PART 2, CHAPTER 19

AIR QUALITY

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PART 2, CHAPTER 19

AIR QUALITY

19.1 OVERVIEW

Pursuant to ***23 United States Code (U.S.C.) § 327*** and the implementing Memorandum of Understanding (MOU) executed on May 26, 2022, the Florida Department of Transportation (FDOT) has assumed and Federal Highway Administration (FHWA) has assigned its responsibilities under the ***National Environmental Policy Act (NEPA)*** for highway projects on the State Highway System (SHS) and Local Agency Program (LAP) projects off the SHS (***NEPA*** Assignment). In general, FDOT's assumption includes all highway projects in Florida which source of federal funding comes from FHWA or which constitute a federal action through FHWA. ***NEPA*** Assignment includes responsibility for environmental review, interagency consultation and other activities pertaining to the review or approval of ***NEPA*** actions. Consistent with law and the MOU, FDOT will be the Lead Federal Agency for highway projects with approval authority resting in the Office of Environmental Management (OEM).

19.1.1 Purpose

The ***Clean Air Act (CAA)***, as amended, requires the Environmental Protection Agency (EPA) to set ***National Ambient Air Quality Standards (NAAQS)*** to protect public health and welfare. The EPA established the first set of primary and secondary ***NAAQS*** for six air pollutants that are common in outdoor air and are considered harmful to public health and the environment. The six criteria air pollutants are: ozone (O_3), nitrogen dioxide (NO_2), particulate matter (PM), sulfur dioxide (SO_2), carbon monoxide (CO), and lead (Pb). The current standards are provided in ***Table 19-1***. The ***NAAQS*** show the maximum allowable concentration of a pollutant by averaging time. For example, the maximum allowable primary and secondary ambient concentration of ozone is 0.070 parts per million (ppm) averaged over an 8-hour period.

In accordance with the ***CAA***, all areas within the United States are designated with respect to the ***NAAQS*** as being "attainment," "nonattainment," "maintenance," or "unclassifiable." Areas with documented air pollutant levels less than the ***NAAQS*** are designated attainment. Areas with documented air pollutant levels greater than the ***NAAQS*** are designated nonattainment. Maintenance areas are nonattainment areas that have been re-designated to attainment status. An area is designated as unclassifiable when the EPA is not able to determine an area's status after evaluating the available information. Current information on the status of nonattainment areas with respect to the ***NAAQS*** is available within the ***EPA's Green Book (EPA, 2019)***.

In 1990, the ***CAA*** was amended to include strategies to achieve and maintain the ***NAAQS*** for criteria air pollutants, to reduce air pollutant and pollutant precursor emissions from mobile sources, and to provide enforcement sanctions for not achieving and maintaining the ***NAAQS***.

At the time of this publication, Florida has one maintenance area for Pb according to the standard last updated in 2008. The maintenance area for Pb is located in Tampa. Florida also has three maintenance areas for SO_2 according to the 2010 standard. The maintenance areas for SO_2 are located in Hillsborough County, Hillsborough/Polk County, and Nassau County. However, on-road motor vehicles are not considered a significant source of SO_2 or Pb, and project level analysis for SO_2 and Pb is not needed. Florida is currently in attainment for all other ***NAAQS***.

Mobile Source Air Toxics (MSATs) are hazardous air pollutants emitted by mobile sources that are known, or suspected, to cause cancer or serious health and environmental effects. The EPA has identified nine compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk contributors and non-cancer hazard contributors from the ***2011 National Air Toxics Assessment (NATA)***. In the ***Updated Interim Guidance on MSAT Analysis in National Environmental Policy Act (NEPA) Documents***, FHWA considers these nine compounds priority MSATs. The nine priority MSATs are acetaldehyde, acrolein, benzene, 1,3-butadiene, diesel particulate matter plus diesel exhaust organic gases, ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter.

This chapter explains how to evaluate project level air quality effects (specifically, CO, PM, and MSATs) of FDOT projects, and how to address those effects during the environmental review process. Because Florida does not have any areas which are in nonattainment, it is generally not necessary to prepare an extensive report to document potential impacts to air quality. Rather, a brief ***Air Quality Technical Memorandum*** is prepared if warranted, and the results are summarized in the Environmental Document.

19.1.2 Definitions

Attainment – The designation that an area has monitored air quality that meets the EPA ***NAAQS*** for a particular pollutant.

CAL3QHC – A dispersion model currently approved by EPA to determine pollutant concentrations at receptor locations near highways using the emission rates determined by the Motor Vehicle Emission Simulator (MOVES) model.

CO Florida 2012 – An FDOT CO screening test for project level analysis of intersections and interchanges that incorporates emission factors produced from the EPA's MOVES model. It has a CAL3QHC module built into it, with several different intersection and interchange configurations pre-programmed as separate input files. ***CO Florida 2012*** can be used to screen for ambient CO near the intersections, which include ramp terminals. It incorporates worst case conservative assumptions in regard to traffic, temperatures, meteorology, and location of receptors. If the model shows no exceedances of the CO ***NAAQS***, it is not necessary to run more detailed models (MOVES and CAL3QHC).

Micron (or Micrometer) (µm) – One millionth of a meter, symbolized as 1×10^{-6} meter.

Mobile Source Air Toxics (MSAT) – Hazardous air pollutants emitted by mobile sources that are known, or suspected, to cause cancer or serious health and environmental effects.

Motor Vehicle Emission Simulator (MOVES) – An EPA emissions model that estimates the emission rates for mobile sources for criteria air pollutants, greenhouse gases, and air toxics.

National Ambient Air Quality Standards (NAAQS) – EPA's list of the maximum level of pollutants allowed as required by the ***CAA***. The six criteria air pollutants are: Ozone (O_3), nitrogen dioxide (NO_2), Particulate Matter (PM), sulfur dioxides (SO_2), CO, and lead (Pb).

Nonattainment- The designation that an area has monitored air quality that does not meet the EPA ***NAAQS*** for a particular pollutant.

Primary Standards – Ambient air pollution standards set to protect public health.

Secondary Standards – Ambient air pollution standards set to protect public welfare, such as protecting against visibility degradation and damage to animals, crops, vegetation, and buildings.

19.2 PROCEDURE

NEPA requires that air quality be considered in the preparation of Environmental Documents. Air quality analysis is performed as part of the environmental review process to identify project-related impacts, and to evaluate possible mitigation, if appropriate. Project level air quality analysis varies according to the size of the project, existing air quality issues, and the degree of controversy regarding the project.

