDOT Traffic Analysis Bureau in the Office of Planning; and 2) must be consistent with the traffic used in the planning and NEPA documents.
- F. Level of Service C traffic data used must be approved by GDOT.

Sound Level Readings

Although GDOT uses FHWA prescribed methodologies, please note the information below.

Noise levels will be measured for all new location projects. This information will be used to establish and document a baseline noise condition in the undeveloped area.

Noise measurements will be made at representative locations, in the vicinity of noise sensitive receptors when traffic volumes would routinely produce the worst noise impact. Readings are taken in locations of frequent human use such as (but not limited to) a playground, patio, or outdoor eating area. Selected sites will exhibit conditions that are typical for the area being evaluated.

Each modeled project will be validated. Existing noise readings will be taken in 15 minute increments, traffic will be counted during the field noise reading and traffic speed will be estimated. The reading timeframe can be adjusted if needed but an explanation will be provided. For example, If a reading is taking place and a noise spike occurs near the end of the reading, e.g., a car backfires, extend the reading to 30 minutes so that the results are not skewed. This would count as two readings.

Atmospheric conditions at the time of measurement will also be noted.

Identification of Impacts

A noise impact in Georgia is identified in two ways: by comparison to the FHWA Noise Abatement Criterion (NAC) and/or by the identification of a substantial increase in noise from the existing condition. If predicted noise levels approach within 1 decibel or exceed the FHWA NAC for an activity category as described in 23 CFR 772, Table 1, an impact is noted. A substantial increase in noise is defined in GDOT policy as an increase of 15 decibels or more from the existing noise level.

6.1.6 Report Preparation Noise Impact Assessment

All federal aid projects must be evaluated for potential noise impacts. The GDOT has two types of noise analysis documentation: a Noise Screening Assessment and a Noise Impact Assessment. The appropriate level of documentation required depends on the scope of the proposed action.

If the project does not meet the definition of a Type I project, a Noise Screening Assessment will be used. The noise screening assessment documents that the project does not require a TNM evaluation. All Type I projects will require at a minimum, the completion of a Noise Impact Assessment.

The Noise Impact Assessment is a comprehensive document that discusses in detail how the proposed project will change the noise environment within a project corridor.

All Noise Impact Assessments will contain:

- Executive Summary page that includes standard project identification information (title, PI Number, month/year date)
- Brief project description
- Modeling assumptions
- Summary of findings
- Name of report preparer and firm (if applicable)
- Name of quality control/quality assurance (QC/QA) reviewer and firm. (Please note the preparer and QC/QA reviewer cannot be the same person. It is acceptable to obtain a QC/QA review from a different firm if necessary.)

The report should utilize GDOT's standard template unless an alternate format is agreed upon by GDOT and FHWA.

The Noise Impact Assessment will contain:

- Introduction
- Project description
- Project location map
- Discussion of the existing noise environment
- Description of corridor land use
- A discussion of the noise impact criteria

- Detailed analysis methodology
- Field validation of model
- Analysis results
- Discussion of undeveloped land
- Abatement measures considered - including a noise barrier analysis (when applicable)
- Public outreach (if applicable)
- Discussion of construction noise
- Report conclusion
- Statement of likelihood
- Receptor and impact location maps for the existing and design year conditions
- Any other graphics and/or tables that meaningfully contribute to the report

The report appendices will include in the following order:

- NAC table (if not in the body of the report)
- Any maps not included in the body of the report
- Traffic data
- TNM input data for receivers
- TNM roadway inputs
- TNM traffic inputs
- TNM outputs
- TNM vacant/undeveloped parcel information
- TNM barrier analysis
- Field notes/ TNM validation run inputs/outputs
- Local officials transmittal package (unless project area does not contain undeveloped land)
- Public outreach materials (if applicable)
- Noise NEPA summary

A CD or DVD of the noise assessment and TNM model including all files that support the model will be provided upon final acceptance of the study.

Noise Barrier Analysis

If the need for a noise barrier has been identified, a noise barrier analysis will be completed once plans are sufficiently developed and elevation information is available. The noise barrier analysis should be completed and included in the Noise Impact Assessment.

For each noise barrier considered, the report will discuss the optimum barrier location (referenced to project station numbers), height, top and bottom elevations, length, finalized abatement costs (both total cost and a breakdown of impacted and benefited receptors), and the decibel reduction anticipated for each barrier. This information will support the determination of whether or not each barrier considered is feasible and reasonable. The barrier design goal is 7dBA; therefore, a wall design should attempt to obtain a 7dBA reduction for all impacted receptors when reasonable (see sections 6.1.4 and 6.1.7). A noise barrier location map, preferably on aerial photography, will be included. The noise barrier location map will allow the reader to see and understand the position of each barrier considered from the beginning to the end of the project.

