

FINDING OF NO SIGNIFICANT IMPACT (FONSI)



Project No. NH 4701-103 (14222)

C-470 Corridor Finding of No Significant Impact

Kipling Parkway to I-25

Arapahoe, Douglas, and Jefferson Counties, Colorado

Submitted Pursuant to:
42 United States Code [USC] 4332 (2)(c)
49 USC 303

Submitted by:
US Department of Transportation
Federal Highway Administration
and
Colorado Department of Transportation

Cooperating Agency:
United States Army Corps of Engineers

Submitted by:

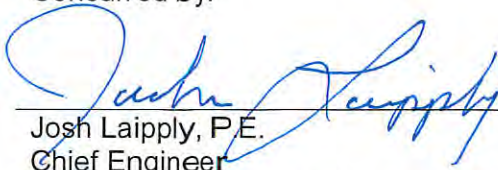


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11-20-2015

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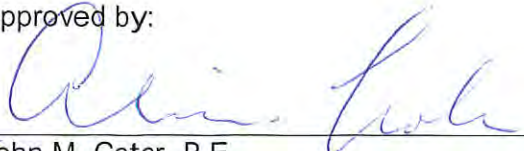


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Statute of Limitations

The Federal Highway Administration may publish a notice in the Federal Register, pursuant to 23 United States Code (USC) § 139(1), once the Finding of No Significant Impact is available. If such notice is published, a claim arising under Federal law seeking judicial review of a permit, license, or approval issued by a Federal agency for a highway or public transportation capital project shall be barred unless it is filed within 150 days after publication of a notice in the Federal Register announcing that the permit, license, or approval is final pursuant to the law under which the agency action is taken, unless a shorter time is specified in the Federal law pursuant to which judicial review is allowed. If no notice is published, then the periods of time that otherwise are provided by the Federal laws governing such claims will apply.

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It is anticipated that this Finding of No Significant Impact will be posted online at the following website address:

<https://www.codot.gov/projects/c470 ExpressLanes>

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LIST OF ACRONYMS

BOCC – Board of County Commissioners

C-470 – Colorado State Highway 470
CDOT – Colorado Department of Transportation

dB(A) – A-weighted decibels
DRCOG – Denver Regional Council of Governments

EA – Environmental Assessment

FHWA – Federal Highway Administration
FONSI – Finding of No Significant Impact

HOV – High-Occupancy Vehicle
HOV3+ – High Occupancy Vehicle with 3 or more occupants
HPTE – High-Performance Toll Enterprise
HRMD – Highlands Ranch Metro District
HRNC – Highlands Ranch Neighborhood Coalition

I&R – Illingworth & Rodkin, Inc.
I-25 – Interstate Highway 25

LOS – Level of Service

MPH – Miles per Hour

NAC – Noise Abatement Criteria
NEPA – National Environmental Policy Act

RAMP – Responsible Acceleration of Maintenance and Partnerships
RTD – Regional Transportation District
RTP – Regional Transportation Plan

SSPRD – South Suburban Parks and Recreation District

USACE – United States Army Corps of Engineers
USC – United States Code
USDOT – United States Department of Transportation

VHT – Vehicle Hours of Travel
VMT – Vehicle Miles of Travel
VPD – Vehicles per Day

CHAPTER 1 INTRODUCTION

1.1 INTRODUCTION

This is the decision document associated with the C-470 Corridor Revised Environmental Assessment (EA) that was approved in July 2015 by the Colorado Department of Transportation (CDOT) and Federal Highway Administration (FHWA) for a Proposed Action to construct tolled express lanes on Colorado State Highway 470 (C-470) between Kipling Parkway and Interstate 25 (I-25), in the southern portion of the Denver metropolitan area.

Per FHWA guidance, the Revised EA replaces a 2006 approved EA for the same corridor, for a similar but not identical Preferred Alternative also including tolled express lanes. Due to lack of funding and other factors, the project did not advance to a decision document, final design or construction following the 2006 EA.

Environmental Requirements

An EA is a document that describes a project's purpose and need, considers alternatives, and examines the social, economic and environmental consequences of alternatives to address the project need, in accordance with the National Environmental Policy Act (NEPA) of 1969.

NEPA applies to actions that would use Federal funds or require Federal approval. NEPA applies to the C-470 Corridor because the proposed improvements would be funded in part by FHWA dollars. Also, C-470 connects to two U.S. highways, I-25 and US 85. Additionally, between Wadsworth Boulevard and US 85 (South Santa Fe Drive), C-470 is located on a property easement granted by the U.S.

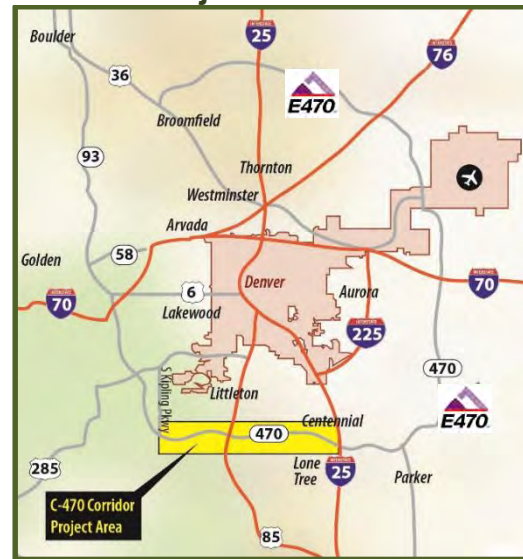
Army Corps of Engineers (USACE). USACE is a Cooperating Agency but not a signatory party for the Revised EA.

Location

C-470 is a 26-mile freeway beginning at I-70 west of Denver (milepost 0) and looping around the southwestern quadrant of the metro area to end at its junction with north-south I-25. E-470, a private toll highway, proceeds eastward from I-25 and turns northward toward Denver International Airport. This Revised EA addresses the eastern half of C-470, from Kipling Parkway to I-25, a distance of 13.75 miles, as seen in the yellow-highlighted portion of **Figure 1-1**.

Figure 1-2 shows that the C-470 project area spans portions of three counties, Jefferson, Douglas and Arapahoe.

**Figure 1-1
Project Location**



**Figure 1-2
C-470 Corridor Project Area**



1.2 PURPOSE AND NEED

The FHWA and CDOT have identified a need for transportation improvements to C-470 between Kipling Parkway and I-25. The purpose of this project is to provide congestion relief, decrease travel delay, and improve corridor reliability. The FHWA and CDOT seek to select an implementable transportation alternative that provides reliable and consistent travel times and commuting travel choices to accommodate an expected increase in the intensity and duration of congestion forecasted for the design year of 2035.

The need for this project is based on congestion, delay, and reliability. Additional considerations included implementation and safety. Specific need-based statements for the C-470 Corridor from Kipling Parkway to I-25 are highlighted here.

Congestion

The Denver Regional Council of Governments (DRCOG), which is the federally designated transportation planning agency for the region, has identified C-470 as a “key congested area” on the regional transportation system (DRCOG, 2013). Traffic volumes on C-470 range from 61,000

vehicles per day (vpd) near Kipling Parkway to 106,000 vpd near Yosemite Street. Volumes of 80,000 or more vehicles per day for the four-lane freeway (two lanes each direction), are a general indicator of peak period congestion, and are found from Lucent Boulevard east to I-25. The eastern portion of the C-470 project area is congested today and has been for a number of years.

By 2035, projected volumes with the No-Action Alternative are predicted to range from 93,000 vpd to 161,000 vpd, so all 13.75 miles from Kipling Parkway to I-25 will be congested. Compared to existing traffic volumes, these predicted volumes reflect approximately a 50 percent increase, attributed to ongoing local and regional growth.

Delay

Travel time sampling in 2013 found an average evening peak period travel speed westbound on C-470 (i.e., the homeward commute from downtown Denver to the suburban residential areas) to be 24 miles per hour, which is well below the posted speed limit of 65 miles per hour.

DRCOG estimates that travel delay for all 26 miles of C-470 will increase from 6,650 hours (2006 baseline) of vehicle delay daily to 41,940 daily hours of delay by 2035. The easternmost portion of C-470 from Kipling Parkway to I-25 accounts for at least half of these totals. The increased delay would result from the fact that C-470 is congested today and the predicted additional travel demand will cause the morning and evening peak periods to lengthen in duration, providing slower travel speeds for more hours of the day.



Reliability

On a heavily congested freeway, any minor incident can cause long traffic backups. Currently, motorists cannot reliably predict how long it will take them to travel on C-470 during peak periods.

DRCOG's regional metric for travel time reliability is the ratio of travel time during peak periods to free flow travel times. On this scale, C-470 at a ratio of 1.44 rates worse than the regional average of 1.27, and DRCOG predicts the ratio will more than double, to 2.93, by the year 2035.

Other Considerations

In addition to addressing traffic-related needs, it is appropriate to consider safety and to ensure that any proposed action would be financially feasible.

The C-470 Proposed Action described in **Chapter 2** of this Decision Document was not developed to address specific safety issues, but improving traffic flow is expected to reduce the prevalence of rear-end collisions, which are the most common crash type on C-470 and are closely associated with traffic congestion. Also, the Proposed Action includes major reconstruction of the highway, providing an opportunity to bring various roadway aspects up to current design standards.

A proposed action would only meet the Purpose and Need discussed above if it were financially feasible. The Proposed Action described in **Chapter 2** is estimated to cost approximately \$385 million, the majority of which would come from toll generation.

The discussion above is an abbreviated summary of the project's purpose and need. Additional details are available in Chapter 1 of the Revised EA.

CHAPTER 2 DESCRIPTION OF THE PROPOSED ACTION

The Proposed Action of this Revised EA for C-470 would add one managed, tolled express lane in each direction between I-25 and Kipling Parkway, and a second managed express lane as follows:

- Westbound, I-25 to Lucent Boulevard
- Eastbound, Broadway to I-25

These new through lanes, plus new auxiliary lanes where warranted, would supplement the existing (free) general purpose lanes. **Figure 2-1** shows typical sections for the eastern portion of the corridor. Painted pavement buffers would separate the tolled lanes from the non-tolled lanes.

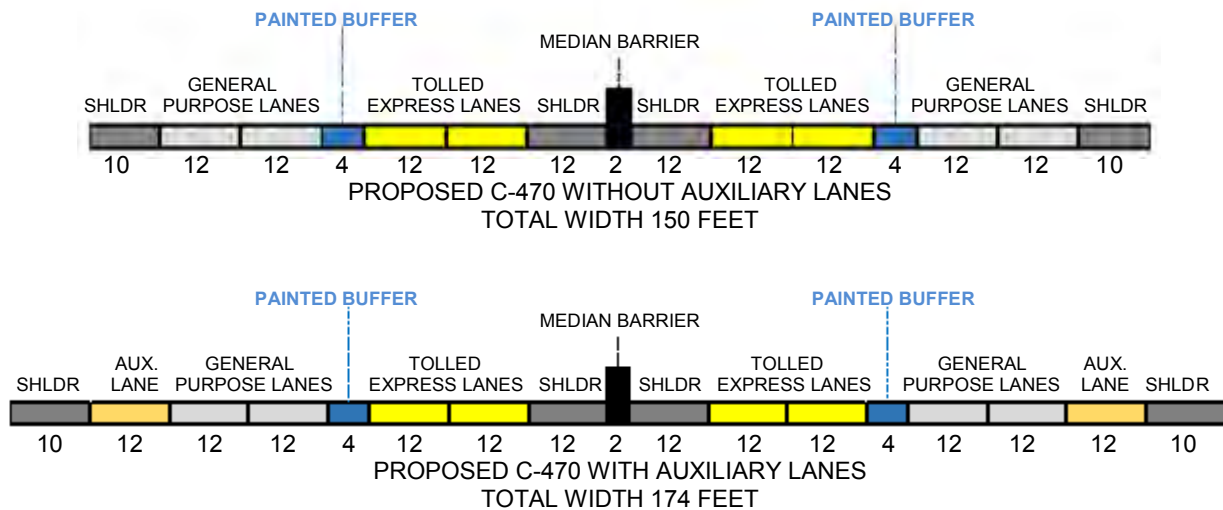
Figure 2-2 shows preliminary locations for auxiliary lanes and express lane access.

New direct-connect ramps would be provided to serve some movements at the C-470/I-25 interchange, as shown in **Figure 2-3**.

In conjunction with the construction of added lanes, the project would also reconstruct existing pavement to address known structural deficiencies. This would be a major reconstruction effort, amounting to roughly one-third the overall project cost.

Concept design plans for the Proposed Action have been developed to the degree necessary to allow assessment of likely environmental impacts. Some operational details such as toll rates and express lane access locations will be finalized based on further revenue studies.

**Figure 2-1
2015 Proposed Action Typical Sections**



**Figure 2-2
Preliminary Locations for Auxiliary Lanes and Express Lane Access**

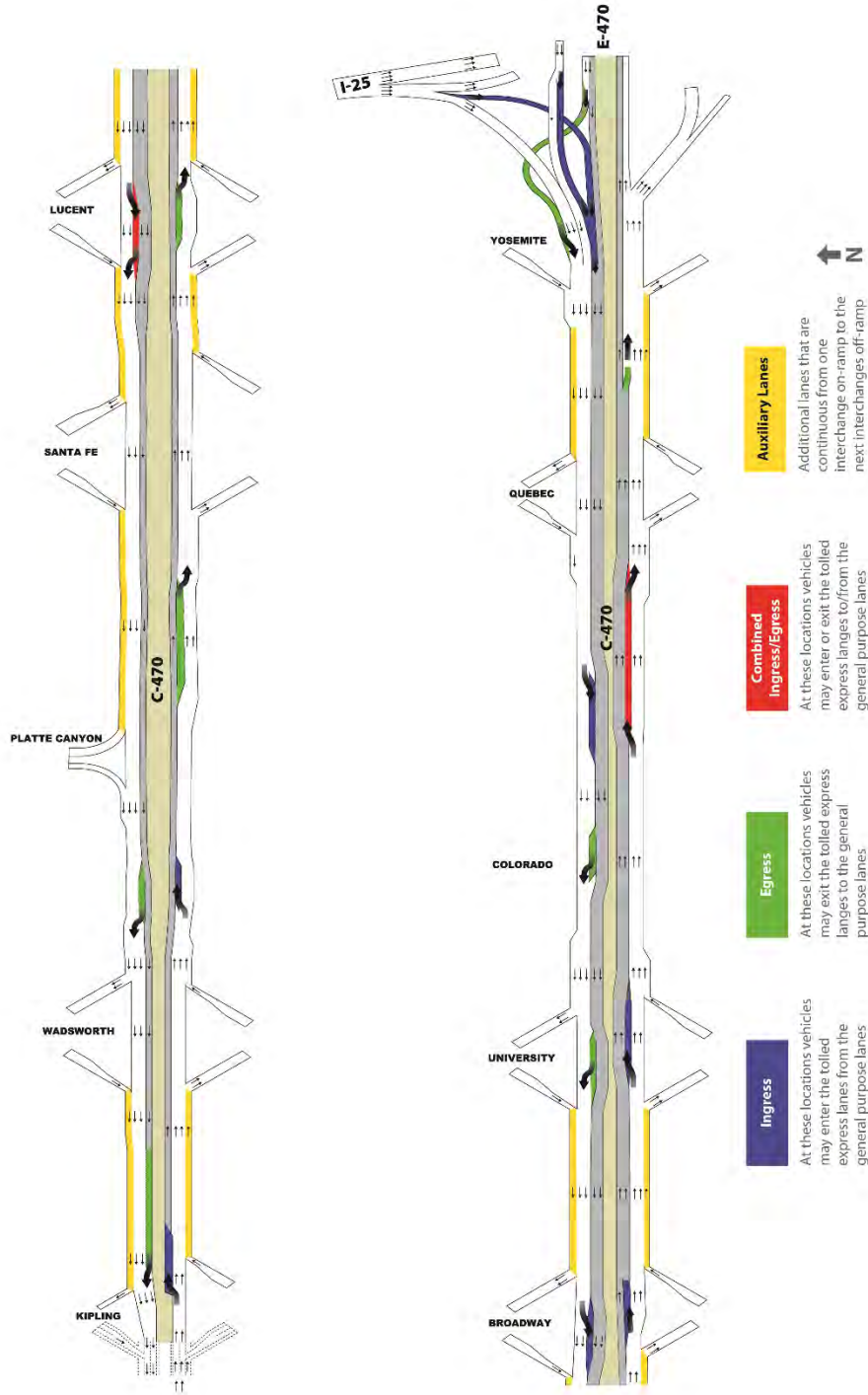


Figure 2-3
Proposed Configuration of C-470/I-25 Direct Connect Ramps

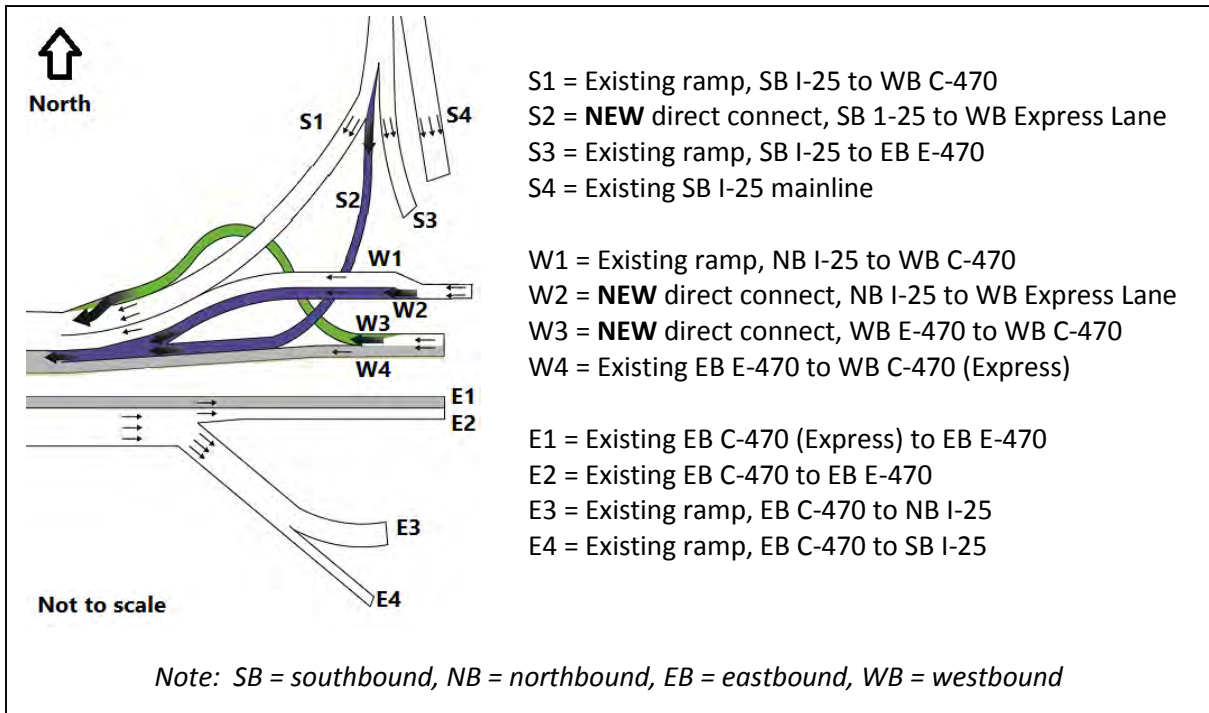


Table 2-1 provides additional details regarding the Proposed Action.

Many engineering details will be decided in the subsequent design-build phase of the project. Unlike conventional project delivery, where the final design is completed and then presented to a construction contractor to build, under design-build delivery the contractor receives preliminary plans which the contractor finalizes in conjunction with the construction process. This can reduce overall costs and delivery time by providing the contractor flexibility to develop time- or money-saving solutions.

Toll rates have not been determined at this stage of project development, but some conceptual information has been developed. At public meetings for this Revised EA, CDOT indicated that peak period toll costs for the full length of the Proposed Action were anticipated to be in the \$4 to \$6 range. Tolls would be lower in off-peak periods.

Another project detail that the Revised EA reported as undecided is the question of whether or not high-occupancy vehicles (HOVs) would be allowed to use the proposed Express Lanes without paying a toll. On October 15, 2015, the Colorado Transportation Commission adopted a resolution indicating that HOV toll exemptions will not be provided on C-470. Updated information on this issue is provided in **Chapter 5, Clarifications to the Revised EA**.

Project Phasing

A phased construction approach will be used. The first phase will construct the Interim configuration in the immediate future. A \$100 million allocation of RAMP funding constitutes the bulk of the available public funding for the first phase. Future toll revenues would pay to complete the ultimate configuration of the Proposed Action.

The first-phase Interim project would provide managed express lanes as follows:

- Westbound, two express lanes from I 25 to Colorado Boulevard (no freeway access there), and one lane from Colorado Boulevard to Wadsworth Boulevard
- Eastbound, one express lane from Platte Canyon Road to I-25

The Ultimate configuration would extend and add lanes to achieve two express lane in each direction between I-25 and Kipling Parkway.

Non-tolled alternatives were carefully considered in both the 2006 EA (CDOT, 2006) and the 2015 Revised EA (CDOT, 2015a), but remain infeasible due to lack of available public funding.

**Table 2-1
Proposed Action Additional Details**

Project Element	Proposed Treatment
Bridges	Most existing C-470 bridges will be widened to accommodate the expanded project lanes and width. However, the two parallel C-470 bridges crossing the South Platte River will need to be fully replaced.
Pavement	All existing pavement will be replaced. Pavement substructure will be improved where necessary.
Ramps	New direct-connect ramps will link I-25 to the westbound express lanes. C-470 improvements will tie into existing interchange on- and off-ramps. No reconstruction will be needed at ramp terminal intersections, except for the Santa Fe Drive westbound onramp to westbound C-470.
Signage	New signage will be needed to provide advance notice of express lane ingress and egress locations. Some signage will be needed outside of the basic project area (i.e., along I-25 northbound and southbound, E-470 eastbound, and eastbound C-470 west of Kipling Parkway).
Electronic tolling equipment	Devices for transponder detection and license plate video surveillance will be installed. There will be no tollbooths and no physical handling of any money onsite.
Variable message signs (VMS)	Several VMS exist along C-470 now and more likely will be added. Congestion information will help motorists decide whether or not to enter or exit the tolled express lanes. Motorists also need to know the currently effective toll rates.
Intelligent transportation systems (ITS)	Various technologies exist on C-470 for traffic management purposes and will also be provided under the Proposed Action, being replaced, relocated or upgraded as necessary.
Ramp metering	Ramp metering exists and is currently used at all C-470 on-ramps except Kipling Parkway. Continued use of ramp metering corridor-wide is anticipated. The Proposed Action does not call for ramp metering at Kipling Parkway, but the Proposed Action would not preclude its installation in the future when warranted.
C-470 trail	Some portions of the existing C-470 trail will need to be relocated outward away from the existing highway. Grade separations will be constructed to take the trail under two arterial cross-streets, Colorado Boulevard and Quebec Street.
Environmental impact mitigation	Stormwater management and water detention facilities will be added. Noise barriers may be installed where deemed to be feasible and reasonable. The project will provide other mitigation as needed (e.g., replacement of impacted wetlands or mature trees). Mitigation commitments are detailed in the Table 2-2 of this Decision Document.

Table 2-2 summarizes the environmental impacts of the Proposed Action and identifies the associated mitigation commitments, together with a determination of the significance of the net impact after mitigation.

**Table 2-2
Summary of Proposed Action Environmental Impacts and Mitigation Commitments**

#, Resource	Impact	Mitigation Commitment
1. Transportation	C-470 congestion due to construction activity	CDOT will maintain at least two through lanes in each direction open for public travel throughout the construction process.
2. Transportation	C-470 temporary closure	Any necessary roadway closures (e.g., possibly for Santa Fe bridge replacement) would be limited to night time and extensive media notice would be provided, with safe detours identified and marked.
3. Transportation	Relocation of 5.8 miles of the C-470 Trail	New sections of trail will be constructed prior to closing any portion of the existing C-470 trail, to avoid disruption. However, closure and detour will be unavoidable where the C-470 Trail and High Line Canal Trail cross C-470 through a shared culvert. See commitment #5, Parks and Recreation, below.
4. Right-of-Way	CDOT would need to acquire 3.48 acres of right-of-way, 31.14 acres of permanent easement, and 15.42 acres of temporary easement.	All right-of-way transactions will be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Act of 1970, as amended. A CDOT ROW specialist will be assigned to each property owner to provide assistance with the ROW process.
5. Right-of-Way	Construction activity on temporary easement property may result in damage to that property.	Any temporary easement property disturbed during construction would be restored to its prior condition, or appropriate compensation will be provided.
6. Parks and Recreation	Temporary closure of Mary Carter Greenway Trail, High Line Canal Trail, and Willow Creek Trail	A minimum two-week advance notice would be provided to the South Suburban Parks and Recreation District and the Highlands Ranch Metropolitan District prior to any temporary trail closure. CDOT has identified available detour routes for each closure and would provide signage for trail users to inform them of the detour routes.
7. Parks and Recreation	Temporary closure of the Mary Carter Greenway Trail could conflict with major bicycle events planned by SSPRD.	CDOT's contractor will be required to obtain SSPRD's schedule of major bicycle events scheduled for the Mary Carter Greenway Trail, with the goal of minimizing any construction conflicts with planned major events.
8. Highway Noise	A number of neighborhoods would experience noise impacts (> 66 decibels)	Noise barriers will be constructed where they are found to be reasonable and feasible, and where the majority of benefitted households voting on mitigation favor its installation. In final design, the actual lengths and locations of the recommended mitigation may vary for reasons such as terrain, utilities, property owner desires or easements.