19.2.1 ETDM Screening

Evaluation of project effects on air quality starts during the Efficient Transportation Decision Making (ETDM) screening for qualifying projects. Potential air quality effects, including attainment status of the area, should be discussed in the Preliminary Environmental Discussion (PED). During the Planning and Programming Screens of the ETDM process, the EPA, which is an Environmental Technical Advisory Team (ETAT) member, provides comments on air quality issues. The ETAT comments are considered along with the FDOT expertise where the results of the review are summarized in the ETDM ***Planning Screen Summary Report*** and ***Programming Screen Summary Report***. These reports support the development of the scope for air quality analysis for a Project Development and Environment (PD&E) Study. For more information, refer to FDOT's ***ETDM Manual, Topic No. 650-000-002***.

19.2.2 Air Quality Analysis

The three pollutants analyzed in the Environmental Document for air quality are CO, PM, and MSATs.

19.2.2.1 Carbon Monoxide Analysis

Project level analysis is only required for federal projects in nonattainment and maintenance areas. The entire state of Florida is currently in attainment for CO, and most transportation improvement projects reduce delay and congestion. Modeling performed on projects statewide have consistently shown no exceedance of the ***NAAQS*** CO standard. Therefore, exceedance of the ***NAAQS*** is not expected to occur. Even though Florida is in attainment for the ***NAAQS***, detailed air quality analysis for CO may be needed, depending on project conditions.

The process for assessing CO is depicted in ***Figure 19-5***. A screening test using the ***CO Florida 2012*** model is needed when:

1. The Class of Action for the project is an Environmental Impact Statement (EIS) and/or;

2. The total vehicular delay time (veh-hours) at an intersection in the design year build condition is projected to increase when compared to the design year no-build condition and/or;

3. The project is expected to have community controversy regarding air quality. (Coordination with District specialists may be required to determine potential community controversy.)

When use of the screening test is not warranted the Environmental Document includes a statement that the project is not expected to have adverse effects on air quality (***Section 19.2.4***).

When use of the screening test is warranted, intersections and interchanges within the project corridor are required to be reviewed to evaluate the potential for a violation of the CO ***NAAQS***. Levels of CO tend to be the highest adjacent to intersections. At a minimum, the intersection with a combination of the highest intersection approach volume, the highest level of delay (on specific turning movements or for the intersection as a whole) and the lowest approach speed is screened using the ***CO Florida 2012*** screening test. The screening test is performed for future design year conditions with and without the proposed roadway improvements. For additional information on data requirements for the CO screening test, see the ***User's Guide to CO Florida 2012*** for the screening methodology and FDOT's ***Software Downloads Website*** to download the ***CO Florida 2012*** model. The ***Traffic Data for Air Quality Analysis Form, Form No. 650-050-36*** is to be used for entering traffic data in the ***CO Florida 2012*** model.

The ***CO Florida 2012*** model can be used to screen for the ambient CO near intersections (including interchange ramps). ***CO Florida 2012*** incorporates worst case conservative assumptions including peak hour traffic, January time-frame temperatures, meteorology conditions favorable for higher concentrations of CO (wind speed, stability class, and wind 360-degree angle search), and close-in receptors. ***CO Florida 2012*** has built in different intersection configurations that are analyzed after certain inputs are entered by the user.

If the CO ***NAAQS*** are not exceeded during screening, using the worst-case assumptions, the intersection passes the screening test and no detailed modeling has to be performed. Documentation of the evaluation is prepared and provided in an ***Air Quality Technical Memorandum*** and in the Air Quality section of the Environmental Document.

If the results of the screening test predict CO concentrations exceeding the standard noted in ***Table 19-1*** (35 ppm for a 1-hour period or 9 ppm for an 8-hour period), a detailed microscale emissions rates and dispersion analysis is performed on the intersection failing the test to insure there are no violations of the CO ***NAAQS***. A detailed assessment requires using actual intersection and receptor geometry, actual traffic predictions for all legs of the intersection, and running the latest versions of EPA's emission rates model (MOVES) and the dispersion model (CAL3QHC) independently. See ***Figure 19-1*** for links to latest MOVES and CAL3QHC models.

If the detailed microscale analysis shows that the intersection still violates the CO ***NAAQS***, mitigation measures are evaluated through changes in lane configurations, signal timing, exclusive vehicle allowances per lane, or other techniques. Once this is done the modeling analysis is run for the adjusted scenarios. Compliance with the ***NAAQS*** standards must be achieved for the proposed project to proceed.

19.2.2.2 Particulate Matter Analysis

Florida is in attainment for PM, both $PM_{2.5}$ and PM_{10}, therefore no project level analysis is needed. Only particulate emissions associated with construction activity are considered.

Project level impacts during construction are temporary in nature. PM emissions that can be associated with construction activities include dust as well as products of combustion, roadway deposits from brake dust, tire particles, and roadway dirt. These impacts are minimized by adherence to applicable state regulations and to the ***FDOT Standard Specifications for Road and Bridge Construction***. See ***Section 19.2.4*** for how to include this information in the Environmental Document.

19.2.2.3 Mobile Source Air Toxics Analysis

This section presents the varying levels of analysis associated with MSATs. The analysis process is depicted in ***Figure 19-6***. Project level MSAT analysis is only required for federal projects and documented depending on the following specific projects circumstances:

1. No analysis for projects with no potential for meaningful MSAT effects;

2. Qualitative assessment for projects with low potential MSAT effects; or

3. Quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects.

19.2.2.3.1 Projects with No Potential MSAT Effects

Projects that have no potential meaningful MSAT effects are **exempted** from MSAT analysis. These projects include:

- Projects qualifying as Categorical Exclusions;
- Projects exempt under the ***CAA*** conformity rule under ***40 CFR § 93.126***; and
- Other projects with no meaningful impacts on traffic volumes or vehicle mix.

Analysis or discussion of MSAT is not necessary for these projects. Documentation demonstrating that the project is exempt will suffice. For other projects with no or negligible traffic impacts, MSAT analysis is not recommended. However, an Environmental Assessment (EA) or EIS should document the basis for the determination of no meaningful potential impacts with a brief description of the factors considered.

Refer to ***Figure 19-2*** for suggested language to be used in the EA or EIS when the project is exempt from MSAT analysis.