In the event that a noise barrier analysis cannot be completed at the time of the Noise Impact Assessment a separate Noise Barrier Assessment may be complete (upon agreement with GDOT and FHWA).

In the event that a standalone Noise Barrier Assessment is complete the report will contain:

- Executive Summary page that includes standard project identification information (title, PI Number, month/year date)
- Brief project description
- Modeling assumptions
- Summary of findings
- Name of report preparer and firm (if applicable)
- Name of quality control/quality assurance (QC/QA) reviewer and firm

The report will contain:

- A project description
- Project location map
- Description of corridor land use
- A discussion of the noise impact criteria
- Summary of the noise impact assessment results
- Barrier analysis results including a discussion of feasibility and reasonableness (if applicable) of the proposed noise barrier
- A summary of public outreach activities and findings (if applicable)
- Discussion of construction noise
- Receptor location and proposed noise barrier location maps for the existing and design year conditions
- Any other graphics and/or tables that meaningfully contribute to the report

The report appendices will include in the following order:

- NAC table (if not in the body of the report)
- Any maps not included in the body of the report
- Traffic data
- TNM input data for receivers
- TNM roadway inputs
- TNM traffic inputs
- TNM outputs
- TNM barrier analysis
- Public outreach materials (if applicable)
- Noise NEPA summary

A CD or DVD of the noise barrier assessment and TNM model including all files that support the model will be provided upon final acceptance of the study.

Reevaluations

A reevaluation allows the lead federal agency to determine if the NEPA document and decision remain valid. A reevaluation of the noise analysis may be required if there are changes to

policy, state or federal regulations or laws, design, traffic volumes, planning horizons or time. Please reference FHWA's question and answer reevaluation guidance, 23 CFR 772 Final Rule and NEPA Reevaluations.

Prior to completing a reevaluation, consultation between GDOT and the lead federal agency should occur to clarify what information should be evaluated and how the information should be presented.

6.1.7 Noise Abatement Consideration

Where noise impacts occur, abatement measures must be considered for each impacted receptor. Abatement options must be both feasible and reasonable. The evaluation and decision making process must be documented in the Noise Impact Assessment. Abatement measures included in 23 CFR 772.15(c) are eligible for federal funding. At a minimum, reflective noise barriers will be considered for noise abatement.

Other acceptable traffic noise abatement measures include alterations to the horizontal or vertical alignment; traffic control measures (TCMs); acquisition of land to create a traffic noise buffer, and/or noise insulation of Category D land uses. These abatement measures can be considered any time the project corridor lends itself to the meaningful consideration of noise mitigation in some form other than a barrier. If an abatement measure other than a noise barrier will be considered, the project team should coordinate with GDOT and FHWA on a case by case basis prior to the submittal of the noise study.

The planting of vegetation or landscaping is not an acceptable abatement measure. Neither is the use of quieter pavements an acceptable noise abatement measure unless and until an approved Quiet Pavement Program is approved by FHWA for Georgia.

Feasibility

When evaluating the appropriateness of noise abatement, feasibility must first be established. The below criteria are considered for each noise abatement measure to evaluate feasibility.

- *Noise reduction:* a calculated noise reduction of at least 5 dB(A) must be achievable for a minimum of one impacted receptor. If interior noise impacts are identified for Activity Category D and exterior abatement measures are determined not feasible and reasonable, interior abatement measures will be considered. Each noise receptor which receives a 5 dB(A) reduction (whether classified as impacted or not) is considered to be a benefited receptor.
- *Constructability:* a noise abatement measure must be able to be constructed using reliable and common engineering practices.
- *Safety and Maintainability:* an exterior noise abatement measure should conform to the AASHTO Green Book and Roadside Design Guide and should be accessible to maintenance personnel and not prevent access to other highway appurtenances (e.g., drainage structures). The maximum barrier height that can feasibly be maintained is 30 feet.
- *Access:* an abatement measure must allow sufficient access to adjacent properties.

If all of the above requirements are satisfied, noise abatement is considered feasible.

