

### 3EN1 Stage 3 - Traffic Noise and Air Quality

## QC Checklist for DNR NOISE MODEL VALIDATION MEMO

SPOT ID/Project TIP #: \_\_\_\_\_

County: \_\_\_\_\_

Note: This QC checklist is for the initial submittal only. For subsequent submittals, the Comment/Response matrix will serve as QC checklist.

Item #	Review Item	Yes	No	N/A
<b>QC.1</b>	<b>Reporting</b>			
QC.1.1	Prepared by a traffic noise analyst prequalified with NCDOT to prepare a DNR.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC.1.2	The Noise Model Validation Memo Template has been followed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC.1.2.1	Includes project location, proposed improvements, project length, existing base year, and design year	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC.1.2.2	Design speed has been confirmed and identified, and aligns with most current design criteria	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC.1.2.3	Discusses the number and duration of ambient noise measurements performed compared to the number and duration of ambient noise measurements proposed in the work plan.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC.1.2.4	Discusses the procedures used to collect all necessary data for TNM validation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC.1.2.5	Includes accurate TNM validation results and provides explanation for any site(s) that did not validate (if applicable).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC.1.3	The Noise Measurement Field Data Sheet Template has been followed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC.1.3.1	Includes complete and accurate field data sheet, unusual event log, and photographs of each individual SLM setup for all short-term ambient noise measurement sites.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC.1.4	Includes calibration certificates for all SLMs and acoustical calibrator(s) indicating that all equipment has been calibrated by an appropriately accredited laboratory within 2 years of the ambient noise measurements or other shorter timeframe as defined by the manufacturer or testing laboratory.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>QC.2</b>	<b>Figures</b>			
QC.2.1	Figures include all short-term and long-term noise monitoring sites where ambient noise measurements were performed, and number of SLMs per site, as applicable, indicated with white dots on the figures. Include reason(s) for any long-term measurements, as applicable.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC.2.2	Figures include all receptor locations and the associated noise abatement criteria (NAC) activity category for each location, including black dots for NAC F and other Non-Noise Sensitive (NNS) land uses.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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QC.2.3	Proposed spatial limits of traffic noise study area generally follow guidance from Table 7.1 of the 2022 NCDOT Traffic Noise Manual (may need to be expanded following the initial noise modeling effort if the outer limit of predicted traffic noise impacts and/or benefits is not defined).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC.2.4	Project mapping represents entire project (study area) on one image (Vicinity Map).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC.2.5	Figures are landscape oriented and are oriented the same way the roadway plans follow the alignment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC.2.6	Figures include aerial photogrammetry.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC.2.7	Figures include a logical scale or denoted as being not to scale.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC.2.8	NSA boundaries are shown and consistent with the approved Work Plan. If NSA boundaries differ from Work Plan, an explanation has been provided.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC.2.9	The proposed design is shown and consistent with the approved Work Plan.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>QC.3</b>	<b>TNM Files</b>			
QC.3.1	All TNM modeling follows the guidance outlined in Section 7.10 of the 2022 NCDOT Traffic Noise Manual.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC.3.1.1	All TNM roadways modeled in accordance with Sections 7.10.1 and 7.10.9, as well as Appendix B of the 2022 NCDOT Traffic Noise Manual.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC.3.1.2	All TNM receivers modeled in accordance with Sections 7.10.2 and 7.10.3 of the 2022 NCDOT Traffic Noise Manual.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC.3.1.3	All TNM terrain lines modeled in accordance with Section 7.10.4 of the 2022 NCDOT Traffic Noise Manual.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC.3.1.4	All TNM barriers modeled in accordance with Sections 7.10.5, 7.10.6 and 7.10.10 of the 2022 NCDOT Traffic Noise Manual.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC.3.1.5	All TNM tree zones modeled in accordance with Section 7.10.7 of the 2022 NCDOT Traffic Noise Manual.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC.3.1.6	All TNM ground zones modeled in accordance with Section 7.10.8 of the 2022 NCDOT Traffic Noise Manual.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC.3.2	For each measurement site, the traffic volumes in TNM are consistent with the traffic counts on the field data sheet (converted to hourly volumes).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC.3.3	For each measurement site, vehicle speeds in TNM are consistent with the vehicle speeds on the field data sheet.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>QC.4</b>	<b>Other Electronic Files</b>			
QC.4.1	Spreadsheet provided that includes all ambient noise measurement data collected.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC.4.1.1	Sound level metrics ( $L_{eq}$ and $L_{max}$ at minimum) collected in increments of one minute (i.e., a 20-minute short-term measurement shall be comprised of 20 data points; a 24-hour long-term measurement session shall be comprised of 1,440 data points).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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QC.4.1.2	Includes accurate calculation of equivalent noise level ( $L_{eq}$ ) for each short-term ambient noise measurement location, including any appropriate despiking of aberrant noise events from data sets (if applicable). Provides an explanation of despiking due to aberrant noise events, if known (e.g., jet plane flyover, lawnmower, car horn, emergency vehicle siren, etc.).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC.4.1.3	Includes accurate calculation of the loudest hour equivalent noise level [ $L_{eq(h)}$ ], using the "rolling hour" method, for any long-term ambient noise measurement site where traffic noise is not dominant.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

For items marked NO or N/A that require further explanation, provide comments or action items in the table below.

Item #	Comments and Action Items

*This checklist may not be comprehensive to every project. All items may not be applicable for smaller projects. It is the responsibility of the reviewer to ensure that an adequate review is performed.*

I have reviewed the deliverables for consistency with this checklist and confirmed that all items have been completed.

QC Reviewer Name: \_\_\_\_\_ Date: \_\_\_\_\_

QC Reviewer (Signature): \_\_\_\_\_