19.2.2.3.2 Projects with Low Potential MSAT Effects

Projects in this category are EAs and EISs that improve operations of highway, transit, or freight without adding substantial new capacity or without creating a facility that is likely to meaningfully increase MSAT emissions. Examples of these types of projects are minor widening projects; new interchanges; replacing a signalized intersection; and projects where design year traffic is projected to be less than 140,000 annual average daily traffic (AADT).

For these projects, a **qualitative assessment** of emission projections should be conducted. This qualitative assessment should compare 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, including the No-Build, based on vehicle miles traveled (VMT), vehicle mix, and speed. It should also discuss national trend data projecting substantial overall reductions in emissions due to stricter engine and fuel regulations issued by EPA.

Refer to ***Figure 19-2*** for suggested language to be used in the EA or EIS for projects that require qualitative MSAT analysis.

19.2.2.3.3 Projects with High Potential MSAT Effects

Projects that have high potential MSAT effects include projects that:

- 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, involving a significant number of diesel vehicles for new projects or accommodating with a significant increase in the number of diesel vehicles for expansion projects; or

- Create new capacity or add significant capacity to urban highways such as Interstates, urban arterials, or urban collector-distributor routes with traffic volumes where the AADT is projected to be 140,000 or greater by the design year; and

- Are proposed in proximity to populated areas.

Projects in this category require **quantitative analysis** to forecast specific emission trends of MSAT for each viable alternative to use as a basis of comparison. If there are meaningful differences in MSAT levels among viable alternatives, mitigation options should be considered. See ***FDOT Mobile Source Air Toxics Quantitative Analysis Guidance and Emission Rates Look-up Tables*** for the analysis procedure and documentation requirements. Example strategies to mitigate MSAT emissions are presented in ***Figure 19-3***.

See ***Figure 19-2*** for suggested language to be used in an EA or EIS for projects that require qualitative MSAT analysis.

19.2.3 Air Quality Technical Memorandum

It is not necessary to prepare an extensive report to document the status of the project with respect to air quality since Florida is in attainment. If a CO screening test and/or qualitative MSAT assessment (i.e., when the AADT is 140,000 or less)/quantitative MSAT analysis (i.e., when AADT is greater than 140,000) was performed, a brief ***Air Quality Technical Memorandum*** is prepared. When final, the memorandum must be placed in the project file. A sample ***Air Quality Technical Memorandum*** is provided as ***Figure 19-4***. The ***Air Quality Technical Memorandum*** should include:

1. A disclosure that the review and evaluation was conducted by FDOT under ***NEPA*** Assignment, see standard language included in the first paragraph of the sample ***Air Quality Technical Memorandum*** (***Figure 19-4***).

2. A brief description of the project and the area where the project is located (e.g., residential, commercial or industrial).

3. A brief description of air quality conditions within the area with respect to the ***NAAQS***. The following statement should be included since Florida is in attainment for CO and PM ***NAAQS***:

This project is not expected to create adverse impacts on air quality because the project area is in attainment for all National Ambient Air Quality Standards. Therefore, the Clean Air Act conformity requirements do not apply to the project. Additionally, the project is expected to [improve/maintain] the Level of Service (LOS) and [reduce/not affect] delay and congestion on all facilities within the study area.

4. Confirm the project was reviewed for air quality impacts, as appropriate, and provide the results of the CO screening test for the project alternatives when conducted. See ***Section 19.2.2.1*** for screening test requirements.

5. When the project has no or low potential MSAT effects the standard language provided in ***Figure 19-2*** should be used.

6. When the project has high potential MSAT effects, and a quantitative MSAT analysis was performed include:

    a. **Project specific MSAT information.** Include a brief project description, project location, analysis years (base year and design year), identification of whether an interim year is required, names of alternatives evaluated; and explanation of why quantitative MSAT analysis is performed.

    b. **Methodology used to estimate MSAT emissions**. Use FDOT ***Mobile Source Air Toxics Quantitative Analysis Guidance and Emission Rates Look-up Tables***. Develop MSAT area of analysis with appropriate data (traffic volumes and average speeds in each link, length of each link). Reference or state the source of traffic inputs.

    c. **Estimation of MSAT emissions**. For each link in the project area, multiply applicable emission rates for each priority MSAT by VMT. Aggregate the emissions from each link to determine total emissions for each priority MSAT. Aggregate the emissions for each priority MSAT to determine the total MSAT emissions. Include a table with total MSAT emissions for the priority MSAT by analysis year, for each alternative analyzed. Include percent change of emission between the analysis years in the table.

    d. **Discussion of MSAT analysis results and comparison of the MSAT emission changes**. Discuss analysis results for the base year, interim year (if applicable), and design year for each build alternative and the no-build alternative. Include discussion of how the proposed improvements affect base MSAT emissions. Use a bar chart or similar chart to visually compare MSAT trends between analysis years.

    e. **Incomplete or unavailable information**. Since the MSAT analysis is evolving, include a discussion of unavailable information for project-specific MSAT health impact analysis from Appendix C of the FHWA ***Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents (FHWA Interim Guidance)***.

f. **Mitigation strategies** (if needed for projects with potentially significant MSAT levels). Use Appendix E of the ***FHWA Interim Guidance*** for information on mitigation strategies.

19.2.4 Documentation in the Environmental Document

19.2.4.1 Non-Major State Action

Projects evaluated as Non-Major State Actions (NMSAs) typically have no effect on area-wide air quality levels but may provide some air quality benefits on a local basis. For projects evaluated as NMSAs, a CO screening analysis is not necessary unless one of the criteria of ***Section 19.2.2.1*** is met. If necessary, the screening test should be performed using ***CO Florida 2012*** and the results reported in an ***Air Quality Technical Memorandum***.

If it is determined that there are no impacts to air quality, the answer to question 3. of the ***Non-Major State Action Checklist*** can include this statement:

> This project is not expected to create adverse impacts on air quality because the project area is in attainment for all National Ambient Air Quality Standards (NAAQS) and because the project is expected to [improve/maintain] the Level of Service (LOS) and [reduce/not affect] delay and congestion on all facilities within the study area.

19.2.4.2 State Environmental Impact Report

For projects evaluated as State Environmental Impact Reports (SEIRs), a CO screening analysis is not necessary unless one of the criteria of ***Section 19.2.2.1*** is met. If necessary, the screening test should be performed using ***CO Florida 2012*** and the results reported in an ***Air Quality Technical Memorandum***.

If an analysis is performed, the results are included in the Air Quality section of the SEIR. See ***Part 1, Chapter 10, State, Local and Privately Funded Project Delivery*** for more detail on how to prepare a SEIR.