Reasonableness

Reasonableness is only considered after the abatement measure has been determined to be feasible. The below criteria are considered for each feasible noise abatement measure to evaluate reasonableness. The first two must be satisfied before contacting property owners and residents:

1. *Noise Reduction:* at least one benefited receptor must receive a minimum noise level reduction of 7 dB(A) – i.e., the noise reduction design goal.
2. *Cost Effectiveness:* Using a \$20 per square foot cost for the required noise barrier, the total cost must not exceed a \$55,000 average allowance per benefited receptor. The \$55,000 allowance was defined in January 2011 and will be reevaluated at an interval not to exceed five years.
3. *Property Owners and Residents:* The decision to provide abatement will be made in collaboration with the property owner and tenants of a benefited receptor. The outreach strategy will be customized for maximum effectiveness on each project. The minimum outreach method will be a certified letter survey provided to both property owners and tenants whose facility or home is identified as a benefited receptor. A noise barrier will only be constructed if at a minimum 50% plus one of the respondents vote in favor of noise abatement. Both property owners and tenants get a vote and their vote must be returned within 30 calendar days of receipt of the survey to receive consideration. Property owners will receive one vote per unit owned and an additional vote if they reside in the unit, and tenants will receive one vote for the benefited unit they occupy. For some projects, individual meetings, community meetings or other outreach efforts may also be utilized to determine a majority consensus.

The final noise abatement measures cannot be determined until the design plans have sufficiently progressed to a point where the barrier analysis can be conducted; after which, the outreach above can be completed. GDOT will strive for a decision on abatement as soon as possible after this information is available, but no later than the final environmental document required for construction authorization.

If all three of the above requirements are satisfied, noise abatement is considered reasonable.

Where it has been determined that a noise barrier will be both feasible and reasonable, the noise barrier analysis will include a discussion of the following: optimum location, barrier height, top and bottom elevations, barrier length, costs and anticipated decibel reduction. This information will also be shown on graphics, maps and tables.

6.1.8. Public Outreach– Noise Abatement Consideration

If it has been determined that a noise barriers is feasible and reasonable, public feedback will be solicited from the benefitted receptors for the proposed noise barrier to determine if the noise barrier is desired. If potential noise barriers are being shown to the public based on preliminary

design, it should be made clear that the proposed noise barriers are not guaranteed and a final decision about barrier feasibility and reasonableness cannot be made until more detailed design is available. In addition, there is no vote on the barrier at this time. Instead, the desired information is whether or not the benefitted receptors would be interested in the preliminarily proposed noise abatement. Final abatement measures cannot be determined until either final design or when the plans have progressed to a point where the barrier analysis can be conducted, typically after preliminary design has been completed.

Noise focused outreach may include, but is not limited to an informational direct mail or email, noise focused community or public meetings. Noise outreach will be customized as necessary to be effective for the proposed action being evaluated. To the greatest extent practicable, property owners, residents, and businesses benefitted by the proposed noise barrier will be individually notified about the potential noise barrier and invited to participate in noise focused public outreach activities regarding the proposed barrier.

When public or community meetings are held for noise outreach, the project team will be prepared to provide information on the project in general in addition to the noise barriers. The date and time of the meeting will allow maximum participation. Information will be presented on aerial plots of a scale that readily conveys project details. The aerial plots should also be included in a meeting handout. The meeting staff will be knowledgeable of the project and consist of at a minimum the Project Manager, design engineer, noise subject matter expert, greeter, right of way specialist (if necessary) and court reporter. Interpreters and translated materials will be provided as needed for the impacted community. The facility must be Americans with Disabilities Act (ADA) compliant and assessable to all citizens. The meeting handout will contain at a minimum a welcome letter, comment card and project description. It is preferred that maps of the proposed barriers also be included.

When public input is solicited via mail for noise abatement, the public should be provided a non-technical description of the proposed action, a visual representation of the general location of the proposed abatement and a tool such as a comment card or post card to provide feedback.

Maps should not use lines to represent noise barriers unless adequate design is available to approximate a potential noise barrier location; a cloud or similar feature is preferred to represent the location of possible noise barriers. The goal of limiting the use of a line feature to represent a proposed noise barrier is to convey a possible location. The project team must clearly convey that a final decision on noise abatement has not been made.

Construction Noise Outreach

Although public outreach most often occurs prior to a project being constructed, there can be a need to develop and implement an outreach plan for a project under construction. The goal is to ensure quality communication between the affected community, GDOT, and the contractor. The contractor's initial plans for work should be carefully reviewed in construction meetings, and adjustments made to suggested construction noise activities scheduled for early morning or late evening. Once the times and dates of the construction activities are approved, an outreach plan can be developed to inform the public.