Table 2-2 (continued)
Summary of Proposed Action Environmental Impacts and Mitigation Commitments

#, Resource	Impact	Mitigation Commitment
9. Highway Noise	Construction activities would result in noise and vibration.	CDOT will require its contractor to prepare a mitigation plan for noise and vibration, to consider a number of options identified in Section 4.3.1 of the July 2015 C-470 Revised EA.
10. Air Quality	Construction activities would cause fugitive dust emissions	CDOT would require contractor implementation of dust control practices in accordance with Colorado Air Quality Control Commission Regulation No. 1 on fugitive emissions.
11. Water Quality	Increased runoff due to 120 acres of additional impervious surface	Permanent water quality features will be incorporated into the project's conceptual design to comply with CDOT's MS4 Permit for water quality treatment.
12. Water Quality	Construction activity poses risks for spills, erosion, and other water quality problems during construction.	CDOT will prepare and implement a Stormwater Management Plan (SWMP) detailing how and where temporary BMPs will be used before, during and after construction, including rigorous compliance monitoring.
13. Hydrology and Hydraulics	Increased stormwater runoff could increase flows under C-470.	To prevent flooding, CDOT will replace an existing, undersized 72-inch culvert east of Spring Creek with a larger, 84-inch reinforced concrete pipe culvert to safely convey the estimated 100-year frequency design flow.
14. Floodplains	Replacing C-470 bridges over South Platte may trigger need for a FEMA map revision.	CDOT will prepare a more detailed analysis to determine if a FEMA map revision is required based on the final design of the new bridges. CDOT will prepare a FEMA map revision if needed.
15. Archaeological Resources	Excavation could unearth archaeological resources	If archaeological remains are exposed during any phase of construction, work will be halted in the vicinity and the CDOT Senior Staff Archaeologist will be contacted to evaluate the discovery and coordinate appropriate Section 106 compliance actions with the SHPO and other agencies or entities, as necessary.
16. Paleontological Resources	Excavation could unearth paleontological resources	CDOT will ensure that a qualified paleontologist is on site during major construction excavation to monitor for buried paleontological resources where known fossil-bearing deposits are mapped, but not currently exposed at the ground surface. If any potential fossils are unearthed during construction, work will be halted until the paleontologist can assess the significance of the find and make recommendations regarding resource protection.
17. Geology and Soils	Known conditions along C-470 require consideration in project design.	Geologic and soil conditions will be taken into consideration during final design in accordance with ordinary due diligence in engineering practice. Appropriate design features and construction methods will be used as needed in response to such conditions.
18. Hazardous Materials	During construction, especially excavation, contaminated soil or groundwater could be encountered.	CDOT will require its contractor to develop of a site-specific Materials Handling Plan, in accordance with CDOT's Standard Specifications for Road and Bridge Construction.

Table 2-2 (continued)
Summary of Proposed Action Environmental Impacts and Mitigation Commitments

#, Resource	Impact	Mitigation Commitment
19. Hazardous Materials	Demolition of bridges and other structures may result in exposure to asbestos materials or lead paint.	CDOT will require its contractor to conduct an asbestos hazardous materials survey and a lead paint survey prior to alteration or demolition of bridges, guardrails or sign structures. If found, proper handling and disposal of these materials would be required.
20. Visual and Aesthetic Character	C-470 visual character will become more urban due to new lanes, signage, noise barriers and toll equipment.	CDOT will design corridor improvements in accordance with Region 1 design standards to improve design consistency. If local governments desire to fund localized upgrades above the corridor standards, CDOT will work with them to pursue these possibilities.
21. Utilities	Numerous utility lines under, over or near C-470 would need to be relocated.	The owners of private utility lines within CDOT ROW pay for relocation of their utilities. If utilities are on land newly being acquired for ROW, CDOT pays for the relocation.
22. Common Wildlife	Adding lanes would increase the difficulty of wildlife movement across C-470.	At the South Platte River, existing parallel C-470 bridges will be replaced and the new bridges have been designed specifically to enhance wildlife movement, providing a 10-foot wildlife movement corridor separated from the adjacent Mary Carter Greenway Trail.
23. Common Wildlife	Adding lanes would increase the difficulty of wildlife movement across C-470.	The existing chain link fence that extends from the South Platte River along the north and south side of C-470 would also be replaced to serve as deer fence, directing large mammals to safely cross under C-470 at the South Platte River.
24. Common Wildlife	Adding lanes would increase the difficulty of wildlife movement across C-470.	After construction, re-vegetation near the bridge would include native riparian shrubs such as skunk brush and willow in attempt to attract deer to cross under C-470.
25. Common Wildlife/ Migratory Bird Treaty Act	Construction would occur within 1/3 mile from active nests of Red-Tailed Hawks and possibly other raptors, disturbing their breeding and foraging behaviors.	Prior to construction, CDOT will conduct additional field surveys to confirm the location of active raptor nests. Seasonal construction restrictions and exclusion areas will be established as necessary to comply with CPW buffer recommendations. If restricting construction within nest buffers during the breeding season is not practicable, prior to construction CDOT would coordinate with USFWS and CPW to develop a mitigation strategy to offset potential lost productivity.
26. Common Wildlife/ Migratory Bird Treaty Act	Nests of MBTA-protected birds may be disturbed during construction	Prior to construction, CDOT would survey areas proposed for disturbance for the presence of migratory bird nests. CDOT would avoid disturbing active nests by removing trees and shrubs during the non-nesting season and timing construction activity to avoid active nests during the nesting season.
27. Common Wildlife/ Migratory Bird Treaty Act	Swallow nests on CDOT bridges and in culverts would be disturbed during construction	Bird nests found under existing bridge structures would be removed after August 15, but prior to April 25 for MBTA compliance. To prevent new nest establishment, netting would be installed under bridges and culverts during the non-breeding season or new nests under construction would be visited every three to four days to clear away any initial nest construction and thus prevent new nests from being completed, unless construction activity is continuous on a daily basis during active nesting season.

Table 2-2 (continued)
Summary of Proposed Action Environmental Impacts and Mitigation Commitments

#, Resource	Impact	Mitigation Commitment
28. Common Wildlife/ Aquatic Species	Construction activity would increase turbidity downstream from bridges or culverts, affecting aquatic species.	Construction in riparian areas will be minimized and mitigated in accordance with SB 40 requirements and the SB 40 permit to be obtained from CPW when final design is completed. In compliance with the SB 40 memorandum of agreement, CDOT would apply to CPW for SB 40 Certification at least 60 days prior to construction. Water quality temporary BMPs will be implemented during construction, and permanent BMPs will be incorporated in the project design, improving long-term water quality.
29. Threatened/ Endangered Species	The Proposed Action would displace an estimated 14.3 acres of black-tailed prairie dog colonies.	Colonies in the areas that would be impacted by construction would be re-surveyed for any changes in activity. CDOT would follow the 2009 <i>CDOT Impacted Black-tailed Prairie Dog Policy</i> .
30. Threatened/ Endangered Species	The Proposed Action would displace an estimated 14.3 acres of black-tailed prairie dog colonies.	For colonies that would be only partially affected, prior to construction a visual barrier would be installed between the burrows that would be impacted and undisturbed portions of the colony. Following barrier installation, burrow openings in the construction area would be collapsed. The visual barrier and collapsed burrows encourage abandonment of burrows that would be affected, which would reduce the likelihood of direct effects to individual prairie dogs.
31. Wetlands and Waters of the U.S.	0.70 acres of permanent wetland impacts and 1.30 acres of temporary impacts may occur.	CDOT has already minimized wetland impacts in conceptual design and will strive for further minimization during final design. Clean Water Act Section 401 and 404 permits will be obtained as appropriate. All impacts will be mitigated under CDOT's "no net loss" policy. Wetland replacement within the corridor will be considered but most likely an offsite wetland mitigation bank will be used.
32. Vegetation – Riparian Area	Temporary and permanent impacts to riparian areas could total up to 2.77 acres.	CDOT will develop mitigation plans and submit them to CPW for SB 40 Certification at least 60 days prior to construction.
33. Vegetation – Trees	Loss of hundreds of trees.	Trees not being removed would be protected by erecting plastic barricade fencing to prevent damage. In riparian areas, removed native trees at least two inches in diameter at breast height would be replaced on-site on a one-to-one basis. Trees four or more inches in diameter removed from non-riparian areas would be replaced elsewhere in the project area.
34. Vegetation	Construction of the Proposed Action would damage roadside vegetation	Areas temporarily disturbed during construction would be seeded after construction with a native seed mix reviewed and approved by a CDOT landscape architect. Seeding would occur during appropriate seasons to ensure that seeds take root and germinate during the next growing season. If out of season, the earth would be protected from erosion with mulch and mulch tackifier. Permanent seeding would occur throughout the project.

Table 2-2 (continued)
Summary of Proposed Action Environmental Impacts and Mitigation Commitments

#, Resource	Impact	Mitigation Commitment
35. Vegetation – Noxious Weeds	Soil disturbance and importation of construction equipment would enable the spread of noxious weeds, already a problem along C-470.	Prior to construction, CDOT will update its weed mapping of the project area and prepare a current Integrated Noxious Weed Management Plan. The plan will include a variety of species-specific control methods based on the size of the weed populations and the surrounding landscape. The plan will be implemented throughout project construction as appropriate. Following construction, mitigated sites will be monitored at least twice over the first growing season and follow-up weed control will be provided where needed.
36. Section 4(f) Resources	Construction of Proposed Action would involve reconstruction of Mary Carter Greenway Trail (transportation enhancement exception), plus temporary closure (temporary occupancy exceptions) for High Line Canal Trail and Willow Creek Trail.	CDOT will work with its contactor to minimize closure durations. CDOT has identified available detour routes for each closure and would provide signage for trail users to inform them of the detour routes. These signs will be posted at least two weeks in advance of any trail closure. CDOT and the contractor will coordinate with the entities that operate these trails (HRMD and SSPRD) to confirm route and sign locations. The contractor will be required to obtain SSPRD's schedule of major events on the Mary Carter Greenway Trail for use in planning to minimize conflicts.

CHAPTER 3 PUBLIC INPUT

3.1 INTRODUCTION

Extensive public input was solicited and taken into account in the development of the C-470 Corridor Revised EA. The Revised EA was approved by CDOT and FHWA on July 24, 2015. The 45-day public comment period for the Revised EA began on July 29 and ended on September 11, 2015. During this time period, the Revised EA was available online at CDOT's website and also available for review in hard copy at various public offices and libraries along the corridor and elsewhere in the Denver metro area.

Project Website: Throughout the public comment period, the CDOT project website invited citizens to submit comments online at: <https://www.codot.gov/projects/c470>. During the 45-day public comment period, a total of 82 comment submittals were received through the project website. Some of these submittals included multiple comments.

Press Releases: A CDOT press release issued on July 28, 2015 announced the subsequent start of the comment period, publicizing document review locations and the project website. It also announced the date, time and location of the project's Public Hearing. Additional press releases were issued as reminders prior to the August 26 public hearing.

Flyers in Spanish: Hearing announcement flyers written in Spanish were posted in locations around the Dakota Station neighborhood near the intersection of South Kipling Parkway and West Chatfield Avenue. The Revised EA had identified this as an area with a concentration of Spanish-speaking households with limited English proficiency.

Location of Revised EA Hard Copies for Public Review during the Public Comment Period

Columbine Library
7706 W. Bowles Avenue
Littleton, CO 80123

Southglenn Library
6972 S. Vine Street
Centennial, CO 80122

Highland Ranch Library
9292 Ridgeline Boulevard
Highlands Ranch, CO 80129

Lone Tree Library
8827 Lone Tree Parkway
Lone Tree, CO 80124

CDOT Headquarters
4201 E. Arkansas Avenue
Denver, CO 80222

CDOT Region 1
2000 S. Holly Street
Denver, CO 80222

Federal Highway Administration
12300 W. Dakota Avenue
Lakewood, CO 80228

Douglas County
100 Third Street, Suite 220
Castle Rock, CO 80104

3.2 PUBLIC HEARING

The Public Hearing regarding the C-470 Revised EA was held on August 26 from 5:00 to 8:00 pm at the Lone Tree Arts Center. Information about the hearing is provided below.

Public Hearing Attendance: A total of 171 people recorded their names on meeting sign-in lists. This included a few project staff members but it is thought that a number of citizens attended the hearing without signing in, so it is a reasonable estimate of total citizen attendance.

Public Hearing Structure: The public hearing began with open-house informal question and answer time. A total of 36 information boards were on display in the room for open-house viewing. Several roll-plots displaying location-specific details were also on display. All of these materials were subsequently posted online at the project website.

Next, CDOT staff provided a presentation to explain the hearing process and comment options. This presentation also briefly discussed the Proposed Action and its interim and ultimate configuration. CDOT's introductory slideshow presentation also was subsequently posted online.

Next, citizens were invited to speak at the microphone before the entire assembly. These comments are detailed in this chapter.

Additional open-house discussion time was provided until the end of the evening event.

Comments at the Microphone: A total of 28 citizens publicly addressed the audience, starting with extended remarks by a representative of the Highlands Ranch Neighborhood Coalition (HRNC). By special request from the Douglas County Board of County Commissioners, the HRNC representative was allowed 15 minutes to speak. Per standard Public Hearing processes, all other speakers were asked to limit their remarks to three minutes per person to ensure that everyone wishing to speak would have an opportunity to do so.



CDOT staff welcomes attendees at the Public Hearing on August 26, 2015.

A CDOT-provided court reporter was present to create a verbatim transcript of all public remarks at the microphone, including CDOT's introductory presentation.

Comments to the Court Reporter:

A second court reporter was present throughout the hearing to receive verbal comments from anyone wishing to comment without standing before the audience. Seven hearing attendees made comments in this manner.

Written Comment Forms: Public comment forms were available throughout the hearing for attendees wishing to submit comments in writing.

Total Comment Submittals at the Public Hearing: The total comment record from the public hearing thus consists of the following 50 elements:

- 28 attendees spoke at the microphone
- 7 attendees spoke to the court reporter
- 13 attendees submitted comment forms
- 2 attendees submitted written comments

The double-spaced 83-page court reporter's transcript of the Public Hearing is available

as part of the administrative record for this project. It includes 13 pages of introductory remarks by CDOT representative Jon Chesser, describing the project and how to submit comments. For ease of response, each comment from the public hearing is included in this chapter, word for word, reformatted to reduce the document size. The order of the speakers at the microphone, following Mr. Chesser, was as follows:

Sales, Carter, representing HRNC
Antico, Bill
Brower, Don
Norton, John
Pendery, Judy
Graber, Larry, representing HRNC
Vogt, Richard
Waldenstrom, Sharon
Waldenstrom, Carl
Moyle, Kirk
Daniels, Byron
Evans, Dave
Chadbourne, Pam
Suhaka, Andrea
Woodland, Don
Bingham, Paul
Lum Lung, Paul
Fey, Carol
Grout, Ronald
Hornung, Al
Gallagher, John
Morgan, Mike
Ford, Wendell
Oslund, Scott
Mumfrey, Chris
Boraz, Robert
Gunderson, Loren
Morris, Brock

3.3 SUMMARY OF 132 COMMENT SUBMITTALS RECEIVED

The 82 submittals made electronically plus the 50 comment submittals at the Public Hearing amount to a total of 132 comment submittals received regarding the C-470 Revised EA during the 45-day public comment period.

Table 3-1 below lists all of the 132 comment submittals received, in alphabetical order by last name. In cases where an individual made more than one comment submittal, the submittals are list as #1 of 2, or similar numbering appropriate to the circumstance.

Table 3-1 provides a brief indication of the key topic or topics of each comment submittal. These are unofficial classifications provided for the benefit of readers of this decision document. The full text of every comment received is included in this decision document. The table lists three primary topics, which are “Noise”, “Tolls” and “Other”.

“Noise” comments generally pertain to residences in Highlands Ranch, south of C-470, unless they specific otherwise (e.g., “Noise, n. of C-470”). Noise was the primary focus in 99 of the 132 comment submittals received. Most all of these comments requested noise mitigation in locations where mitigation is not recommended in the Revised EA. There was no opposition to providing noise mitigation from the residents who would be benefitted by mitigation that was recommended.

The “Tolls” designation accounts for 19 comment submittals, which nearly all expressed opposition to charging tolls. One of these comments suggested that if tolls are necessary, they should be kept low.

The “Other” designation is a catch-all category for all comment submittals not addressing noise or tolls. This category includes several statements of project support or opposition, as well as a few miscellaneous comments about specific traffic operation topics.

Table 3-1 also indicates whether the comment submittal was received at the August 26, 2015 Public Hearing, in any of four formats, or electronically through the project website.

Table 3-1
List of 132 Comment Submittals Ordered Alphabetically by Last Name

#	Name	Format: E=Electronic H=Hearing	Primary Topic			Response Provided on Page
			Noise	Tolls	Other	
1	Allond, Aubray	H			Support	Page 3-31
2	Anderson, Harold	E			Support	Page 3-31
3	Antico, Bill #1 of 2	H	Noise			Page 3-31
4	Antico, Bill #2 of 2	H			Formal request*	Page 3-32
5	Arkell, Brian	E			Opposed	Page 3-32
6	Bartscherer, Holly	E	Noise			Page 3-32
7	Belak, Colleen	E	Noise			Page 3-33
8	Bingham, Paul #1 of 3	H	Noise n. of C-470			Page 3-33
9	Bingham, Paul #2 of 3	H	Noise n. of C-470			Page 3-33
10	Bingham, Paul #3 of 3	E	Noise			Page 3-33
11	Boraz, Robert #1 of 2	H	Noise			Page 3-33
12	Boraz, Robert #2 of 2	H	Noise			Page 3-36
13	Borthwick, Carol	E	Noise			Page 3-37
14	Brower, Don	H	Noise			Page 3-37
15	Cargile, Stephen	E		Tolls		Page 3-37
16	Chadbourne, Pam	H	Noise n. of C-470		Raise gas tax	Page 3-38
17	Correll, Robert	E	Noise n. of C-470			Page 3-39
18	Cousins, Barb	E			Opposed	Page 3-39
19	Daniels, Byron (Col., ret.)	H	Noise			Page 3-40
20	Danko, James	E	Noise			Page 3-41
21	Davis, Thomas	E	Noise			Page 3-41
22	Dawson, Patrick	E			Traffic signals	Page 3-41
23	Deegan, Alan	E	Noise			Page 3-42
24	Delaney, Monty	E	Noise/C-470 trail			Page 3-42
25	Domanick, Ed	E	Noise			Page 3-43
26	Donovan, William	E	Noise/suggestions			Page 3-43
27	Eagleston, Michael	E	Noise			Page 3-44
28	Elwell, Lawrence	E	Noise n. of C-470			Page 3-45
29	Erickson,Carolynn	E	Noise			Page 3-45
30	Evans, David #1 of 2 representing Bike Jeffco	H	Noise/C-470 Trail			Page 3-46
31	Evans, David #2 of 2 representing Bike Jeffco	E	Noise/C-470 Trail			Page 3-47
32	Fee, Peter	E	Noise/Willow Creek			Page 3-48
33	Ferruzza, Ronald	E			No more studies	Page 3-49
34	Fey, Carol	H	Noise n. of C-470			Page 3-49
35	Fielding, Amy	E	Noise			Page 3-50
36	Ford, Wendell #1 of 2	H		Tolls		Page 3-50
37	Ford, Wendell #2 of 2	H		Tolls		Page 3-51
38	Friedenstein, Charles	E	Noise			Page 3-52
39	Gallagher, Bev #1 of 2	H	Noise			Page 3-52
40	Gallagher, Bev #2 of 2	H			Complaint**	Page 3-52
41	Gallagher, John #1 of 2	H	Noise			Page 3-52
42	Gallagher, John #2 of 2	H	Noise			Page 3-53
43	Gehrke, James	E	Noise			Page 3-54
44	Gilsdorf, Sarah #1 of 2	E	Noise			Page 3-54
45	Gilsdorf, Sarah #2 of 2	E	Noise			Page 3-54
46	Graber, Larry #1 of 2, representing HRNC	H	Noise			Page 3-54

* Asked that the hearing transcript be sent to the governor's office.

** Asserting unprofessional conduct by C-470 project staff.

Table 3-1 (continued)
List of 132 Comment Submittals Ordered Alphabetically by Last Name

#	Name	Format: E=Electronic H=Hearing	Primary Topic			Response Provided on Page
			Noise	Tolls	Other	
47	Graber, Larry #2 of 2, representing HRNC	H	Noise			Page 3-14
48	Griffin, Scoty	H	Noise			Page 3-56
49	Grout, Ronald (Dr.)	H	Noise			Page 3-56
50	Gunderson, Loren #1 of 5	E	Noise/health			Page 3-57
51	Gunderson, Loren #2 of 5	E	Noise/alternatives			Page 3-58
52	Gunderson, Loren #3 of 5	E			EA inadequate	Page 3-58
53	Gunderson, Loren #4 of 5	E			Sun glare/speed	Page 3-59
54	Gunderson, Loren #5 of 5	H	Noise/health		Sun glare/speed	Page 3-59
55	Hall, Kirk & Linda	H	Noise			Page 3-61
56	Hall, Linda	H	Noise			Page 3-61
57	Harvey, Ron	E		Tolls		Page 3-61
58	Hayes, Lisa	H	Noise		Increased crime	Page 3-62
59	Hedrick, Russ	E		Tolls	Colorado Blvd. access	Page 3-62
60	Hornung, Al #1 of 2	H	Noise			Page 3-62
61	Hornung, Al #2 of 2	E	Noise			Page 3-62
62	Hunt, Mark	E	Noise			Page 3-63
63	Hutchinson, Raymond	E	Noise			Page 3-63
64	Judish, Dan	E	Noise			Page 3-63
65	Kaplan, Nick	E	Noise			Page 3-64
66	Landauer, Holly	E	Noise			Page 3-64
67	Lareau, Mary	E			Safety/HOV ramp	Page 3-65
68	Lilly, Claire	E	Noise			Page 3-65
69	Lindsley, Sue	E	Noise/golf course			Page 3-66
70	Lum Lung, Paul	H	Noise			Page 3-66
71	Malek, Paul	E		Tolls		Page 3-67
72	McCullah, Darlene	E	Noise			Page 3-68
73	McGahey, Kirk	E			Alternatives	Page 3-68
74	Melick, Jordan	E	Noise			Page 3-68
75	Milius, Raymond	E	Noise			Page 3-68
76	Morgan, Mike	H	Noise n. of C-470			Page 3-69
77	Morris, Brock	H	Noise			Page 3-70
78	Mount, Patricia	E		Tolls		Page 3-70
79	Moyle, Kirk	H	Noise			Page 3-70
80	Mrla, Jannell	E	Noise			Page 3-70
81	Mueller, S.	E			EA correction	Page 3-71
82	Mumfrey, Chris	H	Noise n of C-470			Page 3-71
83	Nadrash, Brandon	E		Tolls		Page 3-72
84	Nicholas, Scott	E		Tolls		Page 3-72
85	Nicholson, Dan	E	Noise			Page 3-72
86	Norton, John	H	Noise			Page 3-72
87	Norton, Michelle	E	Noise			Page 3-73
88	Not Provided	H			Transit instead	Page 3-73
89	Not Provided, Benjamin	E		Tolls		Page 3-73
90	Not Provided, Cheryl	E			Longer on-ramps	Page 3-73
91	Not Provided, Jim	E		Tolls		Page 3-74
92	Not Provided, Teresa	E		Tolls		Page 3-74
93	Novak, Bob	E	Noise			Page 3-74
94	Osborne, Susan	E	Noise			Page 3-75
95	Oslund, Scott	H	Noise			Page 3-75
96	Owens, William	E	Noise			Page 3-75

Table 3-1 (continued)
List of 132 Comment Submittals Ordered Alphabetically by Last Name

#	Name	Format: E=Electronic H=Hearing	Primary Topic			Response Provided on Page
			Noise	Tolls	Other	
97	Pendery, Judy	H	Noise			Page 3-75
98	Peters, David	E	Noise			Page 3-76
99	Peterson, Karin	E	Noise			Page 3-76
100	Prince, Joyce	E	Noise n. of C-470			Page 3-76
101	Pugh, Travis	E		Tolls		Page 3-77
102	Quirk, Sue	E	Noise		Auxiliary lanes	Page 3-77
103	Ranero, Michael	H	Noise			Page 3-78
104	Recker, James	E	Noise			Page 3-78
105	Rehnke, Robert & Jean	E	Noise			Page 3-79
106	Reichman, Don #1 of 2	E	Noise			Page 3-79
107	Reichman, Don #2 of 2 2	E	Noise			Page 3-79
108	Rold, Cindy	E	Noise			Page 3-79
109	Rudnicki, Beth	E	Noise	Tolls		Page 3-80
110	Rymer, Kate	E		Tolls		Page 3-80
111	Sales, Carter representing HRNC	H	Noise			Page 3-8
112	Salisbury, Barbara	H	Noise			Page 3-80
113	Scholz, Bob	E			Ramp metering	Page 3-81
114	Schwan, David #1 of 2	H	Noise n. of C-470			Page 3-81
115	Schwan, David #2 of 2	H	Noise n. of C-470			Page 3-82
116	Showers, Jacy (Dr.)	E	Noise			Page 3-82
117	Skansberg, Mark	E	Noise n. of C-470			Page 3-82
118	Smoodly, Karen & Mike	E	Noise			Page 3-83
119	Snow, Francine	E	Noise			Page 3-83
120	Steinberger (HRNC atty)	E	Noise			Page 3-20
121	Suhaka, Andrea	H	Noise n. of C-470			Page 3-84
122	Sundlof, L.	E	Noise			Page 3-84
123	Tanberg, Kim	H	Noise			Page 3-84
134	Tepper, Dan	E		Tolls		Page 3-84
125	Theobald, Jean	E	Noise			Page 3-85
126	Vogt, Richard #1 of 2	H		Tolls		Page 3-85
127	Vogt, Richard #2 of 2	H		Tolls		Page 3-86
128	Waldenstrom, Carl	H	Noise			Page 3-86
129	Waldenstrom, Sharon	H	Noise			Page 3-87
130	Welte, Norren	H	Noise			Page 3-88
131	Willers, Kathy	E		Tolls		Page 3-89
132	Woodland, Don	H	Noise			Page 3-89

3.4 COMMENT SUBMITTALS RECEIVED AND CDOT/FHWA RESPONSES

Under the National Environmental Policy Act (NEPA), opportunities for public participation are an important part of the federal decision-making process. Accordingly, FHWA and CDOT have provided a response to each comment

submittal. These are presented below, in alphabetical order by the comment submitter's last name, with three exceptions, noted below.

Presented first, and not in alphabetical order, are three lengthy submittals from representatives of the Highlands Ranch Neighborhood Coalition (HRNC). HRNC incorporated in April 2015 following the two February 2015 CDOT C-470 public

outreach meetings where findings of the C-470 noise analysis were presented.

In brief, HRNC is concerned over the fact that the 2015 C-470 noise analysis does not recommend noise mitigation for their neighborhood(s), whereas mitigation was recommended previously for a similar (but different) Preferred Action in 2006. HRNC representatives have stated they are not opposed to the 2015 Proposed Action, but they want noise barriers. They also assert that increased future noise and no noise barrier would diminish their property values.

HRNC and CDOT representatives have met in person and have exchanged correspondence with questions and answers about how the 2015 noise analysis was conducted and why the results differ from 2006. CDOT has pointed out that many factors have changed so that a new noise analysis was required for 2015.

Many of the nearly 100 comment submittals regarding noise concerns are from residents who mentioned HRNC's concerns.

Responding first to the three lengthy HRNC comment submittals therefore provides a useful reference for understanding the briefer comments.

As noted above, the 132 comment submittals and responses are presented below in alphabetical order with three exceptions. The three exceptions are presented first, out of order, and are as follows:

- **Table 3-2:** Oral comments by HRNC representative Carter Sales at the microphone, from the August 26 Public Hearing
- **Table 3-3:** Written comments by HRNC representative Larry Graber, submitted at the August 26 Public Hearing
- **Table 3-4:** Written (submitted via project website) comments by Attorney David Steinberger (Lewis Roca Rothgerber), representing HRNC

The remaining 129 comment submittals are then presented in **Table 3-5**.