If it is determined that there are no impacts to air quality, the Air Quality section of the SEIR can state as follows:

> This project is not expected to create adverse impacts on air quality because the project area is in attainment for all National Ambient Air Quality Standards (NAAQS) and because the project is expected to

> [improve/maintain] the Level of Service (LOS) and [reduce/not affect] delay and congestion on all facilities within the study area.
>
> Construction activities may cause short-term air quality impacts in the form of dust from earthwork and unpaved roads. These impacts will be minimized by adherence to applicable state regulations and to applicable FDOT Standard Specifications for Road and Bridge Construction.

Summarize the measures that will be taken to minimize potential construction impacts in the Construction Section of the SEIR.

19.2.4.3 Type 1 Categorical Exclusion

Projects evaluated as Type 1 Categorical Exclusions (CEs) typically have no effect on area-wide air quality levels but may provide some air quality benefits on a local basis. For projects evaluated as Type 1 CEs, CO screening analysis is not necessary unless one of the criteria of ***Section 19.2.2.1*** is met. If necessary, the screening test should be performed using ***CO Florida 2012*** and the results reported in an ***Air Quality Technical Memorandum***.

If it is determined that there are no impacts to air quality, this is documented in the general verification checkbox of the ***Type 1 Categorical Exclusion Checklist*** that confirms there are no significant impacts.

19.2.4.4 Type 2 Categorical Exclusion

Projects evaluated as Type 2 CEs typically have no effect on area-wide air quality levels but may provide some air quality benefits on a local basis. For projects evaluated as Type 2 CEs, CO screening analysis is not necessary unless one of the criteria of ***Section 19.2.2.1*** is met. If necessary, the screening test should be performed using ***CO Florida 2012*** and the results reported in an ***Air Quality Technical Memorandum***.

The air quality assessment is summarized in the Air Quality section of the ***Type 2 Categorical Exclusion Determination Form***.

If it is determined that there are no impacts to air quality, the Air Quality section of the Type 2 CE can state as follows:

> This project is not expected to create adverse impacts on air quality because the project area is in attainment for all National Ambient Air Quality Standards (NAAQS) and because the project is expected to [improve/maintain] the Level of Service (LOS) and [reduce/not affect] delay and congestion on all facilities within the study area.
>
> Construction activities may cause short-term air quality impacts in the form of dust from earthwork and unpaved roads. These impacts

> will be minimized by adherence to applicable state regulations and to applicable FDOT Standard Specifications for Road and Bridge Construction.

19.2.4.5 Environmental Assessment and Environmental Impact Statement

While it is recognized that Florida is currently in attainment for CO and there is low likelihood of adverse air quality impacts associated with projects that reduce delay and congestion, a CO screening test is performed for projects where an EIS is prepared

The screening test should be performed using ***CO Florida 2012*** in accordance with ***Section 19.2.2.1*** and the results reported in an ***Air Quality Technical Memorandum***. However, if the predicted CO concentrations exceed the standard noted in ***Table 19-1***, a more detailed emissions rates and microscale dispersion analysis using computer modeling techniques should be used. See ***Figure 19-1*** for links to latest emissions and dispersion models (MOVES and CAL3QHC).

For projects where an EA is prepared, CO screening analysis is not necessary unless one of the criteria of ***Section 19.2.2.1*** is met. If necessary, the screening test should be performed using ***CO Florida 2012*** and the results reported in an ***Air Quality Technical Memorandum***.

The air quality analyses documented in the ***Air Quality Technical Memorandum*** are summarized in the Environmental Analysis section of the EA or EIS, including the results of the screening test, a statement that indicates that there will not be any violations of the ***NAAQS*** for CO, and the results of the appropriate MSAT analysis. Each alternative, including the No-Build alternative, is analyzed. The No-Build analysis is for the project opening year and the design year. In most circumstances, the build alternatives will indicate an improvement in CO concentrations. If detailed microscale analysis is required and shows that the intersection exceeds the CO ***NAAQS***, mitigation measures are incorporated and discussed in the EA or EIS. Compliance with the ***NAAQS*** standards must be achieved for the proposed project to proceed.

Appropriate statements regarding MSAT analysis based on the project specifics are included in the Environmental Document as appropriate. Statements for projects with no or low potential MSAT effects are included in ***Figure 19-2***. Documentation for quantitative MSAT analysis in the EA or EIS should include a summary of MSAT analysis and reference the ***Air Quality Technical Memorandum***.

If it is determined that there are no impacts to air quality, the Air Quality section of the EA or EIS can state as follows:

> This project is not expected to create adverse impacts on air quality because the project area is in attainment for all National Ambient Air Quality Standards (NAAQS) and because the project is expected to

[improve/not change] the Level of Service (LOS) and [reduce/not change] delay and congestion on all facilities within the study area.

Construction activities may cause short-term air quality impacts in the form of dust from earthwork and unpaved roads. These impacts will be minimized by adherence to applicable state regulations and to applicable FDOT Standard Specifications for Road and Bridge Construction.

19.3 REFERENCES

EPA, 2011 National Air Toxics Assessment Results. https://www.epa.gov/national-air-toxics-assessment/2011-nata-assessment-results

EPA, 2014. National Emissions Inventory. https://epa.gov/air-emissions-inventories/national-emissions-inventory-nei

EPA, The Green Book Nonattainment Areas for Criteria Pollutants. https://www.epa.gov/green-book

FHWA, Advisory T6640.8A, Guidance for Preparing and Processing Environmental and Section 4(f) Documents, October 30, 1987; available from the FHWA Environmental Guidebook. https://www.environment.fhwa.dot.gov/projdev/impta6640.asp

FHWA, Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents, October 18, 2016. https://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/msat/

FHWA, A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives. https://www.fhwa.dot.gov/environment/air_quality/air_toxics/research_and_analysis/mobile_source_air_toxics/msatemissions.cfm

First Renewal of the Memorandum of Understanding Between FHWA and FDOT Concerning the State of Florida’s Participation in the Surface Transportation Project Delivery Program Pursuant to 23 U.S.C. § 327May 26, 2022. http://www.fdot.gov/environment/pubs/Executed-FDOT-NEPA-Assignment-MOU-2016-1214.pdf

FDOT, CO FDOT Florida 2012 User’s Guide and Screening Model. https://www.fdot.gov/environment/software/software.shtm

FDOT, MSAT Look-up Tables and Quantitative Analysis Guidance February 2018
http://www.fdot.gov/environment/pubs/MSAT.shtm

