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To:	Renus Kelfkens, P.E.
From:	Michael Minor, Principal
Date:	June 23, 2026
Subject	Century Boulevard Extension Noise Study Comments

Introduction

This memorandum was produced to respond to comments on the Traffic Noise Review for Century Boulevard in Washington County.

Document 1

Comments and Responses: File Name: ***01 – Noise Study Notes Brief.pdf***

Comments on poor sources:

Pg. 1: "Draft Traffic Noise Analysis Manual for Transportation Capital Improvements, Washington County (2016)" was a draft and may be outdated. Could not find it online, bibliography reference has no source.

Response: This is the most current version of the report. There have not been any required updates.

Pg. 4: *FHWA Traffic Noise Model* version 2.5 (2004) was not the latest version. Version 3.2 is from 2015 (https://rosap.ntl.bts.gov/view/dot/73526). Why didn't the report authors use the latest version?

Response: Although there is a more recent version of TNM, the FHWA has not yet required its use as there are many issues with the application. We know of no state Department of Transportation that is currently using TNM Version 3.2, not Washington, Alaska, California, Oregon, Idaho or any other state where we have performed traffic noise studies.

Pg. 5: Table 1 has no reference. Where did report authors get these categories?

Response: These are taken from Chapter 23 of the Code of Federal Regulations (CFR) Part 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise, FHWA 2026 (updated), and can also be found in the Oregon Department of Transportation Noise Manaal and noise manuals for every other state. Links verified on June 23, 2026

- The complete FHWA regulations can be found at: /www.ecfr.gov/current/title-23/chapter-I/subchapter-H/part-772
- The land uses categories specifically are available at: www.ecfr.gov/current/title-23/section-772.11

Comments on discrepant details

Pg. 2: States that the data used "weekday PM peak-vehicle hour." This contradicts "peak daytime" on pg. 9.

Response: The traffic data is listed in the appendix and is for PM peak hour. This is also the daytime peak hour, as the PM peak hour is during the daytime. This has no effect on the noise analysis.

Pg. 2: "Land uses in the project areas include single and multi-family residences and a park" is reflected on pg. 3: Four receivers (R-7, R-8, R-9, R-10) are placed in Noble Woods.

Response: Receivers R-7, R-8, R-9, R-10 are in Noble Woods Parks and should be under FHWA Category C, which covers "Active sport areas, amphitheaters, 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" – See Table 1 and above references.

This category has the same impact criteria as residences, 66 dBA Leq peak hour or 15 dBA increase. This has no effect on the noise analysis.

Pg. 5: Category A is "Lands on which serenity and quiet are of extraordinary significance and serve an important public need..." Category B is "Residential."

Response: FHWA Category A is reserved for, as stated, "Lands on which serenity and quiet are of extraordinary significance and serve an important public need..." – and the Noble Woods would not meet that requirements under FHWA, ODOT or Washington County criteria. This category is reserved and very rarely used, an example would be the Tomb of the Unknown Soldier in Washington DC.

Pg. 7: Counter to the above, Table 2 lists all receivers as Category B. Notice that Category A has lower noise abatement criteria than residences.

Response: please see above.

P. 15: No "environmental impact statement" (EIS) available. When was it released?

Response: This is a standard introduction to acoustics inserted for information. This project did not meet the requirements for an Environmental Assessment (EA) or EIS and therefore none was performed.

P**g. 1 (1) The report s dated "September 15, 2021" but the footer states 5/28/2021. Moreover, the footer states "Century Blvd Improvement Project" while elsewhere it is referred to as "Century Boulevard Extension." Such discrepancies taken together with the other problematic aspects of this document lower confidence in the reliability of the information in the report**.

Response: The footer has an auto-update feature, and the date filed in the document did not, and should have been manually updated.

(2) The word "Draft" in the title and its publication date of 2016 led me to question whether this manual is the current standard. When I tried to look it up, I could not find it anywhere. The

bibliography (p. 12) also does not indicate a format or URL. It may no longer stand as a valid basis for methods.

Response: There is no requirement for a city or county to have a traffic noise analysis manual or requirements. State or federal requirements for traffic noise studies occur if the project receives funding from ODOT or the FHWA, and this project has no federal or state funding associated with it.

Washington County, unlike most other counties or cities, elected to produce a noise analysis method for county funded projects, and use it to identify noise impacts. In cases where warranted, Washington County constructs noise walls to reduce traffic noise levels at impacted residences. Example can be found along NW 185th Avenue, north of the high school, along NW Bethany Boulevard just north of Highway 26, and along several sections of Walker Road.

Most other cities or counties would not perform a noise study or install any noise abatement if the project was constructed with local funds. We cannot think of any noise walls being constructed, except in Washington County, where federal funds were not part of the project, thereby requiring a noise analysis using the state interpretation of the federal criteria to obtain the funding.

Pg. 2 (3) This should say "Traffic Noise Analysis Manual."

Response: Noted.

(4) How and when did Kittleson & Associates obtain their data? Where is a reference to Kittleson & Associates, Inc. in the bibliography?

Response: Manual turning movement traffic counts were conducted at the study intersections on May 16, 2018 during the weekday morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak periods. Projected year 2040 AM and PM peak hour turning-movement volumes were developed based on Washington County's travel demand model, estimated local growth, a review of the 2040 turning movement volumes prepared for the Hillsboro Transportation System Plan (TSP), and coordination with Washington County and City of Hillsboro staff.

(5) Here states that the data used was "weekday PM peak-vehicle hour." This contradicts "peak daytime" on pg. 9.

Response: Please see above.