**Table 3-2
Public Hearing Comments by Carter Sales, on Behalf of HRNC**

Comment	Response
<p>Good evening. My name is Carter Sales. My family and I live at 3479 Meadow Creek Way in Highlands Ranch. I'm president of the Highlands Ranch Neighborhood Coalition. Our constituents live in several Highlands Ranch neighborhoods bordering the south side of C-470. There are about 1,000 households that are within these neighborhoods. We're not opposed to the highway expansion, but we live with the noise impact generated by C-470 24 hours a day.</p> <p>In 2006 CDOT released an environmental assessment that recommended 2 miles of noise-abatement walls and berms to be installed during the construction along the south side of C-470 in Highlands Ranch between University Boulevard and Quebec Street. Then the project was put on hold. Now CDOT has eliminated the entire 2 miles of the previously recommended noise-abatement barriers adjacent to our neighborhood. And we have voiced our opposition to this issue since March 2015.</p> <p>The Federal Highway Administration states that procedures for noise studies and noise abatement are provided to protect the health, welfare, and livability of the public. The Federal Highway Administration has also approved CDOT's noise analysis and abatement guidelines dated January 15, 2015. This approved set of guidelines is the primary document that the Federal Highway Administration uses to implement the requirements of their regulation 23 CFR 772.</p> <p>Throughout this entire process, we have attempted to establish a collaborative approach with CDOT and other agencies in order to address our concerns regarding the C-470 noise issue. So far, I have personally made presentations to the following organizations: The Douglas County Board of County Commissioners, Highlands Ranch Metro District Board of Directors, CDOT Transportation Commission, Highlands Ranch Community Association Board of Directors, C-470 Corridor Coalition members, Jerome Estes from CDOT, project director, and his project staff and Wilson & Company, CDOT executive level, Mr. Mike Lewis and Paul Jesaitis in a recent meeting last week with the Douglas County Commissioner Roger Partridge and his staff of Douglas County.</p> <p>During the course of those presentations and meetings, we have stated our objections, verbally and in writing, as to the differences from 2006 compared to today regarding the methodology and monitoring of noise levels along the C-470 corridor, specifically in Highlands Ranch.</p>	<p>CDOT appreciates the clarification that HRNC is not opposed to the Proposed Action, but is concerned about C-470 noise impacts.</p> <p>CDOT has previously responded to this comment in letters to the HRNC dated May 1, 2015 and August 20, 2015. The response in the latter letter was as follows: <i>"No noise walls have been 'eliminated', as the recommendations from the 2006 EA referenced in the comment are not applicable to the current project (per federal regulations and state guidance). The 2006 EA provided recommendations that were identified as being subject to further change pending final design. It should be noted that the 2015 Revised EA recommends a total of approximately 17,200 linear feet of noise walls in the corridor, and that these 2015 Revised EA noise wall recommendations are also required to be confirmed and validated through final design of the project."</i></p>

Table 3-2 (continued)
Public Hearing Comments by Carter Sales, on Behalf of HRNC

Comment	Response
<p>Specifically, the differences are in 2006, they took short-term noise readings and they also took long-term noise readings for a one-week period to validate and calibrate their computer noise model. We do not object to this methodology. Conversely, in 2015, they took only two 20-minute short-term noise readings during a holiday week on July 2 and 3 in 2013, and they did not take any long-term noise readings to validate the computer noise model. We object to this methodology of only taking short-term noise readings and not collecting the additional long-term noise measurements as was done in 2006 to validate and calibrate the noise model.</p> <p>CDOT maintains that they're only required to take short-term readings. We disagree because CDOT guidelines standard validation practices designed as the -- defined as the protocol are described in Appendix C of the 2015 CDOT guidelines recording both short-term and long-term measurements.</p> <p>Additionally, the Federal Highway Administration traffic noise analysis and abatement guidelines document that is FHWA-HEP10-025 is dated December 2011. On page 31, it's called Existing Highway Traffic Noise Measurements. And I'll quote, "If information is not available to identify the noisiest hour of the day, or if there is public controversy at a specific location, 24-hour measurements may be necessary," closed quote.</p> <p>This is a public controversy, and we hereby request that the Federal Highway Administration refrain from issuing a finding of no significant impact or decision document on the revised environmental assessment until this issue has been resolved to the satisfaction of the Highlands Ranch Neighborhood Coalition in order to protect the health, welfare, and livability of the public.</p> <p>In 2006, they took noise readings at actual residences in our neighborhoods. We do not object to this methodology. Conversely, in 2015, they did not take noise readings at any actual residences in our neighborhoods.</p>	<p>CDOT's noise analysis for the Revised EA was conducted in accordance with the January 2015 CDOT Noise Analysis and Abatement Guidelines. During the public review period for the Revised EA, multiple comments were received expressing concern that CDOT did not collect long-term measurements as part of this analysis. CDOT subsequently conducted long-term monitoring in October 2015. The results of this effort reconfirmed validation of the TNM model. Results of this analysis are provided in Appendix C and Chapter 5 of this Decision Document. In summary, the long-term measurements validated the noise model used in the Revised EA and resulted in no changes to impacts and mitigation recommendations.</p> <p>Please see response above.</p> <p>Please see response above.</p> <p>Please see response above.</p> <p>FHWA and CDOT noise guidelines do not require that noise readings be taken at actual residences, on private property. In the Highlands Ranch Venneford Ranch area, a field validation noise reading was taken approximately 40 feet north of the fence line for the residence at 8562 Mallard Place.</p>

**Table 3-2 (continued)
Public Hearing Comments by Carter Sales, on Behalf of HRNC**

Comment	Response
<p>We object to this methodology of not going back to the residences to collect noise data. There are plenty of homes to choose from, and the families are agreeable to let them use their homes for noise readings.</p> <p>But, instead, Wilson & Company took the readings at a mini storage building, a Highlands Ranch sign along the highway, and a park and a school in order to validate their new noise model. Logically, you would sample actual homes in each area to see how the new noise readings would compare to 2006 and to validate and calibrate the new computer noise model.</p> <p>The question is who in the world would not want to know what the current actual noise readings are at actual residences? Our families certainly want to know. But, apparently, Wilson & Company and CDOT prefer to have a computer model predict what the noise readings are. This does not protect the health, welfare, and livability of the public.</p> <p>Since CDOT did not adhere to their protocol and take the required long-term noise readings, we decided to hire a professional noise consulting firm to conduct a long-term -- the long-term noise readings on our own so we can have scientific noise data available to compare to the technical noise report that CDOT just released on July 29, 2015. We hired Illingworth & Rodkin, Incorporated, an acoustics engineering firm founded in 1987 with a specialty in highway noise engineering and having done over 4,500 proprietary noise studies for a variety of uses.</p> <p>Illingworth conducted a noise monitoring survey over a six-day period in May of 2015. Just like the 2006 -- just like in 2006, and consistent with the current CDOT guidelines, they set up equipment and gathered both long-term and short-term noise readings at actual residences in our neighborhoods. The results of our study compared to CDOT results showed two things.</p> <p>Number 1, our existing loudest hour noise level recorded over the six-day period at actual homes ranges from 6 to 10 decibels higher than CDOT current model results.</p>	<p>Noise measurements for the C-470 Revised EA were taken in accordance with the CDOT Noise Analysis and Abatement Guidance, which does not require that noise measurements be taken in the yard of a residence, on private property. As noted above, the monitoring site for the Highlands Ranch Venneford Ranch area was 40 feet away from a residential back yard.</p> <p>The noise evaluation for the 2015 C-470 Revised EA was a stand-alone analysis performed consistent with current (2011) FHWA guidance and (2015) CDOT guidance. The objective of the monitoring effort was to validate the new TNM model. Comparison to readings taken in 2006 was not an objective of the analysis.</p> <p>CDOT and its consultant are required to use the TNM computer model to predict noise levels, per the CDOT Noise Analysis and Abatement Guidelines. Following the guidance assures fair and consistent analysis for all projects statewide.</p> <p>As is explained in Section 5.3 of this Decision Document, the CDOT 2015 Noise Analysis and Abatement Guidelines provide an alternative option for identifying the noisiest hour of the day by instead assuming worst-case traffic volumes and speeds that would generate more noise than any hour identified by long-term monitoring. CDOT used this option for the C-470 traffic noise analysis. However, in response to public concerns received, CDOT subsequently conducted long-term monitoring in October 2015. The results of that effort reconfirmed the model validation.</p> <p>CDOT collects data on traffic volumes, speeds and composition in conjunction with noise measurements. This was done in 2003 for the 2006 EA and in 2013 for the 2015 Revised EA. For the Revised EA, it was also done in conjunction with long-term noise monitoring collected in October 2015 (see discussion in Chapter 5 of this Decision Document). Without this associated traffic data, noise measurements are unusable for modeling purposes. HRNC has provided no traffic data associated with I&R noise measurements.</p> <p>Point-in-time field measurements are not used to determine impact predictions, nor to determine whether a neighborhood will be recommended for mitigation, only to develop and validate the model in accordance with FHWA and CDOT guidelines.</p>

**Table 3-2 (continued)
Public Hearing Comments by Carter Sales, on Behalf of HRNC**

Comment	Response
<p>Number 2, after the highway is expanded to eight lanes in front of our neighborhoods, our existing loudest hour noise level will still be 2 to 5 decibels higher than the CDOT model projection. It's totally illogical that our noise levels today are higher than the predicted future noise levels after C-470 is expanded to eight lanes of traffic.</p> <p>On July 2, I went before the C-470 Corridor Coalition to present our findings of our noise survey and that we had probable cause to believe that the 2015 noise model was potentially flawed and that we were calling for a third-party peer technical review of the Wilson & Company noise report before it was released to the public.</p> <p>We sent our noise survey and supporting documents to CDOT on July 13, also asking them to conduct a third-party technical peer review of their noise study and delay the release of the environmental assessment until the review could be conducted.</p> <p>The response was that they were in compliance with CDOT guidelines and federal highway regulations, and they were going to proceed with the release of the environmental assessment on July 29.</p> <p>Now we have a revised 2015 environmental assessment that has eliminated the 2 miles of noise walls and berms that were previously recommended in 2006.</p> <p>CDOT says that the differences today versus 2006 are due to advances in noise model technology, including improved mathematical algorithms, better analysis capabilities, more refined design of the highway, and slight changes to the original highway design.</p> <p>Furthermore, CDOT says we need less noise data now to validate their computer model. However, more data could be bad for CDOT because it may invalidate the model and require different calibration and noise recommendations.</p>	<p>Please see Appendix C, Long-term Traffic Noise Monitoring Technical Memorandum for information about factors affecting current measurements and future predictions.</p> <p>CDOT Region 1, CDOT Headquarters, and FHWA technical staff have reviewed and approved the traffic noise technical report per the established NEPA process; thus, no additional reviews are required. CDOT Executive Management (Mike Lewis and Paul Jesaitis) made the decision to continue release of the Revised EA on schedule after meeting with Mr. Sales and discussing his concerns in person because CDOT used appropriate methods to complete the noise analysis.</p> <p>CDOT has not "eliminated" any sound abatement barriers, as the recommendations from the 2006 EA referenced in the comment are not applicable to the current project (per federal regulations and state guidance). The 2006 EA provided recommendations that were identified as being subject to further change pending final design. The 2015 Revised EA noise analysis found that mitigation would not be reasonable and feasible in the area noted.</p> <p>The 2015 Revised EA: 1) examines a Proposed Action that differs from the 2006 Preferred Alternative, 2) includes updated traffic projection data, 3) includes more advanced survey data, 4) is subject to current applicable noise abatement guidance, and 5) uses the current traffic noise model (TNM) as opposed to the STAMINA model used in 2006.</p> <p>CDOT validated its model per 2015 guidance, and the model-predicted results were within 3 dB(A) of the short-term field measurements collected. Worst case traffic volumes at free flow speeds were used for future impact analysis. In October 2015, more data was collected (long-term measurements) and the results validated the noise model used in the Revised EA.</p>

Table 3-2 (continued)
Public Hearing Comments by Carter Sales, on Behalf of HRNC

Comment	Response
<p>As we were going through this process, I asked our engineer if she's ever done a noise study of this magnitude without taking long-term noise readings to validate a noise model. Without hesitation, she said, "No."</p> <p>Reading the revised environmental analysis, I could find no mention regarding cost alternatives of utilizing berms in lieu of walls. In the 2006 report it cited numerous study areas to include berm alternatives. This helps achieve a reasonable threshold of \$6,800, the cost benefit index per receptor.</p> <p>The Highlands Ranch Metro District, the local government in our community, owns all of the open space between our homes and C-470. CDOT is in the process of creating an intergovernmental agreement with the stormwater runoff from C-470 expansion that CDOT will fund with \$300,000. My question is, has CDOT explored any intergovernmental agreement with the Metro District to include placing berms on Metro District property with all the excess dirt that will be created and hauled away during construction?</p> <p>If CDOT can pay \$300,000 for stormwater runoff retention caused by the highway on Metro District property, logically, CDOT can find a way to work with the District on cost-effective replacement of berms since the dirt will be hauled off anyway.</p> <p>The federal highway abatement guidance document I referred to earlier, Section 772.03 K, also has a provision to allow the highway agency to cost average noise abatement among benefited receptors within common noise environments. This has not been addressed in the environmental assessment.</p> <p>One more point before I close. Every time we pose a question or a challenge related to their guidelines or methodology, the response is that CDOT is adhering to state and federal guidelines and guidance. Not once in this entire process, given all of the meetings, correspondence, and our own professional noise report, has CDOT acknowledged that even one of our points may have a shred of merit. Rather, we have been patronized and encouraged to continue in the public involvement process only to be stonewalled at every instance.</p>	<p>The noise analysis for the C-470 Revised EA was prepared in accordance with the current applicable federal and CDOT Noise Analysis and Abatement Guidelines. Conducted in response to citizen concerns, long-term noise monitoring conducted in October 2015 has reaffirmed the validation of the TNM model.</p> <p>Berms were considered in every location where mitigation is recommended. For a berm to achieve the same noise reduction as a wall, it must be the same height. To be stable and maintainable, a berm must have reasonable slopes of 3:1 or flatter. Thus it requires more land. Within CDOT's limited right-of-way, the extra land needed for a berm may conflict with stormwater management needs, wetlands, prairie dog colonies, the C-470 Trail, and other land use constraints. Additionally, the C-470 corridor has hundreds of utility lines. Certain utility infrastructure (e.g., major sewer or water pipes) cannot bear the weight of adding many feet of fill material. Based on the project's current conceptual design, recommended mitigation calls for walls instead of berms. Mitigation recommendations are reassessed in the final design process, and berm options will be reconsidered at that time. Currently, based on CDOT's Noise Analysis and Abatement Criteria, no mitigation is recommended for this location.</p> <p>Funding for stormwater mitigation and noise mitigation are two separate topics. Stormwater runoff management is required for all CDOT projects. The project includes the costs for all required mitigation, both for water quality and for traffic noise. Please see the response immediately above regarding berm feasibility.</p> <p>All receptors that received 5 dB(A) or greater in noise reduction from evaluated barriers, whether or not they were considered impacted according the CDOT Noise Abatement Criteria, were used in the calculation of benefits. This is in accordance with the CDOT Noise Analysis and Abatement Guidelines, Section 4.5.1 Noise Reduction Design Goal.</p> <p>CDOT has respectfully engaged HRNC on numerous occasions, and consistently responded to HRNC's concerns and input as demonstrated in the May and August correspondence between CDOT and HRNC. The public involvement process as required by NEPA is the appropriate forum for submitting and responding to public comments during the NEPA process.</p>

Table 3-2 (continued)
Public Hearing Comments by Carter Sales, on Behalf of HRNC

Comment	Response
<p>Our challenges to CDOT not abiding by their guidelines, our noise report, and examples of federal guidance discussed tonight provide reasonable and substantive evidence that our concerns are justified and do have merit.</p> <p>My question is, who at CDOT, the County, and the C-470 Corridor Coalition, the Federal Highway Administration, the governor's office, state and federal representatives, or the CDOT Transportation Commission will stand with us to have our concerns fairly addressed and properly evaluate all noise mitigation measures?</p> <p>Certainly, we can pool our collective experience and expertise in problem-solving to protect the health, welfare, and livability of the public by installing noise abatement in our neighborhoods that is justified with its highway expansion.</p> <p>That concludes my remarks.</p>	<p>The noise analysis for the C-470 Revised EA was prepared in accordance with the current applicable federal and CDOT Noise Analysis and Abatement Guidelines. Conducted in response to citizen concerns, long-term noise monitoring conducted in October 2015 has reaffirmed the validation of the TNM model.</p> <p>CDOT and FHWA have concluded that the noise analysis for the C-470 Revised EA was prepared in accordance with the current applicable federal and CDOT Noise Analysis and Abatement Guidelines. HRNC's concerns have been fairly addressed in this Decision Document and in previous correspondence with CDOT. All noise mitigation measures have been properly evaluated per NEPA and per established CDOT and FHWA guidance.</p>

**Table 3-3
Written Comments Submitted by Larry Graber on Behalf of HRNC**

Comment	Response
<p>My name is Larry R. Graber. My wife and I own and live in a residence located on the south side of C-470 between University and Quebec in Highlands Ranch, referred to in the 2015 EA as Venneford Ranch. Our property line is about 600 feet from the highway centerline. I have been a registered Professional Engineer in the State of Colorado for over 20 years and have numerous years of experience in the energy and mining industries, including environmental impact assessments and statements.</p> <p>As part of the Highlands Ranch Neighborhood Coalition, my responsibilities have been to lead the engineering committee in selecting a reputable and qualified noise consultant related to the Project. Based on (a) my oversight of their work, (b) review of the noise analyses released by the Colorado Department of Transportation (CDOT), and (c) several meetings with the Wilson Company and CDOT to discuss these matters, I submit the following 15 comments in this public hearing.</p>	
<p>1. In my opinion, noise analyses performed by the Wilson Company and CDOT in the 2015 Environmental Assessment is one of the worst I have seen, because there are virtually no baseline measurement and data related to current noise levels.</p> <p>This absence of data has left the Wilson Company and CDOT room to manipulate their modeling numbers to eliminate noise protection walls and berms as a means of reducing overall Project costs.</p>	<p>The noise analysis for the C-470 Revised EA was prepared in accordance with the current applicable federal guidance and CDOT Noise Analysis and Abatement Guidelines. Data collection, which is part of the baseline analysis process, included ambient noise levels, traffic volumes, traffic speeds and vehicle classification data for two 10 to 20-minute periods at 15 different locations to validate the new noise model. This methodology follows the CDOT Noise Analysis and Abatement Guidelines dated January 15, 2015, as shown on page 17.</p> <p>No data manipulation occurred to eliminate noise walls, reduce costs, or for any other reason. For federal projects, mitigation is recommended if it meets the requirements of both reasonable and feasible per guidance. If mitigation meets the established criteria, it is recommended. CDOT does not get to choose what mitigation gets recommended as a means to reduce overall project costs. The 2015 results differ from the 2006 EA because the 2015 analysis used a new noise model and complied with new abatement guidelines.</p>

**Table 3-3 (continued)
Written Comments Submitted by Larry Graber on Behalf of HRNC**

Comment	Response
<p>2. Because of the absence of existing noise measurements, HRNC hired a reputable and qualified noise engineering firm with over 28 years of highway noise experience to obtain baseline data. We found that the actual loudest noise hour in our Neighborhood was 71 decibels as compared with 65 decibels represented by the CDOT model. This represented a substantial increase of 6 decibels. Since noise levels are measured on a logarithmic scale, this would be the equivalent to a quadrupling of the noise source. HRNC measurements are also substantially higher than the 66 decibel noise abatement criteria set forth in CDOT standards. HRNC's baseline data included long term monitoring over several days, whereas the Wilson Company and CDOT only took short term measurements of 20 minutes each during a summer holiday week (Fourth of July) in 2013.</p> <p>Without long term measurements, actual loudest hour noise levels cannot be reliably determined; therefore CDOT modeled noise levels are flawed and must be rejected.</p>	<p>CDOT's August 20, 2015 response to HRNC addressed this point: "From the information provided to CDOT in the July 13, 2015 letter and the I&R report, it is unclear as to all of the assumptions used by HRNC and their consultant to arrive at the stated sound levels..." Noise monitoring for the C-470 Revised EA complied with all applicable aspects of the CDOT Noise Analysis Guidelines including number of measurements, duration, and timing.</p> <p>Actual point-in-time field measurements are not used to determine impact predictions, nor are they used to determine whether receptors will be recommended to receive mitigation. They are used only to develop and validate the model in accordance with FHWA and CDOT guidelines. Traffic data is required to be collected at the time of the measurement(s) and incorporated into the model so it can be replicated for that period of traffic and used to determine if the model is accurate in forecasting similar values to what was monitored in the field. No traffic data and no noise modeling results were provided as part of the HRNC and I&R report.</p> <p>During the public review period for the Revised EA, multiple comments were received expressing concern that CDOT did not collect long-term measurements as part of this analysis. CDOT evaluated these comments and decided to collect long-term measurements and associated traffic volumes to determine loudest hour for the purposes of validating the noise model. The results of this analysis are provided in Appendix C and Chapter 5 of this Decision Document. In summary, the long-term measurements validated the noise model used in the Revised EA and resulted in no changes to impacts and mitigation recommendations.</p>
<p>3. The differences between actual and modeled noise levels were reported in writing to the Wilson Company and CDOT prior to issuance of the 2015 EA; however such differences were summarily dismissed and ignored without proper consideration. During the past several months, CDOT personnel have deliberately suppressed the validity of the HRNC actual measurements, stifled public involvement, and patronized comments by citizens in our Neighborhood.</p>	<p>CDOT has considered and responded to HRNC's concerns and input as demonstrated in the May and August 2015 correspondence between CDOT and HRNC. The public involvement process as required by NEPA is the appropriate forum for submitting and responding to public comments during the NEPA process. CDOT has respectfully engaged HRNC on numerous occasions. Responses to all citizen comments received regarding the Revised EA are included in this Decision Document.</p>

**Table 3-3 (continued)
Written Comments Submitted by Larry Graber on Behalf of HRNC**

Comment	Response
<p>4. CDOT had the audacity, as set forth in an e-mail from CDOT to HRNC, to reject our baseline noise measurements because we had not performed our own noise model. Performing a valid noise study is CDOT's job, not ours. We find such attitude repulsive and presumptuous. As tax payers and customers of CDOT, they violated their own value statement to have a can-do attitude and work together with others to respond effectively to customer needs.</p> <p>Instead of using our data constructively to make sure their conclusions were valid, they just ignored the data because we did not perform the analysis for CDOT.</p>	<p>Nothing submitted to CDOT by HRNC has been rejected at any time. All HRNC comments have been given full consideration in our technical analysis and CDOT has provided a response to each concern brought forward. No information brought to CDOT's attention has changed the conclusions of our analysis or affected the recommendations for where mitigation is or is not being recommended because all applicable guidelines and processes have been followed.</p> <p>From the information provided CDOT in the July 13, 2015 letter and the I&R report, it is unclear as to all of the assumptions used by HRNC and their consultant to arrive at the stated sound levels of 70-76 dB(A). CDOT guidance requires correlation of field measurements to associated traffic data for use in validating a noise model which is then utilized to determine receptor noise levels. CDOT performed all of these requirements. HRNC's I&R report was analyzed by our project team, and was found to provide collected noise measurements, but no associated traffic data. Without the associated traffic data, the noise measurements are not usable for model validation.</p>
<p>5. CDOT failed to follow its own guidelines in conducting the 2015 EA Noise Analyses.</p> <p>Such caution has been stated on several occasions prior to this public hearing, but they have repeatedly ignored our concerns.</p>	<p>The noise analysis for the C-470 Revised EA was prepared in accordance with the current applicable federal and CDOT Noise Analysis and Abatement Guidelines.</p> <p>CDOT has respectfully engaged HRNC on numerous occasions, and consistently responded to HRNC's concerns in order to explain the technical differences that support CDOT's position.</p>
<p>6. Even with higher traffic volumes predicted with the C-470 expansion, the Wilson Company and CDOT models reflected noise levels in year 2035 ranging from 67.9 to 69.0 decibels in our Neighborhood. Those predicted/modeled noise levels are still lower than current actual baselines measurements of 71 decibels. The results by CDOT are totally illogical, given the projected 8 lanes of traffic for C-470.</p>	<p>From the information provided to CDOT in the July 13, 2015 letter and the I&R report, it is unclear as to all of the assumptions used by HRNC and their consultant to arrive at the stated sound levels of 70-76 dB(A). CDOT guidance requires correlation of field measurements to associated traffic data for use in validating a noise model which is then utilized to determine receptor noise levels. CDOT performed all of these requirements.</p>

**Table 3-3 (continued)
Written Comments Submitted by Larry Graber on Behalf of HRNC**

Comment	Response
<p>7. Critically, the Wilson Company and CDOT have grossly understated the number of noise receptors in our Neighborhood, resulting in manipulated values that justify their removal of noise barriers.</p>	<p>The noise analysis for the C-470 Revised EA was prepared in accordance with the current applicable federal and CDOT Noise Analysis and Abatement Guidelines. The project analyzed first row receptors and second row receptors in the project area within 500 feet that had the potential to have noise levels of 66 DB(A) or higher. All receptors that received 5 dB(A) or greater in noise reduction from evaluated barriers, whether they were considered impacted according the CDOT Noise Abatement Criteria or not, were used in the calculation of benefits. This does not understate the number of noise receptors nor result in manipulated values. Rather, it follows the requirements for evaluating project noise sensitive land uses for noise mitigation opportunities.</p>
<p>8. Based on CDOT's own noise analyses performed in 2006, which is consistent with our baseline measurements, the proper number of noise receptors in the Venneford Ranch area should range from 90 to 115 instead of 22 as reported in the 2015 EA. In the Gleneagle [sic] Village area, the proper number of receptors should range from 25 to 61 instead of 9. Using the correct number of receptors, the cost benefit index is less than the \$6,800 threshold set forth in the CDOT/FHWA criteria, thereby requiring the installation of noise abatement walls or berms.</p>	<p>The noise analysis conducted for the 2006 EA is not applicable. CDOT is required to use a new noise model, TNM, and to follow new FHWA and CDOT guidance for noise abatement analysis in 2015, compared to what was required in 2006. The results of the 2015 analysis are the only results relevant to mitigation analysis at this time. Higher numbers of impacted receptors in 2006 may have been due in part to the addition of a 3 decibel "correction factor" as noted on page 7 of the Noise Technical Report from 2006. It is available online at: https://www.codot.gov/content/projects/C470ExpressLanes/February%202006%20EA%20Appendices%20and%20Tech%20Files/Noise%20Analysis%20Tech%20Rept.pdf No "correction factor" was needed or used in 2015 as the model was validated for use in predicting existing and future impacts and associated mitigation recommendations.</p> <p>All receptors that received 5 dB(A) or greater in noise reduction from evaluated barriers, whether they were considered impacted according the CDOT Noise Abatement Criteria or not, were used in the calculation of benefits. The total of nine benefitted receptors included seven impacted and two not impacted.</p>
<p>9. In the event CDOT proceeds with the Project without the required noise protection, qualified realtors estimate our property values in the Venneford Ranch area will decrease by \$50,000 to \$100,000. Such decrease in appraised value represents a loss of 8-12% in Neighborhood sales prices, which will also apply to homes in the Gleneagle [sic] Village area.</p>	<p>CDOT is required to apply established federal regulations and state guidance for traffic noise impacts and mitigation to all federally funded transportation projects in a consistent manner throughout the state. If a receptor is determined to be impacted by traffic noise, a reasonable and feasible analysis for mitigation is completed that considers constructability and noise reduction benefit, in addition to location, cost and other criteria. Property values are not a factor of this analysis. The decision to recommend mitigation for federal projects is based on the ability to construct a barrier that will have a noise reduction benefit that meets federal standards.</p>