Title 40 CFR Part 93, Determining Conformity of Federal Actions to State or Federal Implementation Plans.
http://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title40/40cfr93_main_02.tpl

19.4 FORMS

Traffic Data for Air Quality Analysis Form, Form No. 650-050-36

19.5 HISTORY

8/18/1999, 9/13/2006, 8/24/2016, 6/14/2017: NEPA Assignment and re-numbered from Part 2, Chapter 16, 1/14/2019, 7/1//2020, 7/1/2023

Table 19-1 National Ambient Air Quality Standards (NAAQS)

Pollutant		Averaging Time	Primary[e]	Secondary[f]
Ozone (O_3)		8-hour[a]	0.070 ppm[g]	0.070 ppm
Nitrogen Dioxide (NO_2)		1-hour[b]	100 ppb[h]	NA
		Annual Arithmetic Mean	53 ppb	53 ppb
Particulate Matter	2.5 microns or less in size ($PM_{2.5}$)	24-hour[k]	35 $\mu g/m^3$	35 $\mu g/m^3$
		Annual Arithmetic Mean[c]	12.0 $\mu g/m^3$	15.0 $\mu g/m^3$
	10 microns or less in size (PM_{10})	24-hour[l]	150 $\mu g/m^3$	150 $\mu g/m^3$
Sulfur Dioxide[d] (SO_2)		1-hour	75 ppb	NA
		3-hour	NA	0.5 ppm
Carbon Monoxide (CO)		1-hour[i]	35 ppm	NA
		8-hour[i]	9 ppm	NA
Lead (Pb)		Rolling 3-Month Average[j]	0.15 $\mu g/m^3$	0.15 $\mu g/m^3$

[a] The ozone standard is attained when the fourth highest daily maximum 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard.
[b] To attain the 1-hour standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb.
[c] To attain this primary standard, the 3-year average of the annual arithmetic mean concentrations from single or multiple community-oriented monitors must not exceed 12.0 $\mu g/m^3$.
[d] To attain the 1-hour standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75ppb. To attain the 3-hour standard, it is not to be exceeded more than once per year.
[e] Primary standards are designed to establish limits to protect public health, including the health of “sensitive” individuals such as asthmatics, children, and the elderly.
[f] Secondary standards set limits to protect public welfare including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.
[g] ppm = parts per million
[h] ppb = parts per billion
[i] Not to be exceeded more than once per year.
[j] To attain the lead standard, the levels during the rolling 3-month averaging period may not exceed the 0.15 $\mu g/m^3$ level over a 3-year period
[k] To attain the primary/secondary standard, the 3-year average of the annual 98th percentile concentrations from single or multiple community-oriented monitors must not exceed 35 $\mu g/m^3$
[l] To attain these standards, these levels are not to be exceeded more than once per year on average over 3 years.

NA = Not applicable
ppm = parts per million
ppb = parts per billion
$\mu g/m^3$ = microgram per cubic meter

Source: United States Environmental Protection Agency, 2019

Federal Highway Administration

Policies and Guidance Papers -
http://www.fhwa.dot.gov/environment/air_quality/conformity/policy_and_guidance

Air Quality -
http://www.fhwa.dot.gov/environment/air_quality/

Transportation conformity –
https://www.fhwa.dot.gov/environment/air_quality/conformity/index.cfm

Florida Department of Environmental Protection

Current air quality rules (Chapter 62-4, F.A.C. and Rule 62-210.300, F.A.C.) –.
http://www.dep.state.fl.us/air/rules/current.htm

General Air Quality Publications.
http://www.dep.state.fl.us/air/publication/general.htm

U.S. Environmental Protection Agency

EPA, 2014. National Emissions Inventory.
https://epa.gov/air-emissions-inventories/national-emissions-inventory-nei

What Are the Six Common Air Pollutants?
https://www.epa.gov/criteria-air-pollutants

National Ambient Air Quality Standards (NAAQS).
https://www.epa.gov/criteria-air-pollutants/naaqs-table

CAL3QHC Model.
https://www.epa.gov/scram/air-quality-dispersion-modeling-preferred-and-recommended-models#cal3qhcx

Guidance on Hot Spot Analysis for PM_{10} and $PM_{2.5}$.
https://www.epa.gov/state-and-local-transportation/project-level-conformity-and-hot-spot-analyses#pmguidance

Motor Vehicle Emission Simulator (MOVES) Model.
https://www.epa.gov/moves

State Implementation Plans (Region 4).
https://www.epa.gov/sips-fl

Figure 19-1 Air Quality Information Sources

2011 NATA: Assessment Results
https://www.epa.gov/national-air-toxics-assessment/2011-nata-assessment-results

The Green Book Nonattainment Areas for Criteria Pollutants.
https://www.epa.gov/green-book

Other Sources

Title 42 U.S.C. § 85, Subchapter I (Programs and Activities), Part A (Air Quality and Emission Limitations).
http://uscode.house.gov/browse/prelim@title42/chapter85/subchapter1/partA&edition=prelim

Figure 19-1 Air Quality Information Sources (Page 2 of 2)

MSAT Standard Language

[USE THIS LANGUAGE FOR EAs OR EISs THAT ARE EXEMPT FROM MSAT ANALYSIS]

The purpose of this project is to (*insert major deficiency that the project is meant to address*) by constructing (*insert major elements of the project*). This project has been determined to generate minimal air quality impacts for Clean Air Act criteria pollutants and has not been linked with any special mobile source air toxic (MSAT) concerns. As such, this project will not result in changes in traffic volumes, vehicle mix, basic project location, or any other factor that would cause a meaningful increase in MSAT impacts of the project from that of the No-Build alternative.

Moreover, Environmental Protection Agency (EPA) regulations for vehicle engines and fuels will cause overall MSAT emissions to decline significantly over the next several decades. Based on regulations now in effect, an analysis of national trends with EPA's MOVES2014 model forecasts a combined reduction of over 90 percent in the total annual emissions rate for the priority MSAT from 2010 to 2050 while vehicle-miles of travel are projected to increase by over 45 percent (Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents, Federal Highway Administration, October 12, 2016). This will both reduce the background level of MSAT as well as the possibility of even minor MSAT emissions from this project.

[USE THIS LANGUAGE FOR EAs OR EISs THAT REQUIRE QUALITATIVE MSAT ANALYSIS]

Introduction
A qualitative analysis provides a basis for identifying and comparing the potential differences among MSAT emissions, if any, from the various alternatives. The qualitative assessment presented below is derived in part from a study conducted by FHWA entitled A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives.