The plan should:

- Begin with clear identification of the location(s) of impacted residents and/or businesses;
- Contain a strategy to inform the public of construction activities (such as blasting) that are expected to create noise above the usual construction machinery and equipment;
- Include detailed information for the public on, and advance notice of, what times, what days, how long construction noise will occur;
- Provide a point of contact at GDOT to receive questions, comments or concerns;
- Acknowledge complaints within 24 hours and respond to complaints within three days;
- Map complaint locations;
- Include a way to maintain a record or summary of complaints received, responses provided and mitigation implemented, if any, to provide to the GDOT, Office of Environmental Services quarterly; and
- Communicate when the noise activities are complete, and thank residents and businesses for their patience and cooperation.

6.1.9 Consultant deliverables

One copy of the Noise Impact Assessment will be provided for review. Upon approval, one additional hard copy of the approved noise assessment and one electronic version will be submitted. One copy of the project's electronic TNM model files will also be submitted for the project file. A Word and pdf version of the report will also be included with the electronic file submittal.

If permission was received to complete a separate Noise Barrier Assessment one copy will be submitted for review. Upon approval, one additional hard copy of the approved report and one electronic version will be submitted. One copy of the project's electronic TNM model files will also be submitted for the project file. A Word and pdf version of the report will also be included with the electronic file submittal.

Reevaluations will be provided as needed.

Noise focused public outreach activities and deliverables should be developed on a case by case basis as a part of developing the project specific outreach strategy. When outreach is needed, typical consultant deliverables include but are not limited to: mailers, flyers, certified letters, door hangers, post cards, meeting layouts, handout packages, maps and other graphics that relay noise impact and abatement information visually, as well as any public comments and responses to comments.

6.1.10 Noise Templates

[Noise Screening Assessment](#)

[Noise Assessment Template](#)

[Noise Assessment Checklist](#)

[Noise NEPA Summary](#)

Local Official Letter

6.2 Air Quality Analysis

Both the National Environmental Policy Act (NEPA) and the Clean Air Act (CAA) Amendments require that air quality be considered during project development.

The NEPA requires a discussion of project-related carbon monoxide (CO) and Mobile Source Air Toxics (MSAT). In addition, the NEPA requires a discussion of Ozone and Particulate Matter (PM_{2.5}), when located within a non-attainment area.

The CAA Amendments require that transportation investments conform to the state's air quality plan for meeting air quality standards. Referred to as "conformity," non-attainment areas must demonstrate that their transportation plan conforms to the region's air quality goals. A conforming transportation plan demonstrates that the emissions from traffic on the region's system are consistent with air quality goals found in the State Implementation Plan (SIP).

The National Ambient Air Quality Standards (NAAQS) have been established for air pollutants that have been identified by the U.S. Environmental Protection Agency (EPA) as being of concern nationwide. These air pollutants, referred to as criteria pollutants, are CO, lead, nitrogen dioxide, PM_{2.5}, Ozone, and sulfur dioxide. The sources of these pollutants, effects on human health and the nation's welfare, and occurrence in the atmosphere vary considerably. In addition to the criteria air pollutants for which there are NAAQS, the EPA also regulates air toxics (MSATs). Due to their association with roadway transportation sources, Ozone, CO, PM_{2.5}, and MSATs are typically reviewed for potential effects on nearby receptors with respect to roadway projects.

Georgia has areas in non-attainment for both ozone and PM_{2.5}. The state's non-attainment area for ozone includes 20 counties in the Atlanta region as well as Catoosa County in the Chattanooga region, Bibb and part of Monroe County in the Macon area, and part of Murray County around the Chattahoochee National Forest. The Atlanta non-attainment area for PM_{2.5} overlaps the ozone non-attainment area but also includes a portion of Heard County and a portion of Putnam County. The PM_{2.5} non-attainment area for Chattanooga includes Walker and Catoosa Counties, the Rome non-attainment area includes Floyd County and the Macon non-attainment area includes Bibb as well as a portion of Monroe County. A project level conformity also must be conducted for these pollutants; in addition to being included in a conforming plan, the NEPA document must include a project level analysis for the pollutant.

A map of Georgia's non-attainment areas can be found at GDOT's [Office of Planning webpage](#).

The air quality report will address each of these four pollutants, including a notation if the project is exempt from analysis for any of the four.