**Table 3-3 (continued)
Written Comments Submitted by Larry Graber on Behalf of HRNC**

Comment	Response
<p>10. Property owners purchasing residences in our Neighborhood were told by realtors that previous studies by CDOT included noise barriers in the event of future expansion. Removal of such noise barriers in the 2015 EA is tantamount to "bait and switch".</p>	<p>CDOT has no oversight of real estate agent discussions.</p> <p>CDOT has previously responded to this comment in letters to the HRNC dated May 1, 2015 and August 20, 2015. The response in the latter letter was as follows: <i>"No noise walls have been 'eliminated', as the recommendations from the 2006 EA referenced in the comment are not applicable to the current project (per federal regulations and state guidance). The 2006 EA provided recommendations that were identified as being subject to further change pending final design. It should be noted that the 2015 Revised EA recommends a total of approximately 17,200 linear feet of noise walls in the corridor, and that these 2015 Revised EA noise wall recommendations are also required to be confirmed and validated through final design of the project."</i></p>
<p>11. Actions taken by the Wilson Company and CDOT are arbitrary and capricious. In my opinion, they have systematically and intentionally manipulated modeling data to eliminate noise protection walls and berms in order to reduce overall Project costs.</p>	<p>CDOT strongly disputes this opinion. The noise analysis for the 2015 Revised EA followed all applicable FHWA and CDOT guidelines. For federal projects, mitigation is recommended if it meets the requirements of both reasonable and feasible per guidance. If mitigation meets the established criteria, it is recommended. CDOT does not get to choose what mitigation gets recommended as a means to reduce overall project costs. At no time in the project development process did CDOT consider eliminating noise walls as a means of reducing overall project costs.</p>
<p>12. Increased noise levels due to CDOT's removal of protection barriers will negatively impact quality of life in our Neighborhood. There are currently times when we cannot hold a conversation in our back yard due to high noise levels from C-470. Such impacts will only become worse in our Neighborhood as C-470 is expended without noise barriers.</p>	<p>There has been no "removal" of sound abatement barriers, as the recommendations from the 2006 EA referenced in the comment are not applicable to the current project (per federal regulations and state guidance). The 2006 EA provided recommendations that were identified as being subject to further change pending final design. The 2015 Revised EA noise wall recommendations are also required to be confirmed and validated through final design of the project.</p>
<p>13. HRNC demands that CDOT include noise protection walls or berms in our Neighborhood. If CDOT refuses to reconsider this issue in its EA, we reserve the right to pursue all legal and financial remedies available to us to challenge the Project; including but not limited to petitioning the proper authorities and courts to overturn the 2015 EA findings and/or require a detailed environmental impact statement. We have retained the law firm of Lewis Roca Rothgerber to assist us as well as the engineering noise consultant, Illingworth and Rodkin.</p>	<p>Providing walls when the analysis shows they are not reasonable and feasible would go against state and federal guidelines.</p> <p>Responses to comments submitted by Lewis Roca Rothgerber are provided in Table 3-4 of this Decision Document.</p>

**Table 3-3 (continued)
Written Comments Submitted by Larry Graber on Behalf of HRNC**

Comment	Response
<p>14. We call on the Honorable John Hickenlooper, Governor of Colorado and Mr. Shailen Bhatt, Executive Director of CDOT to once again include noise protection walls or berms in the project, as recommended in the 2006 noise analyses performed by Hankard Environmental.</p>	<p>We understand that HRNC has met with the governor's office and that a written response to HRNC may be forthcoming. Additionally, Mr. Bhatt has been briefed regarding HRNC's concerns. Providing walls when the analysis shows they are not reasonable and feasible would go against state and federal guidelines.</p>
<p>15. In addition, based upon the e-mail released by CDOT in response to e-mails from HRNC, we have serious concerns about whether the information we are presenting to CDOT is being properly considered, rather than summarily dismissed. We therefore call on Mr. Bhatt to oversee his staff to ensure that a proper review of the environmental assessment has been and will be performed in response to public comments regarding the draft 2015 EA.</p> <p>This concludes my comments.</p>	<p>CDOT has respectfully engaged HRNC on numerous occasions. CDOT has considered and responded to HRNC's concerns and input as demonstrated in the May and August correspondence between CDOT and HRNC.</p> <p>Mr. Bhatt has been briefed on this issue by CDOT executive management. All information presented to CDOT by HRNC has been properly considered, analyzed, and responded to.</p>

**Table 3-4
Written Comments Submitted via E-mail by Attorney David Steinberger
(Lewis Roca Rothgerber), on Behalf of HRNC**

Comment	Response
<p><u>Lewis Roca Rothgerber represents the Highlands Ranch Neighborhood Coalition (HRNC) in submitting these written comments as a supplement to the comments submitted by HRNC at the August 26, 2015 public hearing. The formal comments are attached to this email as a pdf file.</u></p> <p>This Firm represents the Highlands Ranch Neighborhood Coalition (“HRNC”), a large group of Highlands Ranch residents concerned about the removal of certain sound abatement barriers in the “2015 version” of the C-470 Expansion Project.</p> <p>While HRNC supports the C-470 Expansion Project, it objects to the project moving forward without those sound abatement measures.</p> <p>Specifically, the HRNC writes to provide these comments objecting to the noise pollution/ abatement findings at Section 4.3.1 of the “C-470 Corridor Revised Environmental Assessment,” Project No. NH 4701-103 (14222) (the “Revised EA”). This letter formalizes and supplements any public comments made by HRNC or its members/representatives at the August 26, 2015 public hearing.</p> <p>As you know, the first iteration of the C-470 Expansion Project was documented in the 2006 C-470 Corridor Environmental Assessment (the “2006 EA”). The current version of the C-470 Expansion Project is, as set forth in the Revised EA, “substantially similar” to the 2006 version of the project. See Revised EA, pg. ES-2.</p> <p>Nevertheless, one significant change from the 2006 project to the current C-470 Expansion Project is the removal of approximately 2 miles of sound abatement measures (berms and walls) including on the south side of C-470 between South University Boulevard and Quebec Street in Highlands Ranch (the “HRNC Neighborhood”). The fact that the sound abatement measures were included in the 2006 project but removed from to the current C-470 Expansion Project is arbitrary, capricious and unreasonable.</p>	<p>There has been no “removal” of sound abatement barriers , as the recommendations from the 2006 EA referenced in the comment are not applicable to the current project (per federal regulations and state guidance). The 2006 EA provided recommendations that were identified as being subject to further change pending final design. The 2015 Revised EA noise wall recommendations are also required to be confirmed and validated through final design of the project.</p> <p>Thank you for clarifying that HRNC supports the C-470 Express Lanes project.</p> <p>Although the 2006 and 2015 alternatives are substantially similar, the C-470 Revised EA discusses key differences between the 2006 Preferred Alternative and the 2015 Proposed Action in Section 2.6.2, CDOT Works with the C-470 Corridor Coalition to Refine Project. These include Colorado Boulevard (access), toll collection advancements, buffer separation, Express Lane access, and I-25 direct-connect ramps. Adding access at Colorado Boulevard (proposed in 2006 but not in 2015) would have increased traffic on that street thus increasing noise for nearby residents.</p> <p>No noise walls have been ‘eliminated’, as the recommendations from the 2006 EA referenced in the comment are not applicable to the current project (per federal regulations and state guidance). The 2006 EA provided recommendations that were identified as being subject to further change pending final design. It should be noted that the 2015 Revised EA recommends a total of approximately 17,200 linear feet of noise walls in the corridor, and that these 2015 Revised EA noise wall recommendations are also required to be confirmed and validated through final design of the project.</p>

Table 3-4 (continued)
Written Comments Submitted via E-mail by Attorney David Steinberger
(Lewis Roca Rothgerber), on Behalf of HRNC

Comment	Response
<p>The simple fact is that the highway volume and associated noise existing today is certainly at least the same or worse than in 2006. And the C-470 Expansion project in the area of the HRNC Neighborhood is essentially the same as what was proposed in 2006.</p> <p>Therefore, there can be no rational basis for determining that the HRNC Neighborhood now requires no noise abatement whereas the same area did require such noise abatement nine years ago for the same exact project.</p> <p>The only possible explanation for such a drastic change is that the governmental agencies which conducted the new noise study and prepared the Revised EA (CDOT and the FHWA, collectively the “Agencies”) have misinterpreted their own guidance and/or manipulated the noise studies in the Revised EA to achieve a pre-conceived and cost savings outcome.</p> <p>The CDOT noise model used to support its conclusions in the Revised EA is flawed because it was not properly validated using appropriate field-measured noise data. The failure to properly validate the model renders all analysis and conclusions stemming from the model as highly suspect and unreliable. Certainly, it is inappropriate to base any planning decisions and conclusions on a flawed model that has not been verified.</p> <p>Yet by using the flawed model, CDOT has determined that in the Highlands Ranch Venneford area, there are only 22 receptors which were considered/benefited for noise abatement, while in the 2006 EA, 115 receptors in the same area were considered/benefited. That drastic change results in a skewed cost-benefit analysis of mitigation options – the more affected receptors there are, the less expensive mitigation becomes on a per-receptor/per reduced decibel basis.</p> <p>By altering the model to reduce the number of receptors, Expansion Project costs are significantly reduced because noise mitigation suddenly becomes “unreasonable” from a cost-benefit standpoint.</p>	<p>Please see the second prior response above regarding differences between the 2006 Preferred Alternative and the 2015 Proposed Action. Adding access at Colorado Boulevard (proposed in 2006 but not in 2015) would have increased traffic on that street, thus increasing noise for nearby residents.</p> <p>This “no rational basis” statement is incorrect. The Proposed Action has changed, the traffic composition has changed, the noise model has changed, and the noise analysis and abatement guidelines have changed prior to a final decision being made or final design being completed. This is the reason that the new analysis yielded different results.</p> <p>For federal projects, mitigation is recommended if it meets the requirements of both reasonable and feasible per guidance. If mitigation meets the established criteria, it is recommended. CDOT does not get to choose what mitigation gets recommended as a means to reduce overall project costs. At no time in the project development process did CDOT consider eliminating noise walls as a means of reducing overall project costs.</p> <p>CDOT disputes these assertions. In 2013, actual field noise measurements, traffic volumes, traffic speeds and vehicle classification data were all collected in accordance with CDOT Noise Analysis and Abatement Guidelines and used to develop and validate the traffic noise model per CDOT guidance.</p> <p>CDOT recognizes there is a difference in benefitted receptors in 2015, compared to the 2006 results. FHWA promulgated a Final Rule on July 13, 2010 to amend its noise regulations at 23 CFR Part 772. Changes in CDOT guidance from 2006 to 2015 have resulted in different modeling parameters. The Revised EA analyzed all first row receptors and select second row receptors in accordance with current noise guidance. All receptors that received 5 dB(A) or greater in noise reduction from evaluated barriers, whether or not they were considered impacted according the CDOT Noise Abatement Criteria, were used in the calculation of benefits.</p> <p>At no time in the EA process did CDOT consider eliminating noise walls to reduce project costs. No “altering” of the TNM model occurred to reduce the number of receptors or for any other reason. Instead, a new model appropriate to the rules, regulations and conditions applicable today was used per guidelines.</p>

Table 3-4 (continued)
Written Comments Submitted via E-mail by Attorney David Steinberger
(Lewis Roca Rothgerber), on Behalf of HRNC

Comment	Response
<p>HRNC asserts that the Agencies (a) have misinterpreted and misapplied their own guidance in performing the 2015 noise analysis, and thus completed their analysis based upon a flawed model which has not been validated and (b) have demonstrated a shockingly unreasonable bias against HRNC, effectively dismissing all constructive input from HRNC.</p> <p>HRNC therefore asserts that the Agencies cannot approve the current Revised EA and cannot issue a final decision document based upon the Revised EA because the current noise study is invalid. The Revised EA for the C-470 Expansion should be revised again such that the “Preferred Alternative” again include noise abatement in the HRNC Neighborhood.</p> <p>However, if CDOT does not revise the project in that manner, then at a minimum, HRNC would expect the Agencies to re-run their noise analysis/modeling using the existing noise data measured by CDOT in 2005 and the data collected by HRNC in 2015. Agency action should be guided by the revised noise analysis completed using <i>all</i> available data, and not the flawed and incomplete data used in the Revised EA.</p> <p>I. The Revised EA Noise Analysis is Flawed.</p> <p>As will be demonstrated, the agencies failed to follow the required guidance for conducting the noise analysis required for the C-470 Expansion Project. Because of that failure, CDOT’s reliance upon the traffic noise study conducted as part of the revised EA is arbitrary and unreasonable.</p> <p>A. CDOT’s Noise Guidance. The analysis of noise impacts associated with highway projects is governed by the CDOT “Noise Analysis and Abatement Guidelines” dated January 15, 2015 (the “Noise Guidance”). The Noise Guidance essentially establishes a two-step analysis.</p>	<p>(a) The noise analysis for the C-470 Revised EA was prepared in accordance with the current applicable federal and CDOT Noise Analysis and Abatement Guidelines.</p> <p>(b) CDOT has respectfully engaged HRNC on numerous occasions, and consistently responded to HRNC’s concerns and input as demonstrated in the May and August correspondence between CDOT and HRNC.</p> <p>CDOT disputes this HRNC assertion. The noise analysis for the 2015 Revised EA followed all applicable FHWA and CDOT guidelines. Providing walls when the analysis shows they are not reasonable and feasible would go against state and federal guidelines.</p> <p>Section 5.3 of this Decision Document describes new (October 2015) long-term modeling near the sites where I&R conducted similar modeling. These results reconfirm the validation of the TNM model. The data from 2005 was collected per different guidance for a different modeling technology. Per FHWA, it cannot be used for current analysis. HRNC noise measurements not accompanied with associated traffic volume, speed and classification data are not usable for model validation purposes.</p> <p>CDOT disputes this assertion. The application of the Noise Analysis and Abatement Guidelines is not “arbitrary” and are applied consistently to all CDOT projects and local agency projects with CDOT and federal oversight across the state of Colorado.</p>

Table 3-4 (continued)
Written Comments Submitted via E-mail by Attorney David Steinberger
(Lewis Roca Rothgerber), on Behalf of HRNC

Comment	Response
<p>First, the agency must determine whether any noise sensitive receptors will be subject “to either 1) future noise levels that approach or exceed the Noise Abatement Criteria (NAC), or 2) future noise levels that substantially exceed the existing noise levels.” Noise Guidance at page 7.</p> <p>Second, “[w]hen noise sensitive receptors are present and are found, during the course of the analysis, to be impacted under either case, noise abatement measures must be considered and evaluated for those receptors under the feasibility and reasonableness factors” Id.</p> <p>In determining whether the expected noise levels will approach or exceed the NAC, the first step is to identify noise sensitive receptors. “The analysis consists of two major parts. The first consists of identification of noise sensitive receptors, assessment of the noise levels that these receptors are currently experiencing and are predicted to experience in the future, and determination of whether or not traffic noise impacts exist.” Noise Guidance at p. 11. This requires the determination/quantification of the current existing noise levels at identified receptors, which is done through field measurement and modeling software (the Traffic Noise Model (“TNM”) software). The protocol for this required analysis (both field measurements and software modeling) is governed by the “Traffic Noise Model User’s Guide for Colorado DOT Projects (2006)” (the “User Guide”).</p> <p>B. CDOT’s User Guide</p> <p>Both the Noise Guidance and the User Guide indicate that actual noise measurements are used in part to validate the TNM model. The User Guide provides the methodology and requirements for such validation. There are three methods to validate the TNM analysis: using the results of other, similar, projects; short-term noise measurements; and both short-term and long-term noise measurements.</p>	<p>The C-470 Revised EA completed this analysis.</p> <p>The C-470 Revised EA completed this analysis.</p> <p>Please see Section 5.3 of this Decision Document, called “Updated Information on the C-470 Traffic Noise Analysis”.</p> <p>Please see Section 5.3 of this Decision Document, called “Updated Information on the C-470 Traffic Noise Analysis”.</p>

Table 3-4 (continued)
Written Comments Submitted via E-mail by Attorney David Steinberger
(Lewis Roca Rothgerber), on Behalf of HRNC

Comment	Response
<p>Short-term sampling “is applicable to medium-sized projects such as interchange improvements and small corridors.” The combination of short-term and long-term noise measurements “is applicable to large corridor projects, and projects where significant mitigation is likely.” There can be no doubt that the C-470 Expansion Project, which addresses 13.75 miles of C-470 at a cost of hundreds of millions of dollars, is a “large corridor project.” Therefore, the noise analysis requires the use of both short-term and long-term noise measurements to validate the TNM analysis.</p> <p>The User Guide specifies the requirements for short-term and long-term noise field measurements at Section 4.0. In addition to the timing requirements for the samples (e.g., short- and long-term samples), the User Guide also addresses the required number of measurement locations: “Take at least one measurement at each major residential area within the project study area....</p> <p>The number of measurement locations varies from 2 to 4 for an interchange project, to 10 to 20 for a corridor project.” Since the C-470 Expansion Project is a large corridor project, sampling would be required at each major residential area, and between 10-20 sample/measurement locations would be required.</p> <p>C. CDOT Did Not Comply With the Noise Guidance and the User Guide.</p> <p>In several significant regards, CDOT failed to comply with its own guidance, which render its conclusions unreliable and invalid. It would therefore be improper to issue a final decision document given the flawed noise analysis.</p> <p><u>1. CDOT Did Not Comply With the Required Sampling Protocol to validate the TNM Model.</u></p> <p>First, CDOT did not comply with the sampling methodology required under the User Guide. As part of the Revised EA, CDOT’s consultant only collected two short-term noise readings at each of 15 locations within the project area. The Revised EA does not provide any details identifying for how long each sample was collected.</p> <p>The User Guide indicates that short-term samples be collected for between 15 and 60 minutes, with 30 minutes desired for measurements close to a road with noise levels expected to be greater than 60 dBA and 60 minutes desired where low traffic is expected.</p>	<p>Please see Section 5.3 of this Decision Document, called “Updated Information on the C-470 Traffic Noise Analysis”.</p> <p>CDOT agrees the C-470 Express Lanes Proposed Action qualifies as a “large corridor project”.</p> <p>Please see Section 5.3 of this Decision Document, called “Updated Information on the C-470 Traffic Noise Analysis”.</p> <p>The noise analysis for the Revised EA included monitoring at 15 locations, as noted in the Revised EA on page 4-20 and also in the Traffic Noise Technical Report.</p> <p>The Revised EA did not specify the sampling periods. CDOT’s August 20 letter to HRNC on page 6 of 8 stated that: “Noise levels, traffic volumes, traffic speeds and vehicle classification data were collected for two representative 10 to 20-minute periods at 15 locations to validate the new noise model.”</p> <p>The 2015 CDOT Noise Analysis and Abatement Guidelines generally take precedence over the 2006 Users Guide, which is included as an appendix to the guidelines. Section 3.2.2 (“Roadway Modifications”) in 2015 guidelines state that, “For high-volume roads, a 10-minute sample is usually statistically accurate enough to obtain a good measurement.”</p>

Table 3-4 (continued)
Written Comments Submitted via E-mail by Attorney David Steinberger
(Lewis Roca Rothgerber), on Behalf of HRNC


Comment	Response
<p>Because the Revised EA provides no information about sample run times, it is impossible to determine whether CDOT even complied with the short-term sampling requirements.</p> <p>Second, and more significantly, CDOT failed to conduct or use any long-term monitoring data to validate their model, which is clearly required in the User Guide. As noted above, for large corridor projects, validation of the TNM model requires both long-term and short-term field measurements. The very fact that CDOT failed to take long-term measurements undermines their findings with respect to the validation of their noise model for the C470 Expansion Project.</p> <p>Therefore, the noise model used for this project has not been properly validated and all analysis and conclusions derived from the use of the non-validated model are suspect and cannot be relied upon to support the conclusions presented in the Revised EA.</p> <p><u>2. CDOT Did Not Comply With the Sampling Location Requirements to Validate the TNM Analysis.</u></p> <p>The User Guide requires that the agency “[t]ake at least one measurement at each major residential area within the project study area.” User Guide at p. 26. In at least one instance, CDOT failed to comply with this requirement. Specifically, no validation measurements were collected at Gleneagles Village. Likewise, for Highlands Ranch/Venneford ranch, samples were taken at a “Highlands Ranch Sign.” See Revised EA, Traffic Noise Technical Report, Table 3. Gleneagles Village is a major residential area consisting of 345 homes and over 500 residents.</p> <p>The Venneford Ranch noise measurement was conducted at a “Highlands Ranch Sign” in the open space between the Highland Ranch Venneford Ranch homes and the highway. It is clear that CDOT did not exercise reasonable care in sampling the noise at actual residential areas in the Gleneagles Village and Venneford Ranch area. By failing to take noise measurements in all required locations, the TNM model validation fails to meet CDOT Guidance.</p> <p>Therefore, the noise model used for this project has not been properly validated and all analysis and conclusions derived from the use of the non-validated model are suspect and cannot be relied upon to support the conclusions presented in the Revised EA.</p>	<p>The Revised EA did not specify the sampling periods. CDOT’s August 20 letter to HRNC on page 6 of 8 stated that: “Noise levels, traffic volumes, traffic speeds and vehicle classification data were collected for two representative 10 to 20-minute periods at 15 locations to validate the new noise model.”</p> <p>Please see Section 5.3 of this Decision Document, called “Updated Information on the C-470 Traffic Noise Analysis”. In response to citizen comments, CDOT conducted long-term noise monitoring in October 2015. The results of that effort reconfirm the validation of the TNM model as used in the C-470 Revised EA.</p> <p>Please see Section 5.3 of this Decision Document, called “Updated Information on the C-470 Traffic Noise Analysis”.</p> <p>As stated previously, the noise analysis for the C-470 Revised EA was prepared in accordance with the current applicable federal and CDOT Noise Analysis and Abatement Guidelines.</p> <p>Noise measurements were taken in the Gleneagles Village area at David Lorenz Park on public land.</p> <p>The abbreviated descriptions of monitoring locations in the table were for general location information. In the Venneford Ranch area a field validation noise reading was taken approximately 40 feet north of the 8562 Mallard Place fence line as shown in the picture here.</p>  <p>As stated previously, the noise analysis for the C-470 Revised EA was prepared in accordance with the current applicable federal and CDOT Noise Analysis and Abatement Guidelines.</p>

Table 3-4 (continued)
Written Comments Submitted via E-mail by Attorney David Steinberger
(Lewis Roca Rothgerber), on Behalf of HRNC

Comment	Response
<p>3. <u>CDOT Failed to Use or Consider the Noise Measurements From 2006.</u></p> <p>It is important to note that in the July 2005 noise study included in the 2006 EA, CDOT’s consultant followed the appropriate requirements and included long-term measurements in their validation of the noise model. Having failed to conduct the required long-term noise sampling in the 2015 noise study, it would have been reasonable and prudent for CDOT to include the 2005 data in their 2015 study.</p> <p>In addressing the 2005 noise study, CDOT states the following at Section 1.3 of the 2015 Traffic Noise Technical Report:</p> <p>Changes from the 2006 C-470 Environmental Assessment <i>The noise analysis completed in July 2005 for the 2006 C-470 EA was prepared using FHWA’s prior noise model (STAMINA), 2002 Federal and state noise abatement guidelines, year 2025 traffic projections, and a slightly different proposed action. No decision document was issued to approve the project.</i></p> <p><i>Therefore, the 2005 noise mitigation recommendations are no longer valid and the 2014 noise analysis for the Revised EA supersedes the 2005 analysis.</i></p> <p>That rational (sic) is simply nonsensical. The changing guidance or modeling software has no effect on field-collected noise sample data. The raw data is what it is. The raw data collected in 2005 should have been included and used to validate the current TNM modeling.</p> <p>As CDOT noted, prior to the use of the TNM analysis software, the modeling was completed using a software program called STAMINA. But the User Guide specifically allows for the importation of older data into the TNM software. Section 2.1 of the User Guide specifically provides instructions for importing STAMINA data into the TNM program for inclusion in TNM modeling and analysis.</p> <p>It makes no sense that CDOT arbitrarily chose to ignore the 2005 raw data that was both available and useable, especially where that 2005 data provided the missing, yet required, long-term sampling data needed to validate the TNM model. This omission by CDOT is significant and renders the Revised EA noise analysis unreliable.</p>	<p>There is no provision in the CDOT Noise and Abatement Guidelines for the use of 12-year old (2003) monitoring data. The data from 2005 was collected per different guidance for a different modeling technology. Per FHWA, it cannot be used for current analysis.</p> <p>As noted earlier, the Revised EA: 1) examines a Proposed Action that differs from the 2006 Preferred Alternative, 2) includes updated traffic projection data, 3) includes more advanced survey data, 4) is subject to current applicable noise abatement guidance, and 5) uses the current traffic noise model (TNM) as opposed to the STAMINA model used in 2006, which is no longer valid or acceptable for determining noise impacts.</p> <p>For the 2006 EA, raw data were collected in 2003, which is 12 years ago. Thus they do not represent existing conditions. The data from 2005 was collected per different guidance for a different modeling technology. Per FHWA, it cannot be used for current analysis.</p> <p>Regarding the TNM technical capability to import STAMINA data, Section 2.1 of the 2006 User’s Guide states, “This will be a very useful feature to many users during the transitional period between STAMINA and TNM.” TNM has now been the required model for about a decade. The User’s Guide does not suggest using 12-year-old data.</p> <p>CDOT conducted long-term noise monitoring in October 2015. The results of this effort reaffirm the validation of the TNM model as used in the Revised EA. Please see Section 5.3 of this Decision Document, called “Updated Information on the C-470 Traffic Noise Analysis”.</p>

Table 3-4 (continued)
Written Comments Submitted via E-mail by Attorney David Steinberger
(Lewis Roca Rothgerber), on Behalf of HRNC