MSAT Effects Consideration
[Select the appropriate language based on the purpose of the project (widening, interchanges or freight focus projects). Modify the language to meet the project context.]

A. Widening Projects and Interchange Projects

For each alternative analyzed in this EA/EIS (*specify*), the amount of mobile source air toxics (MSAT) emitted would be proportional to the vehicle miles traveled (VMT) if other variables such as fleet mix are the same for each alternative. The VMT estimated for each of the Build Alternatives is slightly higher than that for the No-Build Alternative, because the additional capacity increases the efficiency of the roadway and may attract some trips from elsewhere in the transportation network. Refer to Table ___ (*specify*).

Figure 19-2 Mobile Source Air Toxics Standard Language

This increase in VMT would lead to higher MSAT emissions for the recommended alternative along the highway corridor, along with a corresponding decrease in MSAT emissions along the parallel routes. The emissions increase is offset somewhat by lower MSAT emission rates due to increased speeds; according to the Environmental Protection Agency's (EPA) MOVES2014 model, emissions of all priority MSAT decrease as speed increases. Because the estimated VMT under each of the Alternatives are nearly the same, varying by less than ___ *(specify)* percent, it is expected there would be no appreciable difference in overall MSAT emissions among the various alternatives. Also, regardless of the alternative chosen, emissions will likely be lower than present levels in the design year because of EPA's national control programs that are projected to reduce annual MSAT emissions by over 90 percent between 2010 and 2050 (Refer to Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents, Federal Highway Administration, October 12, 2016). Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the project area are likely to be lower in the future in nearly all cases.

[Include the following paragraph if the project will construct travel lanes closer to populated areas, such as residences, schools and businesses.]

The proposed improvements may have the effect of moving some traffic closer to nearby populated areas; therefore, under each alternative there may be localized areas where ambient concentrations of MSAT could be higher under certain Build Alternatives than the No-Build Alternative. However, the magnitude and the duration of these potential increases compared to the No-Build alternative cannot be reliably quantified due to incomplete or unavailable information in forecasting project-specific MSAT health impacts. In sum, when a highway is widened, the localized level of MSAT emissions for the Build Alternative could be higher relative to the No-Build Alternative, but this could be offset due to increases in speeds and reductions in congestion (which are associated with lower MSAT emissions). Also, MSAT will be lower in other locations when traffic shifts away from them. However, on a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be significantly lower than today.

B. Improvements or Expansions to Intermodal Centers or Other Projects that Affect Truck Traffic

For each alternative in this EIS/EA (*specify*), the amount of mobile source air toxics (MSAT) emitted would be proportional to the amount of truck vehicle miles traveled (VMT) and rail activity, if other variables (*such as travel not associated with the intermodal center*) are the same for each alternative. The truck VMT and rail activity estimated for each of the Build Alternatives are higher than that for the No-Build

Figure 19-2 Mobile Source Air Toxics Standard Language (Page 2 of 4)

Alternative, because of the additional activity associated with the expanded intermodal center. Refer to Table ___ (specify). This increase in truck VMT and rail activity associated with the Build Alternatives would lead to higher MSAT emissions (particularly diesel particulate matter) near the intermodal center. The higher emissions could be offset somewhat by two factors: 1) the decrease in regional truck traffic due to increased use of rail for inbound and outbound freight; and 2) increased speeds on area highways due to the decrease in truck traffic. The extent to which these emissions decreases will offset intermodal center-related emissions increases is not known.

Because the estimated truck VMT and rail activity under each of the Build Alternatives are nearly the same, varying by less than ___ (specify) percent, it is expected there would be no appreciable difference in overall MSAT emissions among the various alternatives. Also, regardless of the alternative chosen, emissions will likely be lower than present levels in the design year because of the Environmental Protection Agency's (EPA) national control programs that are projected to reduce annual MSAT emissions by over 90 percent from 2010 to 2050 (Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents, Federal Highway Administration, October 12, 2016).

Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the EPA-projected reductions are so significant (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future as well.

[*The following discussion may apply if the intermodal center is close to other development.]*

The additional freight activity contemplated as part of the project alternatives will have the effect of increasing diesel emissions near nearby homes, schools, and businesses; therefore, under each alternative there may be localized areas where ambient concentrations of MSAT would be higher than under the No-Build alternative. The localized differences in MSAT concentrations would likely be most pronounced under Alternatives _____ (specify). However, as discussed above, the magnitude and the duration of these potential differences cannot be reliably quantified due to incomplete or unavailable information in forecasting project-specific health impacts. Even though there may be differences among the Alternatives, on a region-wide basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, will cause substantial reductions over time that in almost all cases the MSAT levels in the future will be significantly lower than today.

[Insert a description of any emissions-reduction activities that are associated with the project, such as truck and train idling limitations or technologies, such as auxiliary power units; alternative fuels or engine retrofits for container-handling equipment, etc.]

Figure 19-2 Mobile Source Air Toxics Standard Language (Page 3 of 4)

Overall, the Build Alternatives in the design year could be associated with higher levels of MSAT emissions in the study area, relative to the No-Build Alternative, along with some benefit from improvements in speeds and reductions in region-wide truck traffic. There also could be slightly higher differences in MSAT levels among Alternatives in a few localized areas where freight activity occurs closer to homes, schools, and businesses. Under all alternatives, MSAT levels are likely to decrease over time due to nationally mandated cleaner vehicles and fuels.

Incomplete or Unavailable Information for MSAT Effects Analysis

Documentation of qualitative analysis in the Air Quality Technical Memo should be concluded by a 40 CFR Part 1502 assessment of incomplete or unavailable information. Refer to Appendix C of the ***Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents, Federal Highway Administration, October 12, 2016*** for details.

Figure 19-2 Mobile Source Air Toxics Standard Language (Page 4 of 4)

MSAT Mitigation Strategies

Lessening the effects of mobile source air toxics should be considered for projects with substantial construction-related MSAT emissions that are likely to occur over an extended building period, and for post-construction scenarios where the NEPA analysis indicates potentially meaningful MSAT levels. Such mitigation efforts should be evaluated based on the circumstances associated with individual projects, and they may not be appropriate in all cases. However, there are a number of available mitigation strategies and solutions for countering the effects of MSAT emissions.

Mitigating for Construction MSAT Emissions

Construction activity may generate a temporary increase in MSAT emissions. Project-level assessments that render a decision to pursue construction emission mitigation will benefit from a number of technologies and operational practices that should help lower short-term MSAT. In addition, the Federal Highway Administration has supported a host of diesel retrofit technologies in the Congestion Mitigation and Air Quality Improvement (CMAQ) Program provisions – technologies that are designed to lessen a number of MSATs.