(6) "Land uses in the project areas include single and multi-family residences and a park" is reflected in the graphic on Page 3: At least four receivers (R-7, R-8, R-9, R-10) are placed in Noble Woods. This contradicts Table 2 (p. 7), which lists all receivers as placed in a residential area (Category B).

Response: Please see previous responses, this is a repeat question.

(8) Kittleson & Associates, Inc.'s contact information is not provided in Appendix B like stated.

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(8) Note that Washington County's standard for a substantial noise increase (15 dB increase) is 5 dB higher than Oregon's (10 dB increase).

Response: Per FHWA regulations, the governing body can set the value for "approach or exceed" and "substantial increase". For example, where Oregon uses 2 dB for approach or exceed, with an impact criteria of 65 dBA, Washington State uses 1 dB, and therefore the impact criterion is 66 dBA. Washington County also uses 1 dB for approach or exceed and has set 15 dB for substantial increase, as is allowed.

Pg. 5 (9) Table 1 has no source; who created these categories? When were these categories created?

Response: Table is from: www.ecfr.gov/current/title-23/chapter-I/subchapter-H/part-772

(10) Note that Category A is "Lands on which serenity and quiet are of extraordinary significance and serve an important public need…" and Category B is "Residential (single- and multi-family units). Again, Noble Woods is a park, but the four receivers there (R-7, R-8, R-9, R-10) are miscategorized as Category B on pg. 7.

Response: Please see previous responses. Noble Woods does not qualify as Category A.

(11) Note that Category A has a noise abatement criteria (NAC) of 56 dBA, which is 10 dBA less than Category B.

Response: please see previous responses.

Pg. 6 (12) This explicitly reiterates (6): The receiver locations were placed in a park in addition to residential areas.

Response: Noted.

(13) How those assumptions (increased development, extension of other planned roadways, notable increase in traffic) were factored into the model during data analysis to yield Table 2's Build Alternative Leq's needs to be explained. Raises numerous questions about study methods.

Response: As it relates to traffic, the projected year 2040 AM and PM peak hour turning-movement volumes were developed based on Washington County's travel demand model, estimated local growth, a review of the 2040 turning movement volumes prepared for the Hillsboro Transportation System Plan (TSP), and coordination with Washington County and City of Hillsboro staff.

Pg. 7 (14) Again, Table 2 does not list R-7, R-8, R-9, R-10 as Category A, which have a WCNAC of 56 dBA (Table 1, p. 5); they're erroneously listed as Category B. At least one receiver showed a projected Leq dBA exceeding WCNAC for Category A in the Build Alternative.

Response: Please see previous responses. Noble Woods does not qualify as Category A.

Pg. 9 (17) Why did the report skip from Table 3 to Table 18? Where are tables 4-17, or why didn't the authors adjust the numbering?

Response: When inserting and modifying the standard construction noise section, we failed to update the table numbers.

Pg. 15 (19) Page 15's "…up to a 5 dBA reduction in traffic noise for locations with at least 30 feet of dense evergreen foliage") contradicts p. 18 "…3 to 5 dBA reduction in traffic noise … with at least 100 feet of dense evergreen foliage." Reduces confidence in the report.

Response: The "30 feet" should be 30 meters.

Typically, foliage is most effective close to the roadway, with diminishing return with distance. The type of noise, e.g., heavy trucks versus passenger vehicles can also make a substantial difference in the overall effectiveness of foliage on traffic noise. In general, however, a 3 to 5 dB reduction can be achieved with 30 meters or more of dense, evergreen, vegetation. Vegetation that loses density (leaves) will also see reduced noise attenuation as will thin bare branches.

If you want more detail on this subject, a document presented at InterNoise in 2014, **The effects of vegetation on road traffic noise**, with supporting measurements can be found here:

www.acoustics.asn.au/conference_proceedings/INTERNOISE2014/papers/p83.pdf

Link Verified June 23, 2026

Foliage and noise is far more complicated than X dB per X distance and many factors must be considered when using foliage in a traffic noise analysis.

Pg. 18 (21) See (19) On what basis would the time of day for data collection be chosen?

Response: Data collection for this project was focused on peak traffic times that are typically during the commuter peaks of the weekday morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM).

When are the peak times (e.g., 8am-10am, 4pm-6pm, etc.)?

Response: Peak traffic times are typically during the weekday morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM).

Over what period was the data gathered? Over the course of a day, a month, a year? What months? Temperature affects sound propagation

Response to the last of these three questions – "Temperature affects sound propagation" – per FHWA the temperature used in all traffic noise studies is the average ambient. More importantly, the effects of atmospheric conditions are most notable at large distances of over 300 to 500 feet. Temperature will have a minimal, if any, effect on traffic noise in the near field.

Are these figures averages? What are the standard deviations? Ranges? Any metric that would indicate spread of data.

Response: If refering to the traffic figures they represent future year 2040 PM peak period turning movement volumes that were developed using the methodology outlined in the National Cooperative Highway Research Program (NCHRP) 255 and 765.

Appendix B, Traffic Data are as described in the title block, weekday Am and PM peak hour volumes.

Why wasn't this study flagged for quality concerns?

Response: Typically, we review and revise based on comments. Although there are some editorial issues, none affect the results of the assessment.

How did this information inform whether to proceed with the project or road design?

Response: Typically, the noise study will not have a notable effect on the project design. The report was conducted to understand any noise impacts as a result of the road.

What other studies were conducted as a part of this project?

Response: this question is not noise related, but other studies conducted included:

- Geotechnical Evaluation
- Cultural Resources
- Stormwater Evaluation
- Hydraulic Analysis
- Significant Natural Resources Overlay Review
- Wetland Delineation
- Traffic Analysis
- Wildlife study