6.2.1 Carbon Monoxide (CO)

The air specialist will perform all computer modeling for predicting ambient CO concentrations associated with the project, in accordance with the scope and procedures outlined below. All links associated with the proposed project will be evaluated along with signalized intersections, if applicable, for the existing year, the design year build, and design year no build. Worst case

one-hour and eight-hour average ambient CO concentrations will be predicted using theoretical worst case inputs. The work by the air specialist will consist of the following:

- A. Screen project for type and traffic volumes to determine the need to perform a detailed assessment.
 1. Determine if the project has the potential to add capacity/storage, i.e. the addition of travel lanes, addition of turn lanes or the extension of existing turn lanes, etc.
 2. Screen design year traffic volumes to determine whether they exceed 10,000 vehicles per day (vpd).
 3. Determine Level of Service (LOS) for intersections. Evaluate those with a LOS of D or worse.
- B. Determine which area(s) should be run for CO. The area chosen as a representative for the project should have the highest traffic volumes with the worst LOS. In cases where it is unclear which area would result in the worst case condition more than one area should be evaluated.
- C. Evaluate input data to determine worst-case conditions for CO dispersion near the project's corridor.
 1. Wind speed
 2. Wind angles
 3. Stability Class
 4. Temperature
 5. Traffic Volumes
 6. Emissions
- D. Compile and format the signal cycle information (if applicable), the approach traffic volumes, speeds based on LOS, and emission factors using MOVES.
 - Use the Highway Capacity Software and the Highway Capacity Manual to help determine the LOS of intersections and projected speeds.
- E. Emission Factors should be obtained utilizing MOVES. The Georgia Department of Transportation (GDOT), in conjunction with GA DNR have run MOVES to create look up tables for use in CO modeling. These tables should be utilized when calculating the emission factor used in CAL3QHC.
- F. Run the models. Although either CALINE3 or CAL3QHC are accepted programs used to model uninterrupted flow roadways, GDOT only accepts CAL3QHC; CAL3QHC must be used to evaluate interrupted flow facilities.
- G. Analyze the results produced by the CAL3QHC model to determine if any of the modeled receptors yielded concentrations greater than 9 ppm. If so, a persistence factor will be selected based on the recommendations of the US Environmental Protection Agency (USEPA) to convert the predictions to an 8-hour averaging time.

The air quality assessment will note the predicted peak one-hour concentration of CO and whether or not it is below the state and federal standards for one-hour averaging time (35 ppm). It also will note whether or not the predicted one-hour concentration is less than the eight-hour standard of 9 ppm. If it is less than 9 ppm, the assessment will state that an eight-hour concentration was not calculated.

6.2.2 Mobile Source Air Toxics (MSAT)

The USEPA identified 21 Mobile Source Air Toxics (MSAT) from the 188 air toxics listed the CAA. USEPA's six priority MSATs include benzene, formaldehyde, acetaldehyde, diesel particulate matter/diesel exhaust organic gases, acrolein, and 1,3-butadiene.

The FHWA has developed a three-tiered approach for analyzing MSATs in NEPA documents. The air specialist will screen the project based on type and traffic volumes to determine which approach is appropriate. The three tiers include:

- No analysis for projects with no potential for meaningful MSAT effects.
 - Qualitative analysis for projects with low potential for MSAT effects.
 - Quantitative analysis to differentiate alternatives for projects with higher potential for MSAT effects.
- A. Exempt projects or projects with no meaningful potential MSAT effects
Exempt projects include:
- Projects qualifying as a CE under 23 CFR 771.117(c) (www.fhwa.dot.gov/legsregs/legislat.html) or
 - Projects exempt under the CAA conformity rule under 40 CFR 93.126 (www.fhwa.dot.gov/environment/conformity/con_laws.htm).

Although there is no analysis of MSATs required for exempt projects, a write-up is required in the NEPA document.

Projects with no meaningful potential MSAT effects include:

- Other projects with no meaningful impacts on traffic volumes or vehicle mix.

The air specialist will document the basis for determining whether the project is one with "no meaningful potential MSAT effects." Appendix A in FHWA's Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA Documents (December 2012) includes the appropriate language needed to discuss the basis for this determination. This interim guidance can be found at <http://www.fhwa.dot.gov/environment/airtoxic/100109guidmem.htm>.

- B. Qualitative analysis for projects with low potential MSAT effect
This category includes a broad range of projects, including those that serve to improve the operations of highway, transit or freight without adding substantial new capacity or without creating a facility that is likely to meaningfully increase emissions. All projects not meeting the exempt projects noted in Section 6.2.2.A above, or not meeting the threshold criteria for higher potential effects noted below in Section 6.2.2.C are included in this category.