Construction mitigation includes strategies that reduce engine activity or reduce emissions per unit of operating time, such as reducing the numbers of trips and extended idling. Operational agreements that reduce or redirect work or shift times to avoid community exposures can have positive benefits when sites are near populated areas. For example, agreements that stress work activity outside normal hours of an adjacent school campus would be operations-oriented mitigation. Verified emissions control technology retrofits or fleet modernization of engines for construction equipment could be appropriate mitigation strategies. Technology retrofits could include particulate matter traps, oxidation catalysts, and other devices that provide an after-treatment of exhaust emissions. Implementing maintenance programs per manufacturers' specifications to ensure engines perform at EPA certification levels, as applicable, and to ensure retrofit technologies perform at verified standards, as applicable, could also be deemed appropriate. The use of clean fuels, such as ultra-low sulfur diesel, biodiesel, or natural gas also can be a very cost-beneficial strategy.

Post-Construction Mitigation for Projects with Potentially Significant MSAT Levels

Travel demand management strategies and techniques that reduce overall vehicle-mile of travel; reduce a particular type of travel, such as long-haul freight or commuter travel; or improve the transportation system's efficiency will mitigate MSAT emissions. Examples of such strategies include congestion pricing, commuter incentive programs, and increases in truck weight or length limits. Operational strategies that focus on speed limit enforcement or traffic management policies may help reduce MSAT emissions even

Figure 19-3 Examples of Mitigation Strategies for MSAT Emissions

beyond the benefits of fleet turnover. Well-traveled highways with high proportions of heavy-duty diesel truck activity may benefit from active Intelligent Transportation System programs, such as traffic management centers or incident management systems. Similarly, anti-idling strategies, such as truck-stop electrification can complement projects that focus on new or increased freight activity.

Planners also may want to consider the benefits of establishing buffer zones between new or expanded highway alignments and populated areas. Modifications of local zoning or the development of guidelines that are more protective also may be useful in separating emissions and receptors.

The initial decision to pursue MSAT emissions mitigation should be the result of interagency consultation at the earliest juncture. Options available to project sponsors should be identified through careful information gathering and the required level of deliberation to assure an effective course of action. Such options may include local programs, whether voluntary or with incentives, to replace or rebuild older diesel engines with updated emissions controls. Information on EPA clean diesel programs can be found at ***https://www.epa.gov/cleandiesel***.

Figure 19-3 Examples of Mitigation Strategies for MSAT Emissions (Page 2 of 2)

Date:

To: Name, Title

From: Name, Title

Subject: Financial Management Number(s)_________
Air Quality Technical Memorandum
Project Name,
____________County

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by the Florida Department of Transportation (FDOT) pursuant to 23 U.S.C. § 327 and a Memorandum of Understanding dated May 26, 2022 and executed by the Federal Highway Administration and FDOT.

The proposed project is located in _____ County, an area currently designated as being in attainment for particulate matter (2.5 microns in size and 10 microns in size) and carbon monoxide (CO).

The project alternatives were vetted through a CO screening model called **CO Florida 2012** that makes various conservative worst-case assumptions related to site conditions, meteorology and traffic. The Florida Department of Transportation's (FDOT's) **CO Florida 2012** model uses the latest United States Environmental Protection Agency (EPA)-approved software to produce estimates of one-hour and eight-hour CO at default air quality receptor locations. The one-hour and eight-hour estimates can be directly compared to the current one-and eight-hour **National Ambient Air Quality Standards** (**NAAQS**) for CO.

The roadway intersection forecast to have the highest total approach traffic volume was *name of intersection or ramp terminal*. The Build and No-Build scenarios for both the opening year (*year*) and the design year (*year*) were evaluated. The traffic data input used in the evaluation is attached to this memorandum.

Estimates of CO were predicted for the default receptors which are located 10 feet to 150 feet from the edge of the roadway. Based on the results from **CO Florida 2012**, the highest project-related CO one- and eight-hour levels are not predicted to meet or exceed the one- or eight-hour **National Ambient Air Quality Standards** (**NAAQS**) for this pollutant with either the No-Build or Build alternatives. As such, the project "passes" the screening model. The results of the screening model are attached to this memorandum.

This project is not expected to create adverse impacts on air quality because the project area is in attainment for all National Ambient Air Quality Standards. Therefore, the Clean Air Act conformity requirements do not apply to the project. Additionally, the project is expected to [improve/not change] the Level of Service (LOS) and [reduce/not change] delay and congestion on all facilities within the study area

[For MSAT analysis, also include the applicable language from *Figure 19-2 or if the project has high potential MSAT effects, include the project specific MSAT information, methodology used to estimate MSAT emissions, estimation of MSAT emissions, discussion of MSAT analysis results and comparison of the MSAT emission changes, incomplete or unavailable information, and mitigation strategies, if needed.*]