The air specialist will conduct a qualitative assessment of emissions projections. According to FHWA's Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA Documents, "This qualitative assessment would compare, in narrative form, the expected effect of the project on traffic volumes, vehicle mix, or routing of traffic, and the

associated changes in MSAT for the project alternatives, based on VMT [vehicle miles traveled], vehicle mix, and speed. It would also discuss national trend data projecting substantial overall reductions in emissions due to stricter engine and fuel regulations issued by EPA.”

Specific examples of appropriate language for this qualitative analysis can be found in Appendix B of the interim guidance noted above. Specific examples are included for

- Minor widening projects;
- A new interchange connecting an existing roadway with a new roadway;
- A new interchange connecting new roadways; and
- Minor improvements or expansions to intermodal centers or other projects that affect truck traffic.

The air specialist also will include a discussion of information that is incomplete or unavailable for a specific assessment of MSAT impacts. Appropriate language can be found in Appendix C of FHWA’s Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA Documents located at ([Transportation & Toxic Air Pollutants](#)).

C. Projects with higher potential MSAT effects

FHWA anticipates that a limited number of projects will fall into this category – projects that have the potential for meaningful differences among project alternatives.

According to FHWA’s Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA Documents, projects in this category must meet a two-pronged test:

- “Create or significantly alter a major intermodal freight facility that has the potential to concentrate high levels of diesel particulate matter in a single location; or
- Create new or add significant capacity to urban highways such as interstates, urban arterials, or urban collector-distributor routes with traffic volumes where the AADT [annual average daily traffic] is projected to be in the range of 140,000 to 150,000, or greater by the design year;

And also

- Propose to be located in proximity to populated areas.

Projects falling in this category will require a quantitative analysis of MSATs. FHWA’s Georgia Division and Headquarters will guide this quantitative analysis. Per FHWA’s Interim Guidance, the air specialist should contact the Office of Natural and Human Environment (HEPN) and the Office of Project Development and Environmental Review (HEPE) in FHWA Headquarters for assistance in developing a specific approach for assessing impacts.

The FHWA Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA Documents should be referenced for additional information on a Tier 3 MSAT analysis.

The report will also include a discussion of information that is incomplete or unavailable for a specific assessment of MSAT impacts. Appropriate language can be found in Appendix C of FHWA's interim guidance (<http://www.fhwa.dot.gov/environment/airtoxic/100109guidmem.htm>).

6.2.3 Ozone

- A. Projects outside of an ozone non-attainment area
NEPA documents for projects located outside of areas in non-attainment or maintenance for ozone will note that "the project is in an area of the state that is in attainment for ozone."
- B. Projects within an ozone non-attainment area
Projects located within areas in non-attainment or maintenance for ozone must be included in a conforming long range plan and short-term Transportation Improvement Program (TIP). Inclusion in a conforming plan also serves as project level analysis.

The NEPA document for projects located in areas of non-attainment or maintenance for ozone will include a statement that "the project is in an area that is in non-attainment for ozone. The Clean Air Act requires Transportation Plans and Transportation Improvement Programs in areas not meeting the National Ambient Air Quality Standards to conform to the emissions budget of the SIP for air quality."

This statement must reference the most current TIP that shows the region's highest transportation priorities and

- The name of the plan and TIP;
- The date the Metropolitan Planning Organization (MPO) adopted the plan and TIP;
- The date the US Department of Transportation (USDOT) approved the plan and TIP; and
- The project's reference number in the TIP.

6.2.4 Fine Particulate Matter (PM_{2.5})

- A. Projects outside of a PM_{2.5} non-attainment area
The NEPA document for projects located outside of areas in non-attainment or maintenance for PM_{2.5} will note that "the project is in an area of the state that is in attainment for PM_{2.5}."
- B. Projects within a PM_{2.5} non-attainment area
Projects located within areas in non-attainment or maintenance for PM_{2.5} must be included in a conforming long range plan and short-term TIP.

Analysis for PM_{2.5} is required for the preferred alternative. If the Draft EA evaluates several alternatives in equal detail, the PM_{2.5} analysis will be deferred to the Final EA. Public notice for PM_{2.5} must be given; a summary of the analysis must be included in the Public Hearing Open House handout.

Table 2 of 40 CFR Section [93.126](#) and [93.128](#) lists Exempt Projects which do not have to perform a PM_{2.5} project level conformity determination, i.e., hot-spot analysis or regional emissions analysis. Exempt projects must be included on an exemption list reviewed by the interagency group. Consultants must confirm with the GDOT air specialist that the project has been included on the exempt list submitted to interagency.

- C. Projects listed in Table 3 of 40 CFR Section 93.127 are only exempt from regional emissions analysis; local effects of these projects must be considered to determine if a hot-spot analysis is required. A PM_{2.5} work sheet will be filled out to assist with this determination.

For projects that are not exempt, a work sheet must be completed for review by the interagency group. State agencies represented include GDOT, EPD, and Georgia Regional Transportation Authority (GRTA); federal representatives include FHWA and USEPA. MPOs in non-attainment areas also are represented. This group will determine if the project is one of “air quality concern.”

If the project is of “air quality concern” located in a PM_{2.5} non-attainment area, the air specialist also will complete a qualitative PM_{2.5} hot spot analysis. Quantitative analyses are not required at this time since quantitative hot spot modeling techniques and associated USEPA modeling guidance still do not exist.

Projects of “air quality concern” are outlined in [40 CFR Sections 93.123\(b\)\(1\)\(i\)-\(v\)](#). These Sections are listed below with their associated preamble discussion.

Section 93.123(b)(1)(i): New or expanded highway projects that have a significant number of or a significant increase in diesel vehicles; Section 93.123(b)(1)(ii): Projects affecting intersections that are at LOS D, E, or F with a significant number of diesel vehicles, or those that will change to LOS D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project;

Examples of concern:

- A project on a new highway or expressway that serves a significant volume of diesel truck traffic, such as facilities with greater than 125,000 AADT and 8% or more of such AADT is diesel truck traffic;
- New exit ramps and other highway facility improvements to connect a highway or expressway to a major freight, bus, or intermodal terminal;
- Expansion of an existing highway or other facility that affects a congested intersection (operated at LOS D, E, or F) that has a significant increase in the number of diesel trucks;
- Similar highway projects that involve a significant increase in the number of diesel transit busses and diesel trucks.

Examples not of concern:

- Projects that do not meet the criteria under § 93.123(b)(1), such as any new or expanded highway project that primarily services gasoline vehicle traffic (i.e., does not involve a significant number or increase in the number of diesel vehicles), including such projects involving congested intersections operating at LOS D, E, or F;
- An intersection channelization project or interchange configuration project that involves turn lanes or slots, lanes or movements that are physically separated. These kinds of projects improve freeway operations by smoothing traffic flow and vehicle speeds by improving weave and merge operations, which would not be expected to create or worsen PM_{2.5} or PM₁₀ violations;
- Intersection channelization projects, traffic circles or roundabouts, intersection signalization projects at individual intersections, and interchange reconfiguration projects that are designed to improve traffic flow and vehicle speeds, and do not involve any increases in idling. Thus, they would be expected to have a neutral or positive influence on PM_{2.5} or PM₁₀ emissions.

Section 93.123(b)(1)(iii): New bus and rail terminals, and transfer points, that have a significant number of diesel vehicles congregating at a single location;

Section 93.123(b)(1)(iv): Expanded bus and rail terminals, and expanded transfer points, which significantly increase the number of diesel vehicles congregating at a single location; and

Examples of concern:

- A major new bus or intermodal terminal that is considered to be a “regionally significant project” under 40 CFR 93.101;
- An existing bus or intermodal terminal that has a large vehicle fleet where the number of diesel busses increases by 50% or more, as measured by bus arrivals.

Examples not of concern:

- A new or expanded bus terminal that is serviced by non-diesel vehicles (e.g., compressed natural gas or hybrid electric vehicles);
- A 50% increase in daily arrivals at a small terminal (e.g., a facility with 10 buses in the peak hour).

Section 93.123(b)(1)(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 violation.

The air quality report for projects located in areas of non-attainment or maintenance for PM_{2.5} will include a statement that “the project is in an area that is in non-attainment for PM_{2.5}. Therefore conformity procedures apply to this project. The Clean Air Act requires Transportation Plans and Transportation Improvement Programs in areas not meeting

the National Ambient Air Quality Standards to conform to the emissions budget of the State Implementation Plan for air quality.”

The air quality report will note that the project is included in a conforming plan and TIP. This statement must reference the most current TIP that shows the region’s highest transportation priorities and

- The name of the plan and TIP;
- The date the MPO adopted the plan and TIP;
- The date the USDOT approved the plan and TIP; and
- The project’s reference number in the TIP.

If the project is one of air quality concern, the report also must include the qualitative analysis noted above.

The regulations governing PM_{2.5} analyses, 40 CFR 93, can be found at www.gpoaccess.gov/cfr/index.html.