Figure 19-4 Sample Air Quality Technical Memorandum

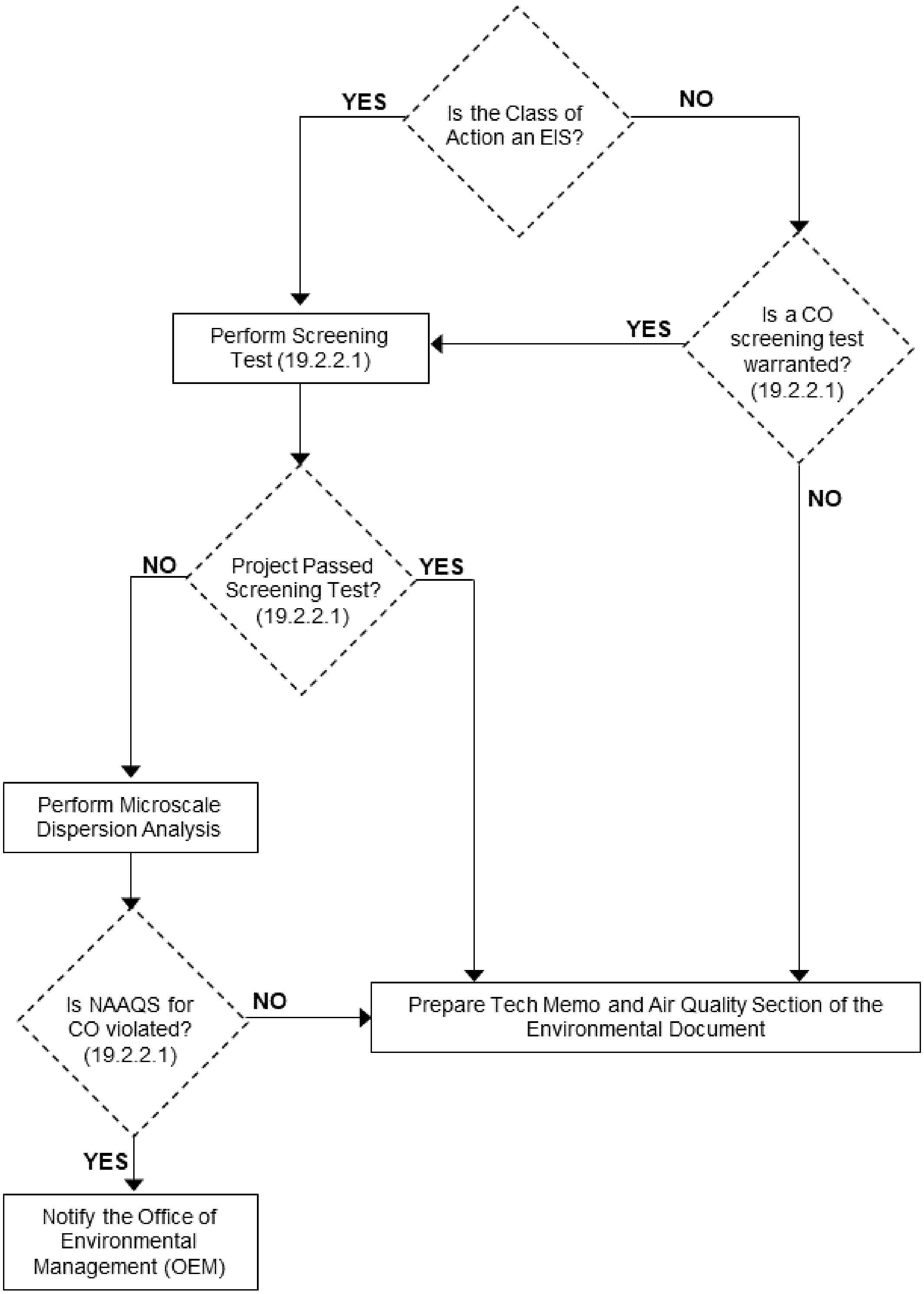

Figure 19-5 Air Quality Analysis Process for Carbon Monoxide

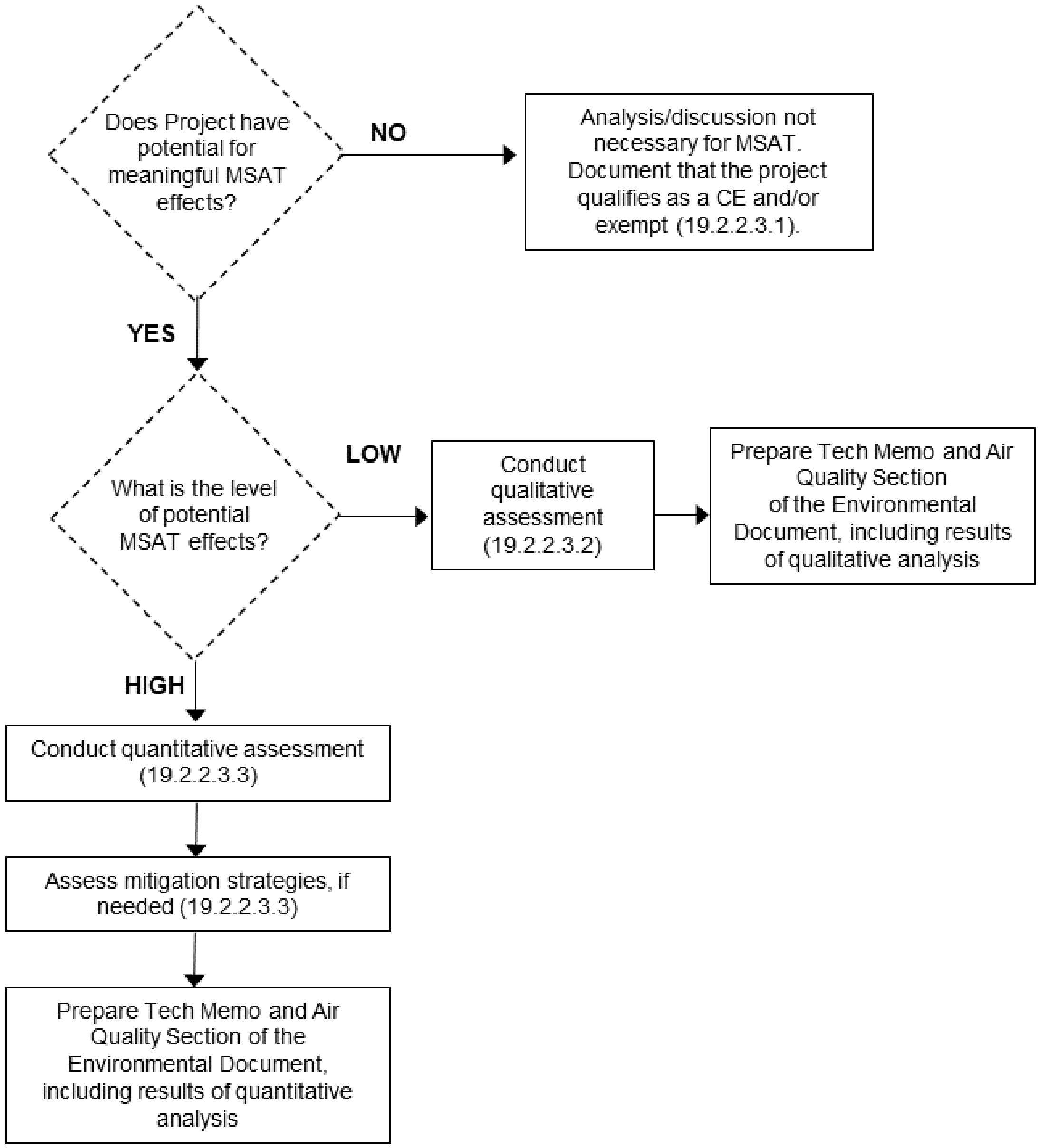

Figure 19-6 Air Quality Analysis Process for MSAT