6.2.5 Summary of air quality project level applicability

Pollutant	Region	Project level analysis
CO	Statewide	ADT > 10,000 & LOS D, E, or F
Pollutant	Region	Project level analysis
MSAT	Statewide	ADT < 140,000 – Qualitative ADT > 140,000 – Quantitative.
OZONE	Ozone non-attainment	NA
PM _{2.5}	PM _{2.5} non-attainment	All projects, both exempt & non-exempt, must be reviewed the interagency group

6.2.6 Report preparation

Each Air Quality Impact Assessment report should utilize GDOTs standard template unless an alternate format is agreed upon by GDOT and FHWA. The report will address all four pollutants and contain the following:

- An executive summary;
- An introduction citing air quality requirements;
- Project description;
- Traffic (existing, future build, and future no build) and LOS data;
- Assessment methodology;
- Interagency concurrence from USEPA for projects in a PM_{2.5} non-attainment area; and
- Conclusions

An Air Report Checklist is available to help reduce the need for report revisions due to information omissions.

6.2.6a Air Templates

Air Assessment Template

Air Checklist

PM_{2.5} Determination Template

6.2.7 Consultant deliverables

Consultants will deliver one copy of the draft Air Quality Impact Assessment and one copy of the approved report, and an electronic copy of the final report, pdf and word version, and air model.

For non-exempt projects located in a PM_{2.5} non-attainment area, consultants also will prepare and submit the determination letter for use during inter-agency consultation. Consultants also must insure that exempt projects have been placed on the list of exempt projects reviewed by the interagency group. If it is necessary to advertise the interagency determination for PM_{2.5} in the legal organ newspaper, the consultant will also be responsible for running the ad.

6.2.8 Useful websites

www.fhwa.dot.gov/environment/conformity/ref_guid/index.htm

6.2.9 Legislation and regulations

Clean Air Act Amendments, 42 USC Chapter 85

Clean Air Act Conformity Requirements, 42 USC 7506

EPA Conformity Regulations, 40 CFR 51 and 93

6.3 Energy supply and mineral resources

In compliance with NEPA, the potential impacts to natural resources and energy supplies must be addressed. It is agreed that transportation projects may result in a sizeable one-time increase in the demand for energy supplies. However, this one-time use should be mitigated by the efficiency a proposed action may create along an existing or new facility. The NEPA analyst will review natural resources facilities such as mining operations to ensure that a corridor would not negatively impact the production of mineral resources present in an area.

The NEPA document will address the following uses of natural resources and energy supplies in the appropriate section:

- One-time sizable use of fossil fuels for heavy machinery and other vehicles;
- Energy mining operations or mineral reserves in the project area; and
- Electrical requirements.

Typically, these potential impacts are mitigated because the proposed project is a one-time energy use that will ensure a more efficient facility; at present, there are no fuel shortages.

If a mining operation or mineral reserve is located in the project area, coordination with the mining operation should be initiated at the earliest practicable time (see [Chapter II](#)). Early Coordination allows ample time to shift the roadway design if possible in the area of the mining operation or provide the mining operation ample time to strip the area potentially affected by project implementation of valuable mineral sources.

6.4 Construction and utilities

Impacts associated with construction activities to the natural, social, and economic environments should be taken into account. These impacts (if any) are discussed within the appropriate sections of the NEPA document.

Discussion of construction impacts should include, but not be limited to, the following areas of potential impact:

- Inconvenience to motorists – During construction, will motorists be delayed for long periods of time? Would lane closures or detours be required?
- Loss of forested areas – Will the project require the clearing of substantial natural vegetation?
- Public Utilities – Will the project require the relocation of utilities (i.e., water, sewer, telephone, etc.); will there be an interruption of the service for a period of time during utility relocations? Will the relocation of the utilities impact other environmental resources, such as streams or historic properties?
- Noise – Will construction activities cause noise pollution?
- Air Quality – Will excessive fugitive dust impact the air quality within the project area; will watering be required to settle/limit dust particles?

Mitigation may be required for impacts resulting from construction activities.

6.5 Underground Storage Tank (UST)/hazardous waste

Hazardous materials and Underground Storage Tank (UST) surveys are performed for NEPA compliance to identify any possible present or future environmental concerns on or around a subject property or corridor. These assessments can help with early identification of potentially problem facilities affecting the project.

Please note that for NEPA documents prepared by GDOT, the NEPA analyst will perform a windshield survey of the project corridor for potential UST and hazardous waste sites. However, the Project Manager will request the UST/hazardous waste site field reconnaissance from the appropriate District and the Office of Materials and Research. The findings of this study will be summarized in the NEPA document. For more information on these procedures, see [Policies and Procedures 5525-1](#).

Also please note that property owners must be notified prior to conducting a soil survey on their land.