Comment	Response
<p>Further, from a procedural standpoint, the 470 Expansion EA is a “Revised” environmental assessment, not a wholly new EA. The wholesale elimination of the raw noise sampling data collected in 2005 is unreasonable in a 2015 EA which is supposed to be simply a revision of the 2006 EA. Because the 470 Expansion EA is a “revised” document, the omission of the 2005 data is clearly arbitrary and unreasonable.</p> <p>II. CDOT Unreasonably Refuses to Consider Data Obtained By HRNC.</p> <p>A. Why HRNC Obtained Its Own Data. HRNC had requested the 2013 noise data from CDOT prior to the release of the Revised EA. When CDOT refused to release that data, HRNC retained Illingworth & Rodkin, Inc. (I&R) to conduct a field investigation to obtain actual existing noise level data. HRNC undertook this initiative because it wanted to scientifically confirm actual noise levels in the HRNC Neighborhood as compared with modeled CDOT results. The I&R Noise Report is attached hereto as Exhibit A.</p> <p>During the week of May 12–18, 2015, I & R conducted a noise study and placed noise monitoring equipment at 2 long-term locations and 4 short-term locations at actual residences in the HRNC Neighborhoods. The noise monitoring equipment conformed to ANSI Standards. Noise measurements were taken according to FHWA and CDOT guidelines and were consistent with the noise monitoring methodology that CDOT used in the noise study included within the 2006 EA. Traffic counts and speeds were also recorded and saved for future use.</p> <p>The I&R sampling data indicates that the existing worst-hour noise levels ranged from 67 to 71 dBA at all actual residential receptors. These actual noise levels I&R recorded/calculated currently exceed the NAC for Category B residential uses of 66 dBA. This data is also consistent with the noise data results from the 2006 EA. Compared to the Revised EA noise study, the I&R recorded worst-hour noise levels range from 6 to 10 dB(A) higher than CDOT’s modeled existing noise levels. Exhibit B contains a chart comparing the data collected by CDOT in 2006, the I&R data and the 2015 modeling results.</p>	<p>For the Revised EA, FHWA required a new noise analysis. As noted earlier, the Revised EA: 1) examines a Proposed Action that differs from the 2006 Preferred Alternative, 2) includes updated traffic projection data, 3) includes more advanced survey data, 4) is subject to current applicable noise abatement guidance, and 5) uses the current traffic noise model (TNM) as opposed to the STAMINA model used in 2006.</p> <p>CDOT consulted with the Attorney General’s office, and the conclusion was made that the DRAFT noise modeling results cannot be released. CDOT responded to HRNC with this information, stating that once the data is considered final it is released through the EA.</p> <p>Traffic data is required to be collected at the time of the measurement(s) and incorporated into the model so it can be replicated for that period of traffic and used to determine if the model is accurate in forecasting similar values to what was monitored in the field. No traffic data has been provided to CDOT, nor was traffic data used to create and validate a noise model (per guidance). Without it, the raw noise measurements alone are not used to validate a model or determine impacts and mitigation recommendations.</p> <p>CDOT’s August 20, 2015 response to HRNC addressed this point: “From the information provided to CDOT in the July 13, 2015 letter and the I&R report, it is unclear as to all of the assumptions used by HRNC and their consultant to arrive at the stated sound levels...” Noise monitoring for the C-470 Revised EA complied with all applicable aspects of the CDOT Noise Analysis Guidelines including number of measurements, duration, and timing.</p>

Table 3-4 (continued)
Written Comments Submitted via E-mail by Attorney David Steinberger
(Lewis Roca Rothgerber), on Behalf of HRNC

Comment	Response
<p>In short, the revised EA noise model predicts that the Proposed Action 2035 worst-hour noise levels <i>will be less than the current worst-hour noise levels as recorded at actual residential properties. It is illogical and unreasonable for CDOT to contend that future noise levels in the HRNC Neighborhood, after the C-470 expansion and with no noise abatement, will somehow be 2 to 5 dBA less than the current actual noise levels after the C-470 Expansion is completed.</i></p> <p>B. CDOT’s Outrageous and Shocking Dismissal of HRNC’s Data.</p> <p>HRNC submitted a comment letter/memorandum to CDOT on July 13, 2015. CDOT responded on August 20, 2015 in a letter written by Jerome Estes, the CDOT Project Director for the C-470 Express Lanes Project. In response to CDOT’s August 20, 2015 letter, Mr. Carter Sales, a representative of HRNC, sent an e-mail to Mr. Estes, which e-mail was also sent to several other CDOT representatives, as well as federal and county officials.</p> <p>Mr. Sales e-mail was sent on August 21, 2015 at 8:41 am. At 9:19 am, only 38 minutes later, Mr. Jonathon Chesser of CDOT fired back a reply e-mail to Mr. Sales. Mr. Chesser’s e-mail is attached hereto as Exhibit C.</p> <p>Mr. Chesser’s e-mail perfectly demonstrates the long-standing intransigence of CDOT in reasonably addressing HRNC’s concerns. Ms. Chesser’s e-mail reflects an utterly dismissive tone towards HRNC’s comments, and certainly does not suggest an agency that actually wants to work productively and collaboratively with concerned citizens. This aggressive dismissal of a stakeholder’s concerns certainly violates the spirit, if not the requirements, of NEPA.</p> <p>To Mr. Chesser’s specific points:</p> <p>1. <i>HRNC’s sampling data should be ignored because HRNC did not “develop and calibrate their own traffic model.”</i> Performing a valid noise study is CDOT’s job, not HRNC’s job or obligation. Instead of using HRNC’s data constructively to ensure that their model, and thus their conclusions, were valid, CDOT simply ignored the data because HRNC did not perform the analysis for CDOT. This is an absolutely arbitrary, capricious and unreasonable position for CDOT to have taken. It should have been a relatively simple, and likely inexpensive, matter for CDOT to simply incorporate the HRNC data into the TNM software to validate the C-470 noise model.</p>	<p>Point-in-time field measurements are not used to determine noise levels as it relates to impact predictions, nor to determine whether a neighborhood will be recommended for mitigation, only to develop and validate the model in accordance with FHWA and CDOT guidelines. Additionally, please see Appendix C, Long-term Traffic Noise Monitoring Technical Memorandum for information about factors affecting current measurements and future predictions.</p> <p>Mr. Sales was inadvertently copied on an internal e-mail. In no way was this intended to be a “fire back” communication. CDOT management has stated to Mr. Sales (via a phone call on the same day) that CDOT supports the technical information in this e-mail. Additionally, CDOT’s e-mail represents an immediate attempt to analyze and discuss the information provided by Mr. Sales with CDOT management. In no way does this demonstrate an “aggressive dismissal” of anything submitted by Mr. Sales, rather it demonstrates timely CDOT discussion of Mr. Sales’ e-mail concerns.</p> <p>In fact, CDOT’s e-mail did not say that the data “should be ignored” (Mr. Steinberger’s words). Instead, it stated that the “...existing data and future impact results are not per guidance and therefore not applicable to this project.” CDOT had been presented with HRNC’s data and responded to HRNC’s concerns prior to this e-mail. HRNC’s data was found to be incomplete to use in validating a noise model as no traffic data was associated with the measurements. At no time was HRNC asked to prepare a noise model. CDOT noted that the raw measurement data was not useful in validating a noise model as presented by HRNC, per guidance.</p>

Table 3-4 (continued)
Written Comments Submitted via E-mail by Attorney David Steinberger
(Lewis Roca Rothgerber), on Behalf of HRNC

Comment	Response
<p>2. Mr. Chesser asserts that HRNC's consultant has inflated their noise calculations by stating that the worst hour noise reading was 71dBA, when no raw data measured exceeded 69 dBA. It is HRNC's understanding that it is common industry practice to correlate short term and long term data. The maximum noise hour was determined using this standard industry practice. Undertaking that correlation resulted in I&R obtaining the measured baseline level of 71 dBA.</p> <p>3. Mr. Chesser states: "Because HRNC did not develop a calibrated noise model using traffic data associated with the field measurements, their existing data and future impact results are not per guidance and therefore not applicable to this project." This is simply another outrageous basis for which to ignore HRNC's data. Again, citizens are not required to perform CDOT's duties. It is not a citizens' job to perform their own noise study in order to contest CDOT's noise study. Rather, it's CDOT's obligation to get its own study right, and that would reasonably require CDOT to use all available data for their analysis.</p> <p>The remainder of Mr. Chesser's e-mail essentially reiterates the same points, and contains the same dismissiveness used throughout the e-mail response.</p> <p>III. Conclusions. The noise study requirements necessary to support a CDOT project are relatively straight forward and require CDOT to comply with the Noise Guidance, which in turn requires compliance with the User Guide. As discussed herein, CDOT failed to comply with either the Noise Guidance or the User Guide. The results of those failures is that all CDOT noise analysis and conclusions stemming from and relying upon the use of the noise model developed for the C-470 Expansion Project are flawed and should be considered invalid. Because the model used for this project and presented in the Revised EA is invalid, the decision to eliminate noise abatement measurements in the HRNC Neighborhood is unsupported and thus invalid.</p>	<p>Adding 2 dB(A) to measured noise levels is not standard practice for FHWA noise analyses in Colorado. The comment refers to "common industry practice" and "standard industry practice" of modifying measured noise readings into calculated noise values. CDOT and FHWA do not recognize this data modification as part of the established regulation and guidance for conducting noise analysis on federal-aid transportation projects in Colorado.</p> <p>Again, as CDOT was not attempting to communicate with Mr. Sales by this e-mail, CDOT was not suggesting that HRNC had any requirement to undertake a noise study meeting CDOT's requirements. Guidance requires traffic data to be collected and along with field measurements, incorporated into a noise model to validate the model.</p> <p>The C-470 noise analysis was conducted in accordance with FHWA and CDOT guidance.</p> <p>In response to public comments received, CDOT subsequently conducted long-term noise monitoring in October 2015. Please see Section 5.3 of this Decision Document, called "Updated Information on the C-470 Traffic Noise Analysis".</p>

Table 3-4 (continued)
Written Comments Submitted via E-mail by Attorney David Steinberger
(Lewis Roca Rothgerber), on Behalf of HRNC

Comment	Response
<p>Finally, as also documented herein, an August 21, 2015 e-mail from CDOT to an HRNC representative clearly demonstrate a predisposition by CDOT against the information presented by HRNC. Instead of reasonably considering and using the information presented by HRNC, which included additional field measured noise data, CDOT clearly viewed the HRNC information as something to put down – to swat away. That certainly runs counter to the spirit of public participation required in NEPA.</p> <p>For all of the foregoing reasons, HRNC asserts that the Agencies cannot issue a final decision document on the Revised EA because one of the key components of the Revised EA, the noise analysis, is incomplete, unreliable and flawed. HRNC further asserts that the C-470 Expansion Project should be redesigned to include the noise abatement measures which were previously included within the initial iteration of the project, as documented in the 2006 EA. Alternatively, at a minimum CDOT must undertake a new noise study taking into account the information identified herein to eliminate the mistakes made in the current noise study. Any new noise study should either include the use of the 2006 data and the HRNC data to validate the TNM model, or alternatively, include all new long- and short-term monitoring that meets the requirements of CDOT guidance documents.</p>	<p>As noted earlier above, Mr. Sales was inadvertently copied on an internal e-mail. CDOT’s e-mail represents an immediate attempt to analyze and discuss the information provided by Mr. Sales with CDOT management. HRNC’s report was analyzed by our project team, and was found to provide collected noise measurements, but no associated traffic data. Without the associated traffic data, the noise measurements are not usable for modeling purposes.</p> <p>CDOT collected and utilized the necessary amount of data to successfully validate the model per guidance.</p>

**Table 3-5
Comment Submittals Ordered Alphabetically by Last Name**

Name and Comments	Response
<p>1 Allond, Aubray: We live in Ken Caryl off the Platte Canyon exit. I drive to E-470 and Smokey Hill for work. This can't start fast enough. Give me a shovel for dirt and an air gun for prairie dogs. Let's get this thing going!</p>	<p>Support noted.</p>
<p>2 Anderson, Harold: I attended the public meeting last night on the proposal for C-470. Obviously many Highlands Ranch residents are wanting a wall or berm to shield them from noise. Although they had many demands, I didn't hear them offer any money to help with the cost. Please consider the fact that there were no complaints coming from Lone Tree, Centennial, Littleton and others near 470. We realize that expansion is really needed and will do what we can to support this plan. Harold Anderson, Lone Tree City Council.</p>	<p>Support noted.</p>
<p>3 Antico, Bill, #1 of 2: I am the president of Gleneagles Homeowners Association. I represent over 500 people, 365 homes. We were told in 2006 by CDOT, who came to our clubhouse and told us that we would get walls to abate the noise.</p> <p>They came to us. We didn't go to them. This time they didn't come to us at all.</p> <p>In 2006, the noise was loud enough that they said we needed the berms. What changed? Just like Carter [Sales] said, what changed was their rules. So I'd like to play on a team where you can change the rules to suit yourself anytime. And that's wrong. You know, we want to go by the rules that are supposed to be in place, not ones that are changed.</p> <p>In 2013 -- 2014, for 10 minutes -- and before -- right before the 4th of July, how can that not be low? Choose what you want to choose to satisfy yourself. That's -- and the money we're talking about for berms or for walls in that section, they're talking \$360 million, and we're asking for 7- or \$8 million for walls, at the most. I mean, it doesn't fit.</p>	<p>The 2006 EA provided recommendations that were identified as being subject to further change pending final design. A decision document was not prepared or signed for the 2006 Preferred Alternative. The 2015 Revised EA supersedes the 2006 EA.</p> <p>Notices for CDOT's February 2015 public meetings to present findings of the C-470 noise analysis were mailed to 71 residences in Gleneagles Village that are closest to C-470, as follows: 24 on Canongate, 28 on Aberdeen, and 19 on Caleridge. No notices were mailed to the more distant homes on your street, Birmingham, because no homes on your street were predicted to be impacted.</p> <p>FHWA promulgated a Final Rule on July 13, 2010 to amend its noise regulations at 23 CFR Part 772. New FHWA noise guidance became effective in 2011, replacing prior FHWA guidance from 1995. This in turn required CDOT to update its Noise Analysis and Abatement Guidelines. The current applicable CDOT guidelines are dated January 2015.</p> <p>According to CDOT guidance, noise measurements may be taken <u>at any time when traffic is free flowing at or near posted speed limits</u>. In accordance with the guidelines, both the noise measurements and associated traffic data collected by CDOT on July 2nd and 3rd 2013) are acceptable and were used to successfully validate the noise model within established requirements of 3 dB(A).</p>

Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name

Name and Comments	Response
<p>3 Antico, Bill #1 of 2 (continued) And the other comment I'd like to make, they say more traffic won't raise noise levels? I mean, come on. What does it take? Of course, it will raise the noise levels.</p> <p>We don't agree with you, CDOT. I don't want to see CDOT turning into the EPA and release a bunch of chemicals or like the VA and try to build something and can't finance it. Come on, CDOT, become a responsible organization.</p> <p>In your mission statement, it says, Integrity. We earn Colorado's trust. You're not doing it now. We are honest and responsible in that we do all and hold ourselves to the highest moral and ethical standards. That's what we're asking you to do. Build the walls. That's all I have to say.</p>	<p>The Revised EA indicates that the Proposed Action would increase noise compared with the No-Action Alternative. See EA page 4-21, or Appendix D, or the Traffic Noise Technical Report (page 87).</p> <p>The C-470 Revised EA was prepared in accordance with Federal and CDOT Noise Abatement Guidelines, which ensure consistent evaluation for all projects.</p>
<p>4 Antico, Bill #2 of 2 I'm making a formal request to CDOT that the minutes from tonight's meeting [August 26, 2015 Public Hearing] go directly to the governor's office and I would like to be notified that that is being done. That's it.</p>	<p>The transcript of the C-470 Public Hearing was received by the Governor's Appointee for Transportation, CDOT's Executive Director, and he briefed the governor's office. Per the response to Larry Graber comment #14 in Table 3-3, we understand that there has also been a meeting between HRNC and the governor's office.</p>
<p>5 Arkell, Brian: I am opposed to the entire project. I do not want to see it built.</p> <p>The project will cost taxpayers too much money. The cost estimates are too low. Underestimated.</p> <p>This will tie up traffic and cause congestion for years. It will only bring more growth and environmental degradation to the south Denver area. It hurts people that live here and only profits the developers. It will bring more population growth, congestion and crime.</p>	<p>Comment noted.</p> <p>Please see Chapter 1, Purpose and Need, in the Revised EA. It explains that continued growth is expected and that traffic congestion will worsen substantially with the No-Action Alternative, according to the Denver Regional Council of Governments.</p>
<p>6 Bartscherer, Holly: I was unable to attend the meeting regarding the noise barriers on C-470 between University and Quebec. I live in Glen Eagles Village well away from the highway and hear the street noise all the time. Many times it gets quite loud and is very distracting when sitting on my deck. It is imperative for our property values that these barriers go up especially now since the highway is going to be widened.</p> <p>All other major highways have these walls. Thank you.</p>	<p>CDOT is required to apply established federal regulations and state guidance for traffic noise impacts and mitigation to all federally funded transportation projects in a consistent manner throughout the state. If a receptor is determined to be impacted by traffic noise, a reasonable and feasible analysis for mitigation is completed that considers constructability and noise reduction benefit, in addition to location, cost and other criteria. Property values are not a factor of this analysis. The decision to recommend mitigation for federal projects is based on the ability to construct a barrier that will have a noise reduction benefit that meets federal standards.</p>

**Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name**

Name and Comments	Response
<p>7 Belak, Colleen: I attended the public hearing on August 26, 2015 regarding the C470 project. I am very concerned that CDOT does not appear to be following its own rules and regulations and that it appears to be ignoring input from the affected community. From what I heard at the hearing, CDOT did inadequate noise testing and justifies its decision not to put in sound walls on the inadequate testing. It defies logic that doubling the size of a highway will result in less noise than was evident in 2006 when the last testing was done and, therefore, walls that would have been needed based on the 2006 analysis are no longer needed.</p>	<p>CDOT has reviewed all materials submitted to it by the Highlands Ranch Neighborhood Coalition. Please see separate responses to Carter Sales, Larry Graber, and David Steinberger in Tables 3-2, 3-3 and 3-4.</p>
<p>8 Bingham, Paul #1 of 3: I agree with all the previous speakers [15 prior speakers at the Public Hearing, concerned with traffic noise]. I would simply request that CDOT do the right thing and listen to you folks and your noise study that you spent a bunch of money to get. I don't understand why they're being stonewalling about it. That's ridiculous. My basic request is -- I live up in Littleton. I'm 2 miles away from -- north of C-470. I can hear C-470. I really sympathize with you people that are closer than that. My request is simple for CDOT, to listen to you guys, go through your noise statement -- I mean your noise study and put back the noise abatement things that should be in there, what was in there in 2006, and even more if that's required, please.</p>	<p>CDOT has reviewed all materials submitted to it by the Highlands Ranch Neighborhood Coalition. Please see separate responses to Carter Sales, Larry Graber, and David Steinberger in Tables 3-2, 3-3 and 3-4.</p>
<p>9 Bingham, Paul #2 of 3: I live 2 miles N of C-470. I can hear the noise from C-470 now. Please include noise abatement in your plans!</p>	<p>The traffic noise analysis for the C-470 Revised EA was prepared in accordance with applicable CDOT and FHWA guidance. The CDOT guidance indicates that noise will be evaluated within 500 feet of the project. A residence two miles away from C-470 would be outside of the study area.</p>
<p>10 Bingham, Paul #3 of 3: Please pay attention to the HLR Neighborhood Coalition and review their consultant's noise test report. They have good points and need some noise mitigation on their section of C-470.</p>	<p>CDOT has reviewed all materials submitted to it by the Highlands Ranch Neighborhood Coalition. Please see separate responses to Carter Sales, Larry Graber, and attorney David Steinberger in Tables 3-2, 3-3 and 3-4.</p>
<p>11 Boraz, Robert #1 of 2: Like many people in this room tonight I am not a native of Colorado. My family and I moved here almost 20 years ago basically due to the quality of life that was offered by Colorado, metropolitan Denver, and specifically Highlands Ranch. Until this issue has come up I have had no second thoughts and no remorse about my move to Colorado and to Highlands Ranch. [Comment continues on next page]</p>	

**Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name**

Name and Comments	Response
<p>11 Boraz, Robert #1 of 2: (continued) I am very uncomfortable with the quality of life that any of us along the C-470 corridor will be able to enjoy due to the changes that have taken place in the recommendations for the construction of the expansion of C-470. No one that I have talked to is disagreeing with the need for the expansion, the plan in place, for the road itself. The traffic and growth of the area search warrant the issues.</p> <p>The concern is that in 2006 an environmental study done by CDOT clearly indicated that the increase in noise level created by the expansion of the road, not to mention the existing noise level in 2006 completely warranted a sound abatement program with either berms or sound barrier walls for the entire corridor that's under discussion. Amazingly recently despite increased growth, increased traffic, CDOT chose on their own to reassess the situation. There are many problems with the reassessment.</p> <p>Number 1, the original study done in 2006 was done by CDOT regulation. It was done for a week in a normal week time frame for holiday -- exempted holidays and so forth. Ironically, the most current one was done for two days over the two days before July 4th which clearly are reduced traffic times, not to mention the fact that we have been advised by our representative that the CDOT regulation requires the study to be done at least for three days and ideally for one week just as the other was done.</p> <p>They are also saying that many of the areas that they have eliminated sound barriers for meet or exceed the quality sound noise level for noise abatement at this time.</p>	<p>Per current and established federal regulations and state guidance, a new traffic noise analysis was required for the 2015 Revised EA. As a result, the noise analysis conducted for the 2006 EA is not applicable for assessing traffic noise impacts and mitigation recommendations for the current C-470 Express Lanes project. A new noise analysis was required because the 2015 Revised EA: (1) examines a Proposed Action that differs from the 2006 Preferred Alternative, (2) includes updated traffic projection data, (3) includes more advanced survey data, (4) is subject to current applicable noise abatement guidance, and (5) uses the current traffic noise model (TNM) as opposed to the STAMINA model used in 2006. A comparison of the recommendations of the two studies would provide no applicable analysis for the recommendations for the 2015 Revised EA.</p> <p>CDOT Guidance states that noise measurements may be taken at any time when traffic is <u>free flowing at or near posted speed limits</u>. In accordance with the guidelines, both the noise measurements and associated traffic data collected by CDOT on July 2nd and 3rd 2013) are acceptable and were used to successfully validate the noise model within established requirements.</p> <p>Regarding the topic of long-term measurements, please see Section 5.3 of this Decision Document, called "Updated Information on the C-470 Traffic Noise Analysis".</p> <p>No noise walls have been 'eliminated', as the recommendations from the 2006 EA referenced in the comment are not applicable to the current project (per federal regulations and state guidance). The 2006 EA provided recommendations that were identified as being subject to further change pending final design. It should be noted that the 2015 Revised EA recommends a total of approximately 17,200 linear feet of noise walls in the corridor, and that these 2015 Revised EA noise wall recommendations are also required to be confirmed and validated through final design of the project.</p> <p>For some areas impacted by traffic noise of 66 dB(A) or more, mitigation was determined to be not reasonable and feasible, per the established CDOT guidance.</p>

Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name

Name and Comments	Response
<p>11 Boraz, Robert #1 of 2: (continued)</p> <p>That doesn't even take into consideration the increases that are anticipated by the increase of double the traffic minimum and increased resident traffic and growth over the next time frame from 2015 to 2035.</p> <p>I would also point out several other issues. So CDOT has not even followed through with their own recommendations. Our neighborhood association has tried on repeated attempts to meet with the CDOT people to discuss the differences and the issues. We have even employed our own noise abatement evaluation by certified noise experts that reveal that the CDOT findings in 2015 are not reflective of the current status of the situation.</p> <p>I would also ask the CDOT people to answer questions to the effect of why is the recently completed expansion of US 36 from Denver to Boulder which only has three total lanes in each direction instead of four total lanes in each direction for C-470, why do they have sound barriers all along the way?</p> <p>I would also ask why does I-25 which has four lanes in each direction have sound barriers all the way, but we don't need those sound barriers.</p> <p>Would also mention that my family had the opportunity to take the light rail from the Southmoor station about two weeks ago on a Saturday evening around 6:00 o'clock, and standing on the platform the noise was literally deafening. Not only could we not speak with each other, but it really hurt our ears and so forth.</p> <p>Now, again, we are not asking to not build the expansion of the road. We are only asking for the appropriate noise abatement process to be intervened and taken care of so that we can enjoy the quality of life we have come to enjoy and learn and love in Colorado.</p> <p>I would also point out that there seems to be other projects that CDOT is real intense upon. They seem to have more concern for the prairie dogs in the area according to the signage that we've been just looking at and the quality of life and health that they have than they are for their own citizens.</p>	<p>Traffic is not expected to double (100 percent increase) anywhere on C-470 by 2035. Near University Boulevard, for example, it is expected to increase 42 percent from 97,000 vehicles per day in 2013 to 138,000 vehicles per day in 2035 with the Proposed Action.</p> <p>Please see separate responses to Highlands Ranch Neighborhood Coalition representatives Carter Sales, Larry Graber and attorney David Steinberger in Tables 3-2, 3-3 and 3-4. CDOT has been open to, and in fact encouraged, face-to-face with meetings with the HRNC to discuss the concerns. HRNC has declined to meet with CDOT, in writing.</p> <p>It is not correct that the entire US 36 corridor between Denver and Boulder has noise walls. See next response. Noise abatement recommendations are made on a project-by-project basis in accordance with Federal and CDOT Noise Analysis and Abatement Guidelines.</p> <p>It is not correct that the entire I-25 corridor, has noise walls. One source of confusion may come from the fact that some areas have retaining walls, which in some places may look like noise walls, but are not noise walls.</p> <p>The RTD Southmoor light rail station is located on Monaco Parkway near I-25, not affected by the C-470 Proposed Action. The noise level you describe (interfering with outdoor conversation) would almost certainly exceed CDOT's Noise Abatement Criterion of 66 A-weighted decibels.</p> <p>Comment noted.</p> <p>Project analysis under the National Environmental Policy Act considers social, economic and environmental impacts. Traffic noise is one of these topics. Wildlife impacts is another.</p>

**Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name**

Name and Comments	Response
<p>11 Boraz, Robert #1 of 2: (continued) Another concern that is clear to me is that CDOT appears to be in a position where they feel that they are in control and we, the people, are serving CDOT when, in fact, our government is based on government by the people, for the people, and of the people, and CDOT should be working for us, not we working for CDOT.</p> <p>Our people have been stonewalled in every attempt to have a rational discussion.</p> <p>A gentleman this evening explained to me that I had never heard this before, but both the noise mitigation along I-25 and the noise mitigation that took place along US 36 were only accomplished through litigation and that apparently that that's the only thing that CDOT will listen to. It is far more beneficial for all parties to resolve their issues in conversation and negotiation than to force everyone to go to litigation. CDOT is us. We are CDOT. We should be able to resolve this issue in an amicable situation and avoid all the other avenues that may be necessary to get this issue resolved. It is clearly a health issue, a quality of life issue, and the people, we the people, are clearly speaking by the turnout this evening.</p>	<p>CDOT has respectfully engaged HRNC on numerous occasions, and consistently responded to HRNC's concerns and input as demonstrated in the May and August correspondence between CDOT and HRNC.</p> <p>The information you were provided regarding litigation on US36 and I-25 was incorrect. No litigation occurred on either corridor regarding traffic noise.</p>
<p>12 Boraz, Robert #2 of 2: My name is Robert Boraz, 51 Falcon Hills Drive in Highlands Ranch. I made some comments to the court reporter previously, so I'll be very brief. I don't want to be redundant.</p> <p>I asked one of the CDOT representatives today why do we have sound barriers all the way on the highway U.S. 36 from Denver to Boulder and we are not getting sound barriers? Why do we have sound barriers all the way along I-25 with new construction? There is three lanes in each direction from Denver to Boulder, four lanes just like we're going to have in each direction on C-470. They have sound-barrier mitigation walls. Why do we not? He would not answer the question.</p> <p>One of the other people in the room indicated to me that the reason is it became an issue of litigation; that they will not listen until litigation takes place.</p> <p>Wouldn't it be a far better use of taxpayers' time, efforts, and money to put the sound barrier and sound mitigation in than to engage each of us in litigation? That makes no sense at all.</p> <p>I'll close by saying that it's always been my understanding that our government was a government of the people, for the people, and by the people. And I think the people tonight have spoken loud and clear.</p>	<p>Noise abatement recommendations are made on a project-by-project basis in accordance with Federal and CDOT Noise Analysis and Abatement Guidelines. Please see earlier response (Boraz #1 of 2) to the same I-25 comment here.</p> <p>The information you were provided regarding litigation on US36 and I-25 was incorrect. No litigation occurred on either corridor regarding traffic noise.</p>

Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name

Name and Comments	Response
<p>13 Borthwick, Carol: I live just north of C-470 and west of Santa Fe. The noise level from C-470 has become increasingly loud and intrusive over the past 27 years. There is the constant car/light truck noise, combined with the noise from large trucks downshifting and using their brakes on the hill at Santa Fe. It is no longer possible to relax and enjoy the "quiet" of my backyard, as there is no quiet. It is continuously under assault from the traffic noise from C-470. When C-470 was built, there should have been noise mitigation. With densely populated areas in Littleton and Arapahoe County to the north and Highlands Ranch to the south, CDOT knew when it originally proposed C-470 that it would adversely impact residents. The addition of additional lanes will only increase the noise level beyond its current level. Drivers might be inconvenienced for 10 minutes on the existing highway, but homeowners live here, and cannot escape the ever-present noise.</p> <p>Not only does adding more lanes increase the noise level, but it also increases pollution and diminishes air quality. CDOT's first priority should be effective noise mitigation for the existing highway.</p> <p>Then it [CDOT] should work with RTD to add light rail along C-470. Take the money saved by not adding more lanes, and use it to subsidize light rail rates and encourage increased utilization. Thank you.</p>	<p>A noise barrier exists at the C-470/Santa Fe Drive interchange for the Wolhurst neighborhood. This barrier will be replaced (relocated slightly to the north) to accommodate the Proposed Action. CDOT and FHWA noise guidance will be followed in the replacement of this wall.</p> <p>An additional noise barrier is recommended north of C-470 and just east of the same intersection for the new Littleton Commons development.</p> <p>The Revised EA includes an air quality analysis. Continuing the trend of several decades, air quality is expected to improve for most pollutants due to improved vehicles and fuels, but not for particulate matter (re-entrained dust). Please see pages 4-25 through 4-29 of the Revised EA. Additional information is found in the Air Quality Technical Report.</p> <p>The Proposed Action accommodates RTD's plans to extend light rail southward across C-470 then eastward to a planned new station at Lucent Boulevard.</p>
<p>14 Brower, Don: I am a homeowner in Highlands Ranch, a small businessman, a veteran. I never thought I would see anything that would compete with the VA center. I think we did. That is the management of this project. I follow guidelines from state, local, and federal in running my business. I expect CDOT to follow their guidelines. That's all I have to say.</p>	<p>CDOT thanks you for your service.</p> <p>CDOT's noise analysis for the Revised EA was conducted in accordance with the January 2015 CDOT Noise Analysis and Abatement Guidelines</p>
<p>15 Cargile, Stephen: I believe that since the Federal government offered to build and pay for an eight lane I-470 and Gov. Lamm used the money for the 16th St. mall instead, Dick Lamm should come drive C-470 every morning and afternoon for the rest of his life.</p> <p>Absolutely NO on the toll lanes.</p>	<p>Comment noted.</p> <p>Chapter 2, Alternatives Considered, in the Revised EA, indicates that non-tolled alternatives were considered for this project, and why they were not selected.</p>

Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name

Name and Comments	Response
<p>16 Chadbourne, Pam: My name is Pam Chadbourne and I live in Littleton, along Santa Fe. And I wanted to talk about noise further away from the freeway and commend mentioning the bike trail and also the gas tax as ways of looking at impact on other affected members of the community and ways to pay for it. I'm hearing you ask for berms and roads. Please consider ways to pay for it. I think these engineers are up against a wall – a rock and a hard place. They only have so much money and they have requirements, and they're only mitigating noise very, very close to the freeway.</p> <p>I lived in LA. I worked in LA, and I know for a fact that you can hear the freeway a quarter mile away, a half mile away, depending on where the wind is blowing from. So where is our requirement on CDOT to mitigate that noise?</p> <p>What will a wall on one side of the highway do to reflected noise on the other side?</p> <p>I want stronger requirements for noise mitigation for everyone, for everyone along this corridor. I live a half block from Santa Fe. It's very noisy.</p> <p>So let's raise the gas tax. I want to hear you, Douglas County people, talk about paying for this. And I'm willing to pay more taxes. Let's pay for what we want.</p> <p>This is analogous to smoke. 30 years ago, everybody smoked everywhere, and we realized that secondhand smoke is a violation of our space and it's bad for our health. Noise and light are the same. And as density increases -- and it will continue to increase -- we need to pay attention to these kinds of nuisances that travel and affect our lives, our sleep.</p> <p>So please think about people who live further away. Let's get some more stringent requirements on CDOT and be willing to pay for it.</p>	<p>The C-470 project includes all recommended noise mitigation that was found to be reasonable and feasible in accordance with current CDOT and FHWA guidelines.</p> <p>The C-470 Revised EA was prepared in accordance with applicable CDOT and FHWA Traffic Noise Analysis and Abatement guidance. The CDOT guidance indicates that noise will be evaluated within 500 feet of the project.</p> <p>Section 4.2.1, Reflected Noise, in the CDOT noise guidance indicates that, "It is possible that reflective noise from a noise barrier could increase noise overall levels by as much as 3 dBA, but in practice will normally change noise levels by 1 dBA or less." Reflective noise was considered in the C-470 Revised EA.</p> <p>Comment noted. Public policy regarding gasoline tax is outside the scope of the project-specific C-470 Revised EA.</p> <p>The C-470 Revised EA was prepared in accordance with applicable CDOT and FHWA Traffic Noise Analysis and Abatement guidance. The CDOT guidance indicates that noise will be evaluated within 500 feet of the project.</p>

Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name

Name and Comments	Response
<p>17 Correll, Robert: As an 18 year resident of Willow Creek III, my wife and I are deeply concerned about the potential additional noise created by the expansion of C-470. The noise in our back yard can already be so loud it sounds like an airport runway. Please, please do whatever can be done to mitigate the current noise as well as the noise that is inevitable because of the highway expansion. With the additional four lanes on C-470, there will then be 18 lanes of traffic from the south end of Willow Creek on County Line to Park Meadows Drive, a distance of just one-third of a mile.</p>	<p>Receptors were identified for outdoor use areas of residential, commercial and recreation properties within 500 feet of C-470 as discussed on page 7 of the Traffic Noise Technical Report. As mentioned in 2011 FHWA Highway Traffic Noise: Analysis and Abatement Guidance on page 11 "Highway traffic noise is not usually a serious problem for people who live more than 500 feet from heavily traveled freeways." The Willow Creek neighborhood is outside this study zone. The Willow Creek neighborhood is more than 600 feet north of C-470 and adjacent to County Line Road, which would be the primary traffic noise generator for this community. There are also substantial commercial properties between C-470 and the neighborhood.</p>
<p>18 Cousins, Barb: Past projects always seem to go on endlessly and run out of funds, how is this one different?</p> <p>Why replace bridges?</p> <p>Why put up noise barriers and just use more concrete?</p> <p>What are grade separations on multi-use trails?</p> <p>There seems to be constant traffic jams which are CAUSED by construction and in the five years we have lived here, none of it is eliminated by your projects.</p> <p>Additionally, using 511 is basically a joke as they don't tell you when they make the announcements, they lag in time with announcements and incidents and time frames have never been correct on the problems on I-70 in the mountains. They are oftentimes wrong by hours and not just minutes. The last project I read about and the end results was the changes on I-70 from Denver to the resorts. That is not even what CO DOT then did.</p> <p>[comment continues on next page]</p>	<p>The use of design-build project delivery is one of the ways CDOT will manage project cost and schedule for the C-470 Proposed Action.</p> <p>Very few bridges will be replaced; most will be widened. A notable exception is the pair of bridges crossing the South Platte River. Replacing these old bridges will improve roadway alignment and address deficiencies of the major trail that crosses under them.</p> <p>Federal and state guideline call for consideration of noise mitigation with major roadway construction projects. Various types of noise barriers, and different materials, will be analyzed further in final design.</p> <p>A grade separation is a bridge or underpass allowing bicycles and pedestrians to cross over or under a roadway, not having to cross through vehicle traffic. The C-470 Proposed Action includes grade separations to take the trail under two arterial cross-streets, Colorado Boulevard and Quebec Street.</p> <p>CDOT will maintain two travel lanes open to traffic in each direction throughout the construction. Nevertheless, some level of construction-related congestion is anticipated and will be further analyzed in final design.</p> <p>This concern has been passed along to the appropriate CDOT office.</p>

Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name

Name and Comments	Response
<p>18 Cousins, Barb: (continued) How about stopping all construction, opening up the highways and letting traffic flow? That would be the best way to stop traffic congestion. I live in Highlands Ranch and as a tax payer and consumer, I have no confidence that this project will go well. I completely oppose it.</p>	<p>Comment noted as support for the No-Action Alternative.</p>
<p>19 Daniels, Byron (Col., ret.): I am Byron W. Daniels. I'm a retired Army colonel and a retired civil servant as well as a resident of Gleneagles Village in Highlands Ranch. Service to this country led me to living around the world. As I neared retirement, I studied for five years where around the world I should retire.</p> <p>After I decided to retire in Colorado, I carefully looked at properties in Highlands Ranch for two years. Then I selected Gleneagles Village with C-470 in my view plane. I settled here and started making my house my home in early 2011. With that house, I felt safe in CDOT's promise in 2006 to our HOA that when money became available, sound barriers to protect us from the increasing traffic noise would be installed.</p> <p>Believing my last state senator's words to me ("You have moved to God's country"), I started investing in my community. I sleep with the homeless in a program of my Highlands Ranch church. I became a political party precinct committee man almost four years ago, and I've spent tens of thousands of dollars locally in upgrading my house to become my home.</p> <p>Now, however, as I age, I'm awakened at 5:45 a.m. with the current traffic noise coming through my double-pane windows that I now must keep closed.</p> <p>When I had learned this spring that CDOT was going to widen C-470 to eight lanes and not install the noise mitigation that was needed in 2006, I became involved. I started informing my Highlands Ranch neighbors via handbills, voice, and e-mail. I volunteered to become the Highlands Ranch Neighborhood Coalition treasurer and one of its representatives at meetings. I've written Highlands Ranch Neighborhood Coalition checks for our sound study and now one for our attorney. Now I've issued press releases.</p> <p>This is a terrible waste of time, talent, and treasure of the Highlands Ranch residents to protect themselves from agencies of their own government. Please end this foolishness and restore the noise mitigation as you build an eight lane highway along our neighborhood. Thank you.</p>	<p>Comment noted. CDOT thanks you for your service to our country.</p> <p>The 2006 EA provided recommendations that were identified as being subject to further change pending final design. A decision document was not prepared or signed for the 2006 Preferred Alternative. The 2015 Revised EA supersedes the 2006 EA.</p> <p>Please see response immediately above.</p>

Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name

Name and Comments	Response
<p>20 Danko, James: Listening to the traffic noise from C 470 at Broadway with the current lane configuration already is very unpleasant, with the additional lanes to be added this situation will only get worse. Please include a sound wall on the south side of C 470 at Broadway to help make the noise levels more bearable. Thank you.</p>	<p>Noise abatement recommendations are made in accordance with Federal and CDOT Noise Analysis and Abatement Guidelines. Results of the analysis for homes east of Broadway are presented on Revised EA page 4-21, and also in Appendix D, as well as the Traffic Noise Technical Report (page 87). Based on the analysis, no abatement was recommended for the Highlands Ranch Dad Clark area (western portion).</p>
<p>21 Davis, Thomas: We are attempting to sell a gorgeous home (inside and out) in between University and S Colorado Blvd south of C-470. The people that have seen it give use rave reviews on the home. However, they say the noise keeps them from considering it further. The noise level makes no sense and requires a noise barrier. Please use common sense on the decision of noise mitigation and construct a berm or noise wall. The data support such a decision. I am going to hire a private attorney to engage in the fight.</p>	<p>The noise analysis in the C-470 Revised EA has been prepared in accordance with the current applicable federal and state guidelines.</p>
<p>22 Dawson, Patrick: I repeat something that seems to be continually ignored by all the agencies involved and that is definitely required before the start of the project and long after: joint primary and secondary road traffic signal coordination! Before, during, and after this project, traffic flows on the primary and secondary roads needs to be addressed.</p> <p>During construction the volume and impacts to local communities will be increased as people cutting through take local roads to avoid construction. County Line Road will see the biggest impact and this flow will filter into the other primary and secondary routes. Dry Creek and Lincoln will see increase. Intersections off C-470 will see impacts as people hit these alternate routes.</p> <p>It should be noted that current heavy C-470 volume and that of other highways is because local municipalities and DRCOG do not cooperate in implementing a metro-wide synchronize traffic signalization, speed limits, and local street triggers that tie into a synchronized timing system. Many commuters, myself included, take the highway to avoid the "piss poor" signalization on local streets that means an even longer commute. The combined agencies that sit on this project have the ability, authority, and mandate to fix the local traffic that has caused the C-470 mess to begin with.</p> <p>The irony is monies have been spent in Douglas County to supposedly synchronize lights and yet the illustrious traffic engineers can't even synchronize lights 300 yards in "downtown HR" or as it should be from HR Parkway/ Colo Blvd from Santa Fe to County Line Road and for the signals from C-470/ University to I-25/ Lincoln.</p>	<p>Section 5.0, Transportation Impacts and Improvements, in the Traffic Technical Report, identifies intersections near C-470 that would experience increased congestion with the Proposed Action, and identifies conceptual improvements (including modified signalization) that could improve traffic flow in those locations.</p> <p>Page 3-29 of the Revised EA reports that CDOT will maintain two through lanes open in each direction during construction, and list several other strategies for minimizing construction-related congestion of C-470.</p> <p>The following information is from the DRCOG website*: "Since 1989, DRCOG has been working to reduce traffic congestion and improve air quality through its Traffic Operations Program. The program involves DRCOG, CDOT and local governments to coordinate traffic signals on major roadways in the region. One of the first MPOs to conduct this type of program, DRCOG remains the leader among the very few MPOs throughout the country involved in traffic signalization."</p> <p>*https://drcog.org/programs/transportation-planning/traffic-operations-program</p> <p>The same website continues... (next page)</p>

Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name

Name and Comments	Response
<p>22 Dawson, Patrick: (continued) Basic physics of MPH and modern computers should make it a no brainer that every municipality could synchronize traffic signals, avoid the created congestion, wasted fuel, increased road rage, increased commute times, running of red lights because lights aren't synchronized, etc. Such a simple yet important concept.</p> <p>With this construction project these "ailments" are going to increase ten-fold for the 3-5 years of the project and neighborhoods will be impacted severely. Work together to solve this issue and then roll it out metro-wide. It's not rocket science!</p>	<p>In 2013, the DRCOG program worked with local governments and CDOT to retime 328 signals on travel corridors in the metro area, reducing daily travel time for motorists in those corridors by more than 9,000 hours and reducing fuel consumption by 4,700 gallons per day. In addition, pollutant emissions were reduced by 1,128 pounds per day, while greenhouse gas emissions are reduced by 97,932 pounds per day.</p> <p>Near-term construction of the Interim construction project is expected to take two years or less. Completion of the Proposed Action at a future date may comparable time, but would focus on the western half of the project area.</p>
<p>23 Deegan, Alan: I am not certain how and where the noise mitigation figures were derived, but can only state that at 8:15 AM on August 27th, 2015, I measured the sound from C-470 traffic while standing at the rear of the last two houses (to the west end) on Canongate Lane; about 200-225 yards from C-470. The decibel level was once at 80 and a few minutes later at 84.</p> <p>It appears that you have determined no mitigation is necessary, but I defy any of you to live in those houses and feel the same way.</p> <p>The noise is atrocious! I live at 60 Canongate Lane to the east, about 0.3 mile from C-470 and I can hear it! Noise mitigation is truly required in the final plan.</p>	<p>Instantaneous spikes in noise can and do occur. Noise analysis for highway projects is based on an averaging method that is detailed in the C-470 Revised EA's Traffic Noise Technical Report, on page 5, which quotes the CDOT Noise Analysis and Abatement Guidelines, as follows: "As sound intensity tends to fluctuate with time, a method is required to describe a noise source, such as a highway, in a steady state condition. The descriptor most commonly used in environmental noise analysis is the equivalent steady state sound level, or Leq. This value is representative of the same amount of acoustic energy that is contained in a time-varying sound measurement over a specified period. For highway traffic noise analyses in Colorado that time period is one hour, and the value then reflects the hourly equivalent sound level, or Leq(h).</p> <p>For some areas impacted by traffic noise of 66 dB(A) or more, mitigation was determined to be not reasonable and feasible, per the established CDOT guidance. Noise analysis was conducted for your Gleneagles Village neighborhood. Seven residences on Caleridge would be impacted by noise with the Proposed Action. Mitigation was considered but did not meet the reasonable and feasible criteria of the CDOT Noise Analysis and Abatement Guidelines.</p>
<p>24 Delaney, Monty: I have lived over 1/2 mile from 470 for over 25 years. CDOT revised noise study is beyond ridiculous. I am an avid cyclist and have been riding the e470 bicycle path since its initiation. The noise level has risen substantially during the time due to more than twice the cars on the highway. CDOT needs to listen to the people who will be affected on this.</p>	<p>[Comment continues, next page]</p>

Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name

Name and Comments	Response
<p>24 Delaney, Monty: (continued) After asking several times how they are going to squeeze the bike path along this expansion at the open house I still have no clue as did the engineers at CDOT.</p>	<p>The C-470 Trail would need to be relocated in various locations to accommodate the Proposed Action. For specific locations, please see The Revised EA's Appendix C, Design Concept Sheets. The maps therein were on display as a roll plot laid out on tables at the August 26, 2015 Public Hearing. As this is a conceptual design, the locations may be subject to change in final design.</p>
<p>25. Domanick, Ed: The Egyptians used berm both for heat, dust and noise control. Why should the nearby homes suffer because of Colorado's poor planning under Governor Love? If you put in more lanes then berms or high walls are necessary to knock down the noise.</p>	<p>Berms were considered as possible noise mitigation. In many cases, berms are not feasible due to inadequate right-of-way, stormwater treatment requirements, and especially due to the existence of key utility lines underground within CDOT right-of-way. Based on the project's current conceptual design, recommended mitigation calls for walls instead of berms. Mitigation recommendations are reassessed in the final design process, and berm options will be reconsidered at that time.</p>
<p>26 Donovan, William: Hello, I assumed with such a massive increase in C470 traffic that noise mitigation for the surrounding residential areas would be part of the project. I have found out through neighbors this is not the case. I am disappointed in the "planners" for not anticipating the problem and mitigating the noise issue. It has been an issue on other roads in the metropolitan area before and has been dealt with successfully. It appears if the neighborhoods do not complain it is not a problem. That is not good planning or engineering. It does appear that some residents went as far as to hire lawyer and engineers to challenge and rebut the State's engineering studies. Both cannot be correct.</p> <p>I noticed many State and Federal agencies participated in the plan, but did not see County or City input? I expected the City of Littleton to be proactive. If not for the good of the community, at least to protect its tax base. It looks as if I am going to be next to a highway that will generate the same or more noise as a drilling rig. I am familiar with the uproar the drilling industry cause in a community and that nearly every governmental agency wants to help mitigate that problem. Why is there less concern for road construction and traffic? At least drilling rigs finish drilling and the noise level declines. Not so with roads, they only get louder. Please consider the following;</p> <p style="text-align: center;"><i>[comment continues on next page]</i></p>	<p>Noise abatement recommendations are made on a project-by-project basis in accordance with Federal and CDOT Noise Analysis and Abatement Guidelines.</p> <p>The noise abatement recommendations for the C-470 Revised EA were made on in accordance with Federal and CDOT Noise Analysis and Abatement Guidelines.</p> <p>The City of Littleton is a member of the C-470 Corridor Coalition, together with the other cities and counties along the 13.75-mile corridor. The Coalition worked actively with CDOT to develop the Proposed Action through the EA process.</p>

Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name

Name and Comments	Response
<p>26 Donovan, William: (continued)</p> <p>1) Build a noise barrier, more specifically on the north side of C470 from Clarkston to Broadway. This would be the simplest and most straight forward solution. /yes, this is self-serving, but every stakeholder acts in their self-interest.</p> <p>2) Provide the engineering expertise that opined about C-470 noise to consult free of charge to the residents near C470 that have been impacted by noise. We have no knowledge of noise mitigation and some very simple changes to our property may considerably reduce the noise. We need the expertise to help us mitigate the problem, if you will not help us.</p> <p>3) Provide tax credits for individual property owner for noise mitigation.</p> <p>4) Place noise monitoring equipment along the widened portion of the road. Compare these measurement with the prebuild estimates and if louder mitigate. Why bother with this pre build estimates if they are wrong. Most cellphones now have a noise meter app. It is not that difficult to measure.</p> <p>5) Give us, the impacted the \$3,000,000 you saved. Maybe we can buy in a nice quite area away from C-470.</p> <p>Seriously, you know this is a problem, you have solve this before and why not solve it now. It will be cheaper in the long run. Thanks.</p>	<p>A wall was considered for the Township at Highland Ranch subdivision, as documented in the Traffic Noise Technical Report, starting at page 59. At that location, a wall was analyzed and was found to be unable to provide sufficient noise reduction to meet CDOT's criteria for reasonable and feasible mitigation.</p> <p>CDOT has no existing program to provide this service, and this would not be eligible as a Federal expense for the C-470 project.</p> <p>CDOT has no involvement with local property taxes.</p> <p>Mitigation decisions are made in accordance with the current FHWA and CDOT Noise Analysis and Abatement Guidelines.</p> <p>No wall has been eliminated and no money has been saved by attempting to reduce the amount of noise walls in the corridor. In cases where noise mitigation is recommended (and subsequently verified through final design), CDOT provides it as part of the project and does not have a choice to do otherwise.</p>
<p>27 Eagleston, Michael:</p> <p>Question regarding presence or absence of sound barrier adjacent to Shadow Canyon condominiums - environmental assessment indicates no noise mitigation at this location, but at Province Center. Maps show sound wall to be included adjacent to Shadow Canyon condos, but no mention of Province Center - which is correct?</p> <p>In any event, would appreciate consideration being given to placement of berm at the Shadow Canyon location rather than sound wall. According to environmental assessment, this construction is less expensive than the sound wall alternative, and from my perspective (both literally and figuratively) more aesthetically pleasing.</p> <p>If not possible, would appreciate consideration given to the least obtrusive type of wall not only in composition, but also in color and texture (no concrete pillar/wood crossbeam construction, no flat/smooth concrete slabs).</p> <p><i>[comment continues on next page]</i></p>	<p>The recommended wall is adjacent to Shadow Canyon. In the Revised EA please see page 4-23, or Appendix D, or Traffic Noise Technical Report page 82. There is an existing berm in the vicinity of Province Center. The Proposed Action would not alter this berm.</p> <p>Berms offer many advantages over walls, but are not always feasible. For many cases in the project corridor, berms are not feasible due to inadequate right-of-way, stormwater treatment requirements, and especially due to the existence of key utility lines underground within CDOT right-of-way.</p> <p>Visual design standards have been developed for use along the C-470 corridor to ensure consistent, aesthetically appropriate design of various elements including noise barriers. Consultation with affected property owners will occur during the final design process.</p>

Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name

Name and Comments	Response
<p>27 Eagleston, Michael: (continued) Our property is to the east of the condo property, and while highway noise has been an ongoing issue (and often subject to wind direction), we realize that there are limits to what can be done in terms of sound mitigation, and appreciate any actions taken in that regard.</p> <p>However, our overriding concern is the preservation of an unobstructed view to the southwest/west/northwest, not only for aesthetic purposes but also for property value preservation and appreciation. An earthen berm at the Shadow Canyon location below the horizon represented by Colorado Boulevard would be a good compromise.</p>	<p>CDOT is required to apply established federal regulations and state guidance for traffic noise impacts and mitigation to all federally funded transportation projects in a consistent manner throughout the state. If a receptor is determined to be impacted by traffic noise, a reasonable and feasible analysis for mitigation is completed that considers constructability and noise reduction benefit, in addition to location, cost and other criteria. Property values are not a factor of this analysis. The decision to recommend mitigation for federal projects is based on the ability to construct a barrier that will have a noise reduction benefit that meets federal standards.</p>
<p>28 Elwell, Lawrence: As a resident of the Willow Creek community, I am angered that this new environmental assessment is being used to renege on the promised sound wall that has already been installed on much of the corridor. This is the noisiest section of c470, and is therefore most justified in sound mitigation. Please reconsider and install the sound wall as we trusted you to do and have waited patiently on for years.</p>	<p>The 2006 C-470 EA did not recommend noise mitigation for your area (2006 Noise Technical Report, page 50), and the C-470 Revised EA also does not recommend mitigation. FHWA's Highway Traffic Noise: Analysis and Abatement Guidance (page 11) states that, "Highway traffic noise is not usually a serious problem for people who live more than 500 feet from heavily traveled freeways." The Willow Creek neighborhood is more than 600 feet north of C-470 and adjacent to County Line Road, which would be the primary traffic noise generator for this community. Noise issues outside of the C-470 project area are not addressed in the C-470 Revised EA.</p>
<p>29 Erickson,Carolynn: Please reconsider your decision to exempt the area between Broadway and Quebec from noise abatement barriers.</p> <p>As a resident of the community directly impacted, I am requesting that the final decision include a valid study of the impact of the noise.</p> <p>Ignoring the studies commissioned by the homeowners and the first study conducted by CDOT representatives is denying the validity of the issue and is equivocal in nature. The barriers are needed and your thoughtful reconsideration is requested. Thank you.</p>	<p>Noise impact and abatement analysis was conducted for all Highlands Ranch neighborhoods between Broadway and Quebec Street. Mitigation was not found to be reasonable and feasible.</p> <p>The noise analysis for the C-470 Revised EA is valid and complete.</p> <p>The I&R study commissioned by HRNC was reviewed and considered by CDOT, and has not been ignored. The 2006 noise analysis is not applicable as the 2006 EA has been superseded by the 2015 Revised EA and a new noise analysis was required.</p>

**Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name**

Name and Comments	Response
<p>30 Evans, David #1 of 2: I'm the chairman of Bike JeffCo and also representing Bicycle of Douglas County and, indeed, all cyclists of the area. My concern is related with just the noise -- the increased noise along the C-470 bike trail. This, indeed, is an important bike way that is used for the people commuting and also for recreation.</p> <p>I would like to say some kudos to CDOT for some upgrades such as the underpass at Colorado and Quebec Street and also for thinking through the diversion during the construction. But my main concern is just the increased noise and the discomfort level for cyclists using the new trail.</p> <p>The environmental assessment report shows a number of receptor locations where the noise on the trail noise exceeds 66 decibels, a magic figure. But I'm told that the report will only take -- or CDOT will only take mitigating action where -- the areas where people are concentrated, i.e., benches or where they'll stop, which doesn't seem correct to me, that here we have people congregating along the trail. They ride with their friends. They ride with whoever.</p> <p>So we took the wrong idea of where mitigation should be. This is really a fault in the policy here. Then also looking at where there are walls right now. There are places where the bike trail would be inside the walls, so heaven knows what the noise level will be at these points. We don't have any figures on that.</p> <p>So CDOT, in the long term, as they keep telling us has moved away from being a highway agency to a transportation agency and, as such, promoting transportation. Bikes are a major part of this. But it seems that in naturally upgrading the highway, we're substantially degrading the bicycle facility along C-470 here.</p>	<p>Comment noted.</p> <p>The CDOT Noise Analysis and Abatement Guidelines call for examination of outdoor sites with frequent human use. Please see page 14 of the guidance, which states, "Individual trails should also be assigned receptors at all areas where user congregating would be expected along the trail, such as rest areas with benches or scenic viewing areas."</p> <p>Unlike fixed receptors such as residences, trail use involves transient, intermittent use, with participants located at a particular location for only a very brief period of time.</p> <p>A trailside congregation site is modeled as one receptor, as a residence would be. Rarely does a single, isolated residence meet the established reasonableness criterion because a cost-reasonable barrier does not provide enough reduction benefit for a single location. It typically requires a number of receptors all benefitting from the same mitigation to meet the cost benefit criterion. These calculations were made for a number of trail receptor sites and in every case the cost benefit criterion was not met.</p> <p>The Revised EA recommends noise walls for impacted adjacent residential areas, not for trail receptor locations. To provide effective noise reduction for adjacent residences, walls are typically constructed at CDOT's outer right-of-way edge. Provision of noise walls at the outside edge of right-of-way means that the C-470 Trail would be "inside" (i.e., between the highway and the wall).</p> <p>The C-470 Trail is a transportation facility that is owned and maintained by CDOT. Many portions of the C-470 Trail are located adjacent to the freeway, so there is no expectation of quiet conditions there. The Proposed Action will improve safety by providing new C-470 Trail grade separations at Colorado Boulevard and Quebec Street.</p>

Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name

Name and Comments	Response
<p>30 Evans, David #1 of 2: (continued) So I have a couple of questions. One is, why is the impact on the bicycle traffic basically ignored by the environmental assessment report?</p> <p>And maybe the bigger question is, is it time that we look at the entire trail and maybe relocation tied in with building a wall on the south side? We would certainly like that because this will just turn – this construction will turn the C-470 trail into an unusable facility.</p>	<p>Trail impacts are discussed on pages 4-16, 4-17, 4-18, 4-23 of the Revised EA and in the Traffic Noise Technical Report.</p> <p>Offsetting the recommended walls to the interior of CDOT’s right-of-way to accommodate CDOT’s C-470 Trail (i.e., outside the wall) would diminish the noise reduction for adjacent residences. In many locations, this could also put the C-470 Trail on the northern side of the wall, shaded from the sun and thus prone to wintertime icing.</p>
<p>31 Evans, David #2 of 2: Comments from Bike Jeffco to the C-470 Revised Environmental Assessment Report. Bike Jeffco is the advocacy group for road cyclists in Jefferson and Douglas Counties.</p> <p>Transportation Impacts Table 3-1 Lucent Boulevard has FULL access to C-470</p> <p>Section 3.6 Other Transportation Impacts As the C-470 trail is a key bicycle commuter route to many businesses along C-470 and to Denver Tech Center, Bike Jeffco concurs with the EA’s statement that no trail should be closed without providing adequate detour routes. Any additional distance incurred by cyclists should be minimized as detour mileage impacts cyclists considerably more than drivers. In particular, closure of the Mary Carter Greenway Trail will have great impact on trail users.</p> <p>The addition of grade separated crossings at Colorado Boulevard and Quebec Street will be especially welcomed.</p> <p>Section 4.3.1 Highway Noise Current users of the trail along C-470 experience high levels noise especially at times of peak traffic volume traveling at highway speeds. This is especially true between Yosemite Street and a half mile west of Broadway where the trail runs close to the highway. The journey time for a cyclist between Yosemite and a half mile west of Broadway is between 30 and 60 minutes during which time the cyclist is currently exposed to high noise levels. Exact levels are hard to determine due to the lack of data in the document. However, it is possible to extrapolate receptor data in the C-470 Technical Report to provide some estimate of expected noise levels in the case of the 2035 Proposed Action. Data for the Bluffs at Highlands Ranch (p55 et seq.) shows noise levels exceeding the acceptable 66.0db for all buildings facing the highway for the proposed 2035 action, reaching as high as 76.9db. As the bikeway is approx. one third the distance of the receptors from the current highway, the noise level on the bikeway will be considerably higher if no mitigation action is taken.</p>	<p>Thank you for this correction. No analysis in the Revised EA relied on the erroneous description in Table 3-1. Corrections to the table are indicated in Chapter 5 of this decision document.</p> <p>The Revised EA indicates that CDOT will endeavor to minimize trail closures and provide adequate detour routes. The Revised EA includes description of each anticipated closure and recognizes the importance of the Mary Carter Greenway Trail. CDOT will have ongoing consultation with the South Suburban Parks and Recreation District and the Highlands Ranch Metro District regarding trail closures.</p> <p>Comment noted.</p> <p>Generally, it is correct that wherever adjacent homes are impacted by traffic noise and the trail is located between C-470 and those impacted residences, noise levels on the trail will be higher than the levels at the impacted residences. (There may be a few locations where the trail is depressed and partially shielded from noise.) Page 4-23 of the Revised EA states that, “Much of the trail is subjected to noise impacts today (i.e., 66 decibels or more) and these noise levels are expected to increase with the Proposed Action.</p>

Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name

Name and Comments	Response
<p>31 Evans, David #2 of 2: (continued) If the recommended mitigation action is taken and a sound wall is built with the bikeway inside the wall, the level will be even higher, reaching potentially dangerous level.</p> <p>Likewise, looking at data for Autumn Chase, Copper Canyon, and Canyon Ranch (p74 et seq.), every one of the receptors closest to the highway is impacted, with a peak value of 76.7 decibels in the 2035 Proposed Action. Thus one can interpolate that the bikeway will experience values even higher. These will be further exacerbated by putting the bikeway inside the recommended wall.</p> <p>The EA Report provides insufficient data to properly assess the noise impact along the rest of the trail. It is only possible to extrapolate from the data provided for the nearby locations previously mentioned. Such an extrapolation leads one to the conclusion that users will experience unhealthy levels of noise for the entire length between Yosemite and a half mile past Broadway. This serious situation will only be made worse by building new highway lanes closer to the trail and placing the bikeway inside the wall.</p> <p>Bike Jeffco calls for CDOT to install receptors at frequent intervals along the section of the trail parallel to the highway in order to provide meaningful noise data and to model the noise levels expected in the 2035 proposed action. Alternate solutions such as earth berms and landscaping should be considered for noise mitigation.</p> <p>It is unrealistic for noise impact monitoring and mitigation steps to be taken only 'where people stop to congregate' on the C-470 trail. The noise exposure to a cyclist while traveling along the C-470 trail parallel to the highway will, in the majority of cases, exceed the exposure to someone stopping at a congregation point.</p>	<p>The Revised EA includes analysis of noise impacts at a few locations along the 13.75 miles of the C-470 Trail. As you have correctly pointed out, wherever the C-470 Trail is located between the highway and some other receptor that was analyzed, the trail is likely to be noisier than the more distant receptor.</p> <p>See response above. Page 4-23 of the Revised EA states, "Many portions of the C-470 Trail are located adjacent to the freeway, so there is no expectation of quiet conditions there. Much of the trail is subjected to noise impacts today (i.e., 66 decibels or more) and these noise levels are expected to increase with the Proposed Action."</p> <p>See response above. Trail receptors (trailside congregation sites) were modeled in accordance with CDOT's Noise Analysis and Abatement Guidelines. Modeling more locations will not change the fact that each receptor would fail to meet the cost benefit index criterion in the guidance.</p> <p>The CDOT Noise Analysis and Abatement Guidelines call for examination of outdoor sites with frequent human use. Please see page 14 of the guidance, which states, "Individual trails should also be assigned receptors at all areas where user congregating would be expected along the trail, such as rest areas with benches or scenic viewing areas."</p>
<p>32 Fee, Peter: Could CDOT please explain why Appendix E Noise abatement studies legally meet Federal Highway requirements between Quebec Street and Yosemite Street, since no receptors were placed in the Willow Creek or Acres Green areas to study the noise impact on residences? This section between Palomino Park and Crest was completely ignored for noise, yet is the highest level relative to adjacent residences in the study area. This question has also been forwarded to the Federal Highway Department for clarification regarding funding for the expansion project.</p>	<p>Receptors were identified for outdoor use areas within 500 feet of C-470 as discussed on page 7 of the Traffic Noise Technical Report. As mentioned in FHWA Highway Traffic Noise: Analysis and Abatement Guidance on page 11 "Highway traffic noise is not usually a serious problem for people who live more than 500 feet from heavily traveled freeways." Both Willow Creek and the Green Acres neighborhoods are outside this study zone. The Willow Creek neighborhood is more than 600 feet north of C-470 and adjacent to County Line Road, which would be the primary traffic noise generator for this community. The Acres Green neighborhood ranges from 700 to 1,400 feet south of C-470.</p>

Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name

Name and Comments	Response
<p>33 Ferruzza, Ronald: Take the money all of us legally licensed vehicle owners paid and fix the roads. Quit spending it on study after study. Don't sell my highway to some foreign entity. If you quit squandering the \$ on countless studies that tell you the same thing and add the lanes we would be many dollars ahead. Go to Phoenix on your own dime and see what efficient roads look like.</p>	<p>Various project delivery options were considered for the C-470 project by CDOT and the High Performance Transportation Enterprise. CDOT and HPTE concluded that CDOT will not pursue a Public-Private Partnership for this corridor. The road will not be privatized and will not be under the control of any foreign entity.</p>
<p>34 Fey, Carol: I live in the Oakbrook neighborhood of Littleton. That is at County Line and Broadway. So we're on the north side of County Line Road, and my house is maybe half a mile from C-470. I moved there in 1987. The week that C-470 opened between I-25 and Kipling, it was quiet at my house.</p> <p>The noise has increased every year, maybe every day. Now there is a constant roar, except for between, maybe, 3:00 and 4:00 in the morning. The roar varies in its loudness, depending upon the weather, the direction of the wind, the day of the week. Right now, it's quite loud I would say it's probably the wind direction. And it's very unpleasant to be outside. It's also -- I can hear it inside with all the windows closed. With the storm windows down in the winter, I can hear that roar. Okay.</p> <p>It has increased, but the idea of it increasing some more and some more and some more, while my very own state, CDOT, says it's going the other direction is wrong for us as citizens paying our share for this to our state, our various governments, to have them tell us something we know is not true. That's not true, and for us to have to pay for it.</p> <p>There are a couple of other things that might be done, I would hope, besides increasing the barrier because like a couple of people further away from C-470 than I either say that noise is going to be coming over whatever obstacle is put there.</p> <p>So I would beg with CDOT and whatever engineers are working with them to look at other ways to reduce noise also, in addition to putting up a barrier, things like carefully considering what kind of pavement, because we know from personal experience that the type of pavement seriously affects the amount of noise that it makes.</p>	<p>The C-470 Revised EA does not say that traffic noise is decreasing. Please see Table 4-8 on page 4-21 of the Revised EA. The C-470 traffic noise evaluation was conducted in accordance with the current FHWA and CDOT Noise Analysis and Abatement Guidelines.</p> <p>Attached to the C-470 Revised EA Traffic Noise Technical Report is the 2015 CDOT Noise Analysis and Abatement Guidelines document. Page 17 of that guidance states the following: "A related topic that has been researched for many years is the noise emissions that are due to the tire-pavement interaction. While it is accepted that different tires, pavements, and pavement surfacing textures do result in varying noise levels, it is difficult to forecast the overall pavement surface condition 20 years into the future. Due to this fact, and the requirement that noise mitigation must provide a readily perceptible reduction in noise levels over a long period of time (i.e., permanent), the use of different pavement types or surface textures cannot be considered as a noise abatement measure."</p>

Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name

Name and Comments	Response
<p>34 Fey, Carol: (continued) Perhaps do something to study what kind of acceleration is going on. I can hear in the morning during rush hour the noise is much more intense as people are accelerating really hard to get onto that highway.</p> <p>So from the point of view of the folks on the north side of County Line Road also, it's a serious problem. And then we beg of you, our state people, to help us keep our quality of life because it is a great place to live other than that.</p>	<p>The addition of auxiliary lanes to much of C-470 has potential to improve this acceleration issue. Motorists will have longer time and distance to merge into through-lanes.</p> <p>Comment noted.</p>
<p>35 Fielding, Amy: Thank you for the very thorough report on the C470 expansion project.</p> <p>I am writing to indicate my extreme disappoint regarding the lack of necessity of a noise barrier for the Township at Highlands Ranch segment. Twelve out of 18 receptors met the criteria for noise mitigation. The rationale that traffic from County Line is already too loud, therefore a C470 noise barrier wouldn't be effective lacks any common sense logic. CDOT's report indicates our neighborhood already has noise "pollution." If defies logic to rationalize that adding more noise to an already noisy neighborhood is acceptable.</p> <p>At 5:30am the noise from C470 was loud enough to drown out the music I had playing in my 3-month old son's room. Clearly our neighborhood could benefit from any type of noise mitigation, regardless of the perceived decibel decrease.</p>	<p>The analysis provided on page 61 of the Traffic noise Technical Report indicates that 12 residences in the Township at Highlands Ranch development not reaching the Noise Abatement Criterion under the No-Action Alternative would meet the criterion with the Proposed Action. A hypothetical wall 20 feet tall and 1,700 feet (nearly a third of a mile) long was modeled. The TNM model indicated that none of the 12 impacted residences would receive a noise reduction of 5 or more dB(A). Providing at least a 5 dB(A) reduction is part of the CDOT Noise Analysis and Abatement Criteria to show that providing mitigation would be reasonable and feasible. Accordingly, mitigation is not recommended for this area.</p>
<p>36 Ford, Wendell #1 of 2: My name is Wendell Ford. I live in Castle Rock. I am not a daily user of C470 but I am a frequent user. I do agree that more capacity is needed. I am opposed to toll lanes and toll roads in general. In medieval times, every castle and village demanded a tribute from every passing traveler. Today toll roads are an anachronism regressing society by 1,000 years or more.</p> <p>Providing public access via roads and streets is one of the fundamental services along with police, fire depts. and etc. There are lots of roads and highways in remote parts of the state that I will never use but I believe they should be provided by the government because in some way we will all benefit from them. Toll lanes and roads are yet another way of providing privileges to the rich, especially as the current tolls required on current toll roads. A minimum or low wage earner cannot afford such tolls for a daily commute which is required because they cannot afford to live near their employment.</p>	<p>The cities and counties along the C-470 have worked cooperatively with CDOT as the C-470 Corridor Coalition to explore funding options for C-470 improvements. The Coalition undertook numerous public outreach activities including telephone town hall meetings and open house meetings and a survey focused on funding options. Based on the input received, the Coalition selected tolling of the new lanes as their proposed funding option for this corridor. Public policy regarding gasoline taxes and local development fees are outside the scope of the project-specific C-470 Revised EA.</p>

Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name

Name and Comments	Response
<p>36 Ford, Wendell #1 of 2: (continued) The argument that it is a way to have those who use the roads pay for them is a specious argument. For one thing frequent users have mechanisms for reduced tolls while the occasional user is hit with much higher tolls. For another it would only have meaning if true for all roads and streets and not just a select few.</p> <p>And the idea of raising funding by private money from investors who live half way around the world whose aim is to make money (and take advantage of our problems) is just completely off base. The original C470 was built with tax money when there were far fewer people, cars, and tax from gasoline than today. Does all of the gas tax and taxes disguised as fees on our vehicle registration really go completely for roads? (True, the EPA does undercut the revenue by requiring more mpg).</p> <p>A great deal of current traffic problems are caused by overdevelopment by greedy developers who make their money and move out leaving us with the problems they created. Fees for local infrastructure do not address the total problem because the congestion radiates far from the local area. An example is the C470-I25 Lincoln area which is a tremendous bottleneck. Yet the city of Lone Tree approves building of a huge employment campus and many large apartment complexes in this immediate area which adds 1000's of cars daily to the mix. Landlords admit that easy access to freeways (and light rail stations) increases the value of their property because they charge higher rents for such locations.</p> <p>Higher taxes are going to be required to alleviate the problem. Such taxes cannot be made completely fair (in everyone's eyes). But they can come close. First a higher gasoline tax per gallon. The cost to the motorist would be offset by the fact that less congestion means fewer gallons of gas will be burned per commute. Second, there could be a real estate property tax for transportation. After all, property is of value only when it is accessible. People will not vote to approve such taxes without a guarantee that it will be spent for the intended purpose and not used by politicians to fund projects that essentially buy them votes in the next election.</p> <p>In my opinion, the proliferation of toll roads is an admission by government officials that they are unwilling or incompetent to do their jobs.</p>	<p>Various project delivery options were considered for the C-470 project by CDOT and the High Performance Transportation Enterprise. CDOT and HPTE concluded that CDOT will not pursue a Public-Private Partnership for this corridor. The road will not be privatized and will not be under the control of any foreign entity.</p> <p>All local governments in the metropolitan area participate as members of the Denver Regional Council of Governments (DRCOG), which is responsible for regional transportation planning. DRCOG's long-range plans call for increased land use density and increased transit use within designated urban growth boundaries as a way to avoid urban sprawl and make more efficient use of resources for purposed of sustainability.</p> <p>As noted above, public policy regarding gasoline taxes and local development fees are outside the scope of the project-specific C-470 Revised EA.</p>
<p>37 Ford, Wendell #2 of 2: [Nearly verbatim duplicate of Mr. Ford's comment #1 of 2. One was a written statement submitted to the court reporter and the other was his statement at the microphone, transcribed by a court reporter.]</p>	<p>Same comments addressed immediately above.</p>

**Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name**

Name and Comments	Response
<p>38 Friedenstein, Charles: I will be out of town on August 26th, so am submitting this written comment. I am an MSEE (electrical) engineer with 45 years' experience, and while not a registered professional engineer, I am probably well qualified to make noise measurements and compare the results to your prior noise study. But that isn't necessary, since your 2006 noise study already determined that many noise barriers were required. Since it is clear to anyone that the traffic volume (and resulting noise level) has only increased since 2006, it defies logic that the previous noise barriers are no longer required - unless you have changed the cost-benefit formula.</p> <p>I would also submit that In Appendix D to your 2015 Revised Environmental Assessment, the cost-benefit calculation (Cost Benefit Index, cost per dB(A) per receptor) can be significantly swayed by how many noise receptors you deploy. If you had doubled the initial number of receptors, it could potentially double the number with a reduction of 5 db, and the cost benefit index is cut in half. Add more receptors (For instance, in addition to #29-41 in Gleneagles Village), and the wall which you have eliminated would quickly become cost-effective.</p>	<p>The cost-benefit formula in the current CDOT Noise Analysis and Abatement Guidelines has indeed changed, compared to the cost-benefit formula used in the 2006 C-470 EA. New FHWA noise analysis guidance became effective in 2011, replacing the prior guidance from 1995. This in turn required CDOT to update its Noise Analysis and Abatement Guidelines. The current applicable CDOT guidelines are dated January 2015.</p> <p>The cost per dB(A) per receptor does decline when there are more receptors benefitting from the same barrier (cost). Generally, only the first row of residences near a highway can achieve a noise reduction of 5 dB(A) and thus be considered to be benefitting. In some cases, the second row of houses (partially shield by the first row) can also meet the criterion. The cost-benefit formula includes all benefitting receptors, even those that do not exceed the Noise Abatement Criterion of 66 dB(A). No benefitting receptors were excluded from the analysis.</p>
<p>39 Gallagher, Bev #1 of 2: Please don't ruin our house values!!!</p>	<p>Comment noted.</p>
<p>40 Gallagher, Bev #2 of 2: What I would like to address tonight is how upset I am about the laughter coming from the back of the room from people with name tags on. That was a direct slap in the face. This is something that's really important to very, very many people. And the lack of respect from the so-called professionals is appalling and I just want that stated down. And I would like that to go to every one of their offices and to the governor's office because it makes this be a joke and it's highly, highly offensive, highly.</p>	<p>Thank you for bringing this matter to CDOT's attention. The project team is aware that side conversations took place during the public hearing. If any laughter occurred in those conversations, please be assured that it was not in response to any speaker at the hearing. CDOT takes the public involvement process very seriously and respects each and every comment received. Your comment will be shared with the project team in an effort to create awareness for future public meetings.</p>
<p>41 Gallagher, John #1 of 2: I live in the Highgate development in Highlands Ranch. The young lady that just spoke [Carol Fey] stole part of my thunder. We've lived there since 1994. We are the original owners of the home. And when I moved there, I was commuting to the job I had at the time out in Golden every day.</p> <p>As the young lady said, there was no traffic on C-470, none. So it was -- you could hear a pin drop 24 hours a day out there. It was a relatively new highway. None of the expansion of the residence -- the converse never occurred along that entire corridor going all the way out to Golden. The Park Meadows Mall did not exist at the time.</p>	

**Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name**

Name and Comments	Response
<p>41 Gallagher, John #1 of 2: (continued) And it is hard, I think, for most. It's hard for me to believe, having lived there when there was no noise to the amount of noise we have today, that if you double the number of lanes and the traffic -- even if the traffic, in my opinion, were not to increase dramatically the number of vehicles, the speed would increase. That's where the noise is coming from. Right? Nobody drives C-470 at 60 miles or 65 miles an hour, right?</p> <p>It's the pounding of the tires on the concrete that is this maddening sound you hear all the way along the highway.</p> <p>It's also interesting, I think, to a lot of us when we go out and we're driving around the neighborhoods, and you see sound-mitigation walls or berms being built on hillsides along streets and cars are going 30 miles an hour, 35 miles an hour, or somehow they thought -- oh, sorry. That all had to be a New Yorker. I talk with my hands. All that had to be mitigated, all that had to be protected. All the visuals had to be protected, and I think, as the earlier speaker said, this is also about the visuals, right? My home doesn't look at C-470, but I know many of my neighbors do. And I can imagine that, not just the noise -- if you cannot hear a sound but you're looking at this constant road race, right?</p> <p>So in any... in the interest of time, one of the things that -- from the Coalition that I think -- piece of data that is important because it's not -- it is a fact. It's not an opinion. Okay. Real estate professionals have looked at this. We have very recent sales data that particularly right on our street, we had a home that literally dropped its price \$80,000 to get a buyer that sat there for months, because it's right on top of that highway. And you can't stand outside without the constant drone. So in any case, I think that needs to be considered.</p> <p>And I'd like to say, in support of some of the other comments, we need to consider, as taxpayers, to get off this privatization thing. Privatizing our schools, our highways, our prisons, has got to stop. This is why we're here, because we won't pay.</p>	<p>FHWA and CDOT Noise Abatement Guidelines are not applicable for local residential streets. They apply to interstates, state highways and projects with federal funding. Developers are free to provide any mitigation they wish, subject to local zoning and development requirements.</p> <p>CDOT is required to apply established federal regulations and state guidance for traffic noise impacts and mitigation to all federally funded transportation projects in a consistent manner throughout the state. If a receptor is determined to be impacted by traffic noise, a reasonable and feasible analysis for mitigation is completed that considers constructability and noise reduction benefit, in addition to location, cost and other criteria. Property values are not a factor of this analysis. The decision to recommend mitigation for federal projects is based on the ability to construct a barrier that will have a noise reduction benefit that meets federal standards.</p> <p>There are no plans to sell or otherwise privatize C-470. CDOT and the High Performance Transportation Enterprise have concluded that C-470 is not a good candidate for a public-private partnership ("P3") project delivery.</p>
<p>42 Gallagher, John #2 of 2: I am very concerned about the already high level of hwy noise near our home. The highway expansion plan should easily justify the sound mitigation that any reasonable person would expect.</p>	<p>When signing up to speak at the Public Hearing, you provided your address on Forrest Street. Forrest Street is part of the Highlands Ranch Venneford Ranch area that was analyzed in the C-470 Revised EA. The analysis concluded that mitigation did not meet the Cost Benefit criterion set forth in the current applicable federal and CDOT Noise Analysis and Abatement Guidelines.</p>

**Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name**

Name and Comments	Response
<p>43 Gehrke, James: I attended the environmental meeting on 8/26.</p> <p>Question: Did CDOT management charge the C-470 project leader and engineers to reduce the cost of noise mitigation on this project? Should this project go to court, this question will be asked under oath under the threat of perjury.</p>	<p>No, at no time were noise walls reduced as a cost savings measure. The Revised EA recommends installation of approximately 17, 200 linear feet of noise barriers. The 2006 C-470 EA recommended a total of 16,000 feet. The difference is an increase of more than seven percent.</p>
<p>44 Gilsdorf, Sarah #1 of 2: When you consider the high volume of noise which Gleneagles Villages is enduring with just a 4-lane highway; it is absolutely absurd to consider widening the highway without giving us a noise abatement wall. Look at the homes along County Line who got walls - for just County Line noise!</p> <p>Thanks for doing your alleged noise test over the 4th of July weekend; nice try - you think we're stupid?</p>	<p>Noise abatement recommendations are made on a project-by-project basis in accordance with Federal and CDOT Noise Analysis and Abatement Guidelines.</p> <p>According to CDOT Noise Analysis and Abatement Guidelines (Section 3.2.2), noise measurements may be taken <u>at any time when traffic is free flowing at or near posted speed limits</u>. In accordance with the guidelines, both the noise measurements and associated traffic data collected by CDOT on July 2nd and 3rd 2013 are acceptable and were used to successfully validate the noise model within established requirements.</p>
<p>45 Gilsdorf, Sarah #2 of 2: If you want to do readings of the noise, you can set up your equipment IN my home, even at 10:00 at night.</p>	<p>Comment noted.</p>
<p>46 Graber, Larry #1 of 2: My name is Larry Graber. My wife and I own and live in a residence located on the south side of C-470 between University and Quebec in Highlands Ranch referred in the 2015 environmental assessment as the Venneford Ranch area.</p> <p>Our property is about 600 feet from the highway center line. I've been a registered professional engineer in the state of Colorado for the last 20 years and have numerous years of experience in the energy and mining industry, including environmental impact assessments and statements.</p> <p>As part of the Highlands Ranch Neighborhood Coalition, my responsibilities have been to lead the engineering committee in selecting a reputable and qualified noise consultant related to the project.</p> <p>Based on my oversight of their work, review of the noise analyses released by CDOT and summer meetings with the Wilson Company and CDOT to discuss these matters, I submit the following comments.</p>	<p>Please see earlier response to Mr. Graber's 15 written comments, presented separately in in Table 3-3.</p>

**Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name**

Name and Comments	Response
<p>46 Graber, Larry #1 of 2 (continued) In my opinion, the noise analysis performed by the Wilson Company and CDOT in the 2015 environmental assessment is one of the worst I've ever seen, because there are virtually no baseline measurements and data related to current noise levels.</p> <p>This absence of data has left the Wilson Company and CDOT room to manipulate their modeling numbers to eliminate noise protection walls and berms as the means of reducing overall costs.</p> <p>Secondly, because of the absence of existing noise measurements, we hired a reputable and qualified noise engineering firm with over 28 years of experience to obtain baseline data, as Mr. Sales just mentioned. We found that the actual loudest noise hour was 71 decibels as compared to 65 decibels represented by the CDOT model. This represented a substantial increase of 6 decibels. Since noise is measured on a logarithmic scale, this would be equivalent to quadrupling the noise source.</p> <p>HRNC measurements are also substantially higher than the 66 decibel abatement criteria set forth in CDOT standards. HRNC's baseline data included long-term monitoring over several days, whereas the Wilson Company and CDOT only took short-term measurements, as already mentioned.</p> <p>The third point is the differences between actual and model noise levels were reported in writing to the Wilson Company and CDOT prior to issuance of the 2015 environmental assessment; however, such differences were summarily dismissed and ignored without proper consideration.</p> <p>During the past several months, CDOT personnel have deliberately suppressed the validity of our actual measurements, stifled public involvement, and patronized comments by citizens in our neighborhood.</p> <p>Due to my limited time, I'm going to conclude with just a couple of comments. First of all, HRNC demands that CDOT include noise-protection walls or berms in our neighborhood. If it refuses to consider this issue in the environmental assessment, we reserve the right to pursue all legal and financial remedies available to us to challenge the project.</p> <p>We call on the Honorable John Hickenlooper, governor of Colorado, Mr. Shailen Bhatt, executive director of CDOT, to once again include noise-protection walls or berms in the project.</p>	<p>As clarification, it is correct that the acoustic power sound intensity is four times at 6 dB, but the volume loudness is only 1.52 times. A sound level must be raised by 5dBA before most listeners report a noticeable or significant change. It takes a 10dBA increase before the average listener hears "double the sound." However, as no sound measured by I&R exceeded 69 dB(A), it is unclear as to all of the assumptions used by HRNC and their consultant to arrive at the stated sound levels.</p> <p>In response to comments received during the public review period, CDOT subsequently conducted long-term noise monitoring in October 2015. See Chapter 5 for details.</p> <p>CDOT has considered and responded to HRNC's concerns and input as demonstrated in the August correspondence between CDOT and HRNC. It is normal for there to be differences between modeled and monitored noise levels. Monitoring is conducted for the purpose of model validation.</p> <p>We understand that HRNC has met with the governor's office and that a written response to HRNC may be forthcoming. Additionally, Mr. Bhatt has been briefed regarding HRNC's concerns.</p>

Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name

Name and Comments	Response
<p>47 Graber, Larry #1 of 2: (continued) This is my final comment. In addition, based on the e-mail released by CDOT in response to e-mails from Highlands Ranch Neighborhood Coalition, we have serious concerns about whether the information we are presenting to CDOT is properly considered rather than summarily dismissed. We, therefore, call on Mr. Bhatt to oversee his staff to ensure that a proper review of the environmental assessment has been made and will be performed in response to public comments regarding the drafting of our environmental assessment. This concludes my comments.</p>	<p>Mr. Bhatt has been briefed on this issue by CDOT executive management. All information presented to CDOT by HRNC has been properly considered, analyzed, and responded to.</p>
<p>47 Graber, Larry #2 of 2: [Note: Mr. Graber provided a written submittal with 15 comments. This is addressed separately, not in this table.]</p>	<p>Please see separate response in Table 3-3.</p>
<p>48 Griffin, Scoty: I simply ask that the state and CDOT consider what they would want done if it was their property at stake and do the right thing.</p>	<p>Comment noted.</p>
<p>49 Grout, Ronald (Dr.): My name is Dr. Ronald Grout, and I reside in the Highgate subdivision of Highlands Ranch on Forest Street. We've lived in Highlands Ranch since 1991. And it is truly a wonderful community of caring people and proud homeowners. Property owners that purchased homes in the Highgate subdivision were told by Realtors and others that our property values would always be protected from C-470 traffic noise because the noise-abatement design proposed by CDOT in the 2006 study would eliminate increased traffic noise.</p> <p>Now we're told by Realtors and others that without the proper noise-abatement barriers, our property values may be decreased by 50- to \$100,000 per home, depending on how close we live to C-470.</p> <p>This noise pollution will only increase from the current 71 decibels to 76 or more over time.</p> <p>Why these protected berms have been totally eliminated by CDOT from Quebec to University is, in my opinion, irresponsible and a dereliction of duty to perform what the previous study mandated.</p>	<p>CDOT has no oversight of real estate agent discussions.</p> <p>The 2006 EA provided recommendations that were identified as being subject to further change pending final design. No decision document was issued for that project. The 2015 Revised EA supersedes the 2006 EA.</p> <p>CDOT and FHWA do not consider the value of residences or commercial properties in the noise analysis. This is done to ensure consistent application of the noise guidance for all receptors.</p> <p>No noise measurement taken by I&R exceeded 69 dB(A). From the information provided CDOT in the July 13, 2015 letter and the I&R report, it is unclear as to all of the assumptions used by HRNC and their consultant to arrive at the stated sound levels of 70-76 dB(A).</p> <p>No noise walls have been "eliminated". The 2006 EA provided recommendations that were identified as being subject to further change pending final design. It should be noted that the 2015 Revised EA recommends a total of approximately 17,200 linear feet of noise walls in the corridor, and that these 2015 Revised EA noise wall recommendations are also required to be confirmed and validated through final design of the project.</p>

Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name

Name and Comments	Response
<p>49 Grout, Ronald (Dr.): (continued) My occupation is dentistry. As a health professional over 45 years, my profession is -- I've been strictly regulated by the Colorado Department of Health to conform to noise, air, water discharge pollution in our office. The safety department of public health is -- does impact the quality of life, quality of life for our children, grandchildren, and many hundreds of others and future generations who will be compromised by the incorrect decision by CDOT today by not placing proper noise abatements in areas already approved and mandated by the federal environmental impact study of '06.</p> <p>CDOT is ignoring the needs of the community and the residents of Highgate and other subdivisions along 470 as well. The residents of Highgate and other communities do support the needed expansion of C-470, but it must also still include the important safeguards to protect the health and welfare of our neighborhoods. And that CDOT has not complied with the mandate and noise abatement in our neighborhood, this will negatively impact our community in the future for our health and well-being.</p>	<p>The noise analysis for the C-470 Revised EA did not ignore Highgate or any other subdivision along C-470. All neighborhoods within 500 feet of the roadway were included in the noise analysis, which was completed per guidance.</p> <p>See prior response regarding a "mandate".</p>
<p>50 Gunderson, Loren #1 of 5: Continual exposure to traffic noise may increase the risk for cardiovascular disease. Scientists used data on road traffic noise and hospital admissions for cardiovascular disease in London from 2003 to 2010, tracking all-cause and cardiovascular death rates for neighborhoods with varying noise levels. Over the period, there were 400,494 hospital admissions for cardiovascular causes. Compared with average noise levels below 55 decibels, levels above 60 decibels were associated with higher rates of hospital admissions for stroke — 5 percent higher among people 25 to 74 and about 9 percent higher among those over 75. All-cause mortality was 4 percent higher for people in noisy neighborhoods. The study, published last week in The European Heart Journal, adjusted for age, sex, socioeconomic factors, ethnicity, smoking and air pollution. Reference: http://eurheartj.oxfordjournals.org/content/early/2015/06/07/eurheartj.ehv216. This report does not address these health concerns that will cause an increase in the disability and death of citizens.</p> <p>As a Certified Industrial Hygienist and Certified Safety Professional, it is my considered opinion this report does not meet the minimum requirements of NEPA in protection of health and environment.</p>	<p>Thank you for submitting this information to the project team. CDOT and FHWA have taken this under advisement and concluded that the Revised EA meets the requirements of NEPA in analyzing the protection of health and environment because Federal and CDOT noise abatement guidelines were followed.</p>

**Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name**

Name and Comments	Response
<p>51 Gunderson, Loren #2 of 5: The C470 EA does not speak adequately to the use of noise-inhibiting paving materials and methods. By focusing the entire abatement method on barrier walls, a false choice is set up within the whole approach of this report. It is well recognized by the study itself that barrier walls lack demonstrable efficiency in blocking noise, and are scene spoiling obstructions to many in the neighborhoods where they may be deployed. This deficiency is a critical error in presenting reasonable options. A resubmittal of the report with this, and other noise-mitigating options is therefore necessary. I am a Certified Industrial Hygienist and Certified Safety Professional. My evaluation brings technical weight to "subjective" issue, and more will be heard from me unless procedural requirements of NEPA are considered very thoroughly.</p>	<p>Attached to the C-470 Revised EA Traffic Noise Technical Report is the 2015 CDOT Noise Analysis and Abatement Guidelines document. Page 17 of that attachment states the following: "A related topic that has been researched for many years is the noise emissions that are due to the tire-pavement interaction. While it is accepted that different tires, pavements, and pavement surfacing textures do result in varying noise levels, it is difficult to forecast the overall pavement surface condition 20 years into the future. Due to this fact, and the requirement that noise mitigation must provide a readily perceptible reduction in noise levels over a long period of time (i.e., permanent), the use of different pavement types or surface textures cannot be considered as a noise abatement measure."</p> <p>CDOT and FHWA have concluded that the NEPA process was followed in the Revised EA and the Decision Document.</p>
<p>52 Gunderson, Loren #3 of 5: This report and scheduled meetings do not meet requirements for open, timely and thorough presentation of all documents under discussion. The reference to Appendix E (Chapter 3, Transportation Impacts) is not available on-line. Correcting this needs to be done in a timely manner to ensure public review and discussion as required by many laws and administrative rules. The following excerpt speaks to the importance of the missing document. "The Traffic Technical Report in the Appendix E of this Revised EA provides a comprehensive evaluation and summary of freeway traffic operations for existing conditions and for future conditions with the No-Action Alternative and the Proposed Action." A delayed posting of this document without a re-adjustment to the schedule of notices and hearings will not be acceptable, and will be vigorously contested.</p>	<p>All elements of the Revised EA were available online and in hard copy from the July 29 beginning of the public comment period to the September 11 end of the public comment period, and remain available at this time.</p> <p>There was no delay in the online posting of any portion of the Revised EA and its supporting documents.</p>

Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name

Name and Comments	Response
<p>53 Gunderson, Loren #4 of 5: Chapter 3 describes a traffic counts by road-sections, traffic direction, time of day and etc. However, it does not discuss mention an obvious condition that impacts traffic speed. Heavy traffic on this E-W corridor has the unfortunate characteristic of the morning commute running into the glare of the sunrise, and the evening commute running into the sunset (varying by season within a range). This in itself causes traffic slowdowns, full stops and cannot be cured by an additional 1, 2, or 4 lanes. The sun will keep shining in people's eyes, they will slow down, and commute times will stay the same. Because this was not considered in discounting the supposed benefit of lessening commuting times, the EA is not only flawed by skewed negatively against a No Acton. For this reason I am challenging the preparation of this document as favoring a particular outcome. This is not disclosed as an intent of the document. An Assessment must present open and fairly considered information, summarizing and recognizing the relevance of the same.</p> <p>The issue of the sun-glare slowing traffic has been raised before in a public hearing for this project. It wasn't answered to then, and it wasn't answered to, or even considered in this document. This leads me to a deeper point: the public forum has been mostly a show, and substantive input from the public dismissed after tea and cookies, I challenge the authors to produce a document that answers public questions and is worthy of being more than an over-stuffed sales brochure.</p>	<p>Traffic glare is mentioned as a contributor to crashes in the Roadway Safety Technical Report. Traffic glare was not mentioned as contributing to reduced peak period travel speeds. Additional roadway capacity does improve travel speeds.</p> <p>The section of C-470 studied in the Revised EA has a generally east-west direction, as do many other roadways in the Denver region. Sun glare is not normally considered in alternative analyses or in roadway design.</p> <p>Sun glare would have minimal effect on fixed guideway transit, which was eliminated in the alternatives analysis for reasons discussed on page 2-8 of the Revised EA.</p> <p>There is no bias against the No-Action Alternative.</p> <p>The public involvement completed for this project complies with the NEPA process. All comments received during the public comment period are responded to in this decision document, per NEPA requirements.</p>
<p>54 Gunderson, Loren #5 of 5: I live at 8414 South Otis Court in the Herrick-Dale subdivision. If you don't know where that is, it's between Santa Fe and Wadsworth. And I'd like to thank, first of all, the folks who have taken the trouble, really, to go deep and understand what NEPA says.</p> <p>I'm a professional industrial hygienist, certified safety professional. I've done it for 25 years. I've lived in my home for 25 years and can echo the experience some folks have had in the increasing traffic. I accept it. It's part of life. It's what you have to deal with when you get a view as nice as I have. That's one of the reasons I live in the house.</p> <p><i>[comment continues on next page]</i></p>	

Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name

Name and Comments	Response
<p>54 Gunderson, Loren #5 of 5: (continued) But it is declining in quality because of traffic noise, and that brings me to my real concern. And it's with the process that we have here for evaluating environmental assessment. Just think about those two words, first of all. I think that in the design of this, they've overlooked some very significant things. First of all, we're going to go safety, because I know a little bit about that. They did look at traffic accidents -- crashes -- I'm sorry -- over a period of time, and I think that, you know, it was recent conclusions. We've all had the experience of driving that route east and west morning and evening. And that's the commuter times we were directly facing the sun. You crest some hills, you get that light in your eyes, what do you do? You have to slow down. You have to slow down. You have to hit the brakes.</p> <p>The impact on that goes all the way down the line. And there, folks, is the problem, because that isn't going to go away because you build more lanes. It's going to exacerbate for those that are on a single lane, as a matter of fact. But it should have been looked at. I think that that is the real concern.</p> <p>I don't think you can do much about the sun coming up in one direction or the other or that we can start claiming that you're going to be reducing commuting times. That probably won't happen. Okay. I've got one minute.</p> <p>Health impacts. Significant studies out there do indicate that excessive exposure to noise impacts health. People over the age of 75, 10 percent more risk of strokes. And I see a number of people that are of retirement age here. So, fun fact: Exposure to noise kills.</p> <p>Lack of imagination to technology. There are low-noise asphalts out there.</p>	<p>Please see response above to you regarding the same sun glare issue. (Comment #53, Gunderson #4 of 5).</p> <p>Please see previous response to you, above, regarding this same comment. (Comment #50, Gunderson #1 of 5).</p> <p>Attached to the C-470 Revised EA Traffic Noise Technical Report is the 2015 CDOT Noise Analysis and Abatement Guidelines document. Page 17 of that attachment states the following: "A related topic that has been researched for many years is the noise emissions that are due to the tire-pavement interaction. While it is accepted that different tires, pavements, and pavement surfacing textures do result in varying noise levels, it is difficult to forecast the overall pavement surface condition 20 years into the future. Due to this fact, and the requirement that noise mitigation must provide a readily perceptible reduction in noise levels over a long period of time (i.e., permanent), the use of different pavement types or surface textures cannot be considered as a noise abatement measure."</p>

Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name

Name and Comments	Response
<p>54 Gunderson, Loren #5 of 5 (continued) There are trees that could be planted in some areas. There are even cuts in the road. This would affect my neighborhood. I'll donate the dirt to your berms. But, yeah, there are cuts in the road that eventually reduce the level -- the grade of the road so it wouldn't impact our neighborhood.</p> <p>So a real lack of imagination. And that's my problem with this. The process is not supporting what it's supposed to do. It's the environmental assessment. What happened to our safety? What happened to our bike riders who are going to be exposed to reflected noise from those wonderful walls? All these need a little rethinking.</p>	<p>The CDOT Noise Analysis and Abatement Guidelines (page 3) state that, "Vegetation does not have sufficient noise abatement properties, and thus cannot be considered" as noise abatement. The 2011 FHWA noise guidance (page 63) states, "Vegetation, if it is high enough, wide enough, and dense enough and opaque may reduce highway traffic noise. A 200-foot width of dense vegetation can reduce noise by 10 decibels. It is usually impossible, however, to plant enough vegetation along a road to achieve such reductions."</p>
<p>55 Hall, Kirk & Linda: We live in Gleneagles Village approx 500 yards from the highway. The noise from traffic is quite loud. At times it is so loud we feel like we're sitting right next to it. I have Parkinson's disease and loud noise is a real problem for me. Please approve a wall!!</p>	<p>Noise analysis was conducted for your Gleneagles Village neighborhood. It showed that noise will increase with implementation of the Proposed Action. Seven residences on Caleridge would be impacted by noise with the Proposed Action. Mitigation was considered but did not meet the reasonable and feasible criteria of the CDOT Noise Analysis and Abatement Guidelines. These criteria are explained on page 4-21 of the Revised EA.</p>
<p>56 Hall, Linda: I just wanted to make a comment that the concern I have is that all of these noise studies have -- the one that was done in 2013 was done for a 20-minute period. My understanding is that during rush hour the noise actually is lower because the cars are not moving very fast. Early in the morning, 5:45, correct, there's a lot of noise. So my understanding is now if we're expanding the highway there are going to be more speeds at a consistent time. In other words, the noise factor is going to run more hours through the day than it is now so it's actually going to increase for over a longer period of time.</p>	<p>As stated on page 5 of the C-470 Traffic Noise Technical Report, "The loudest hour for noise occurs when the highest volume of traffic is traveling at the highest free flow speed for the particular roadway. This is often not the peak hour, when heavy traffic volumes result in lower speeds."</p>
<p>57 Harvey, Ron: I am disappointed in Douglas County BOCC for this decision with no benefits to local residents. 20 years ago or so we voted to fund C-470 through taxes which we have been paying. This has been a convenience for most who live in the South area, but now that the Douglas County BOCC has committed millions more of taxpayer dollars with no added benefit to its citizens.</p> <p>At a minimum there should be some type of reimbursement to the funding taxpayers such as reduced use amount, or some number of free uses per month.</p>	<p>The EA notes that approximately 75 percent of the Proposed Action is located within Douglas County. Douglas County residents would be the main beneficiaries of improved traffic flow on C-470.</p> <p>Tax issues such as this are outside the scope of the Revised EA.</p>

Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name

Name and Comments	Response
<p>58 Hayes, Lisa: The expansion without walls will create an unsafe environment. Cars, thus people, will have direct access to homes - those people that are criminals will be able to vandalize, rob and worse, have access to my children. I am so disappointed in how short-sighted CDOT is on the research.</p> <p>The noise detection is false - how can you live with yourselves - are we going to sacrifice homeowners to benefit some bonus program -- Do any of the decision makers live in this area? Do you [have] families? If so, would this still happen? All we ask is review the facts - false facts - and redo them!!</p>	<p>CDOT typically fences its right-of-way to discourage entry of people into an environment with high speed traffic but does not build security fences for private residences. The Proposed Action would add lanes, serving more vehicles, but would not modify access from the highway to neighborhoods.</p> <p>The noise analysis in the C-470 Revised EA has been prepared in accordance with the current applicable federal and state guidelines. We are unaware of any bonus program. At no time in the project development process did CDOT consider eliminating noise walls as a means of reducing overall project costs.</p>
<p>59 Hedrick, Russ: I am for more lanes. Your website does not state if there will be on/off constructed at Colorado Blvd. This exit needs to be built at any cost! And I think the 2 new westbound lanes need to go all the way to Santa Fe, at a minimum - taking them to Ken Caryl would be better. And if you really want to plan for the future, then run them all the way to I70. That's the only way you will relieve congestion. Stopping one lane at Colo Blvd will just shift the backups from Quebec street to Colo Blvd when traffic merges. Remember, Sterling Ranch - think 50,000 more people - is being built south of Santa Fe and 470. A lot of those people will be going to/from I25 also.</p>	<p>The 2006 EA proposed addition of express lane-only access to and from the east via a "T-ramp" at Colorado Boulevard. This feature was eliminated after 2006 in the development of the Proposed Action by CDOT and the C-470 Corridor Coalition because local governments did not want it.</p>
<p>60 Hornung, Al #1 of 2: I live in Gleneagles Village. I appreciate that CDOT is going to listen to us. I want you to do more than listen; I want you to take some action. Mr. Hickenlooper, Mr. Bhatt, build this wall!</p>	<p>We understand that HRNC has met with the governor's office and that a written response to HRNC may be forthcoming. Additionally, Mr. Bhatt has been briefed regarding HRNC's concerns.</p>
<p>61 Hornung, Al #2 of 2: Gentlemen: Please explain in writing why long-term noise readings have not been taken AT RESIDENCES.</p> <p>There are many references to the requirements and necessity for long-term measurements. The one simple reference to short-term noise readings does not relieve you of the NEPA obligation and rules You have a legal responsibility to do so.</p>	<p>Noise measurements for the C-470 Revised EA were taken in accordance with the CDOT Noise Analysis and Abatement Guidance, which does not require that noise measurements be taken in the yard of a residence, on private property.</p> <p>CDOT conducted long-term noise measurements in October 2015. The results confirm the TNM model validation in the Revised EA. Please see Section 5.3 of this Decision Document, called "Updated Information on the C-470 Traffic Noise Analysis".</p>

Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name

Name and Comments	Response
<p>62 Hunt, Mark: I am hearing that when this project on C-470 starts and finishes, there will be no sound walls or sound proofing. This is very discouraging as even now we hear the highway noise. To plan this is very irresponsible for the traffic engineers. We are held hostage by this decision and will only get worse. I would like a separate decision of this plan.</p>	<p>In the 2015 Revised EA, CDOT recommends provision of 17,200 linear feet of noise barriers.</p>
<p>63 Hutchinson, Raymond: The noise level from C470 has increased over the years. I live on Old Stone Drive and when we moved here you could not hear the traffic noise, now it is a constant roar. I am afraid that my house value will drop because the area will become undesirable due to the noise from C470. In the summer when all the trees have leaves it is somewhat muffled but in the fall, winter and spring the noise is much worse. I don't know who these people were that did the noise testing but I can assure you that they don't live along the C470 corridor.</p> <p>Why did they build a noise barrier down I25 and 225, seems to me we have the same situation here. The cost should not be the determining factor when you are talking about affecting the quality of life of those who have lived here for so many years.</p> <p>The state continues to approve permits for all these large apartment and housing complexes without considering the impact on the current environment.</p> <p>This whole thing is an example of CDOT trying to fix a traffic congestion problem at the expense of those who live along the C470 corridor, typical politics in action. In the end the politicians will win out, the voice of the little person will be shoved under the rug. How would those making the decision like to have their house sitting on the side of an 8 lane highway? They should all be made to answer that question.</p>	<p>CDOT and FHWA have concluded that the noise analysis for the C-470 Revised EA was prepared in accordance with the current applicable federal and CDOT Noise Analysis and Abatement Guidelines. HRNC's concerns have been addressed in this Decision Document and in previous correspondence with CDOT. All noise mitigation measures have been properly evaluated per NEPA and per established CDOT and FHWA guidance.</p> <p>Noise abatement recommendations are made on a project-by-project basis in accordance with Federal and CDOT Noise Analysis and Abatement Guidelines.</p> <p>CDOT has no jurisdiction over local land use decisions. Those decisions are made by cities and counties, not the state.</p> <p>Comment noted.</p>
<p>64 Judish, Dan: Your sound abatement test is such an insult. You received the results that you wanted not what is a fair and objective evaluation. All the state wants to do is save as much money on the project at any cost especially to the cost of the citizens that it is affecting. This entire project is not about relieving traffic tie ups on C470 but about making money essentially an additional tax except you just aren't calling it a tax. This state waited decades to upgrade its infrastructure and now is feeling the effects with the huge growth. I-25 north and south was built in 1957, how many years has it taken this state to finally do something about the expansion? How much of the interstate isn't even slated to be expanded? This is a joke!!</p>	<p>Noise abatement recommendations are made on a project-by-project basis in accordance with Federal and CDOT Noise Analysis and Abatement Guidelines.</p>

**Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name**

Name and Comments	Response
<p>65 Kaplan, Nick: We need to have the original noise walls reinstated that were recommended by CDOT in 2006.</p> <p>We almost did not buy our home 3 years ago because of the existing noise levels of 470. After learning that the sound walls would be in place for the expansion we purchased our home.</p> <p>Doubling the sound will be unbearable and will significantly decrease my property value and quality of life. New studies have been conducted that support the original 2006 noise study. Removing this wall is simply unacceptable, please reinstate the original noise wall.</p>	<p>Per current and established federal regulations and state guidance, a new traffic noise analysis was required for the 2015 Revised EA. As a result, the noise analysis conducted for the 2006 EA is not applicable for assessing traffic noise impacts and mitigation recommendations for the current C-470 Express Lanes project.</p> <p>CDOT is not responsible for real estate agent discussions.</p> <p>CDOT is required to apply established federal regulations and state guidance for traffic noise impacts and mitigation to all federally funded transportation projects. If a receptor is determined to be impacted by traffic noise, a reasonable and feasible analysis for mitigation is completed that considers constructability and noise reduction benefit, in addition to location, cost and other criteria. Property values are not a factor of this analysis. The decision to recommend mitigation for federal projects is based on the ability to construct a barrier that will have a noise reduction benefit that meets federal standards.</p> <p>No wall has been or will be “removed”. The 2006 EA provided recommendations that were identified as being subject to further change pending final design. The 2015 Revised EA recommends a total of approximately 17,200 linear feet of noise walls in the corridor, and that these 2015 Revised EA recommendations are also required to be confirmed and validated through final design of the project.</p>
<p>66 Landauer, Holly: I am concerned about the latest study showing that the noise mitigation barriers along C470 are no longer needed, while in 2003, when the traffic was even lighter than today, they were recommended.</p> <p>I think it hurts the neighborhood and property values if something is not done.</p>	<p>Per current and established federal regulations and state guidance, a new traffic noise analysis was required for the 2015 Revised EA. As a result, the noise analysis conducted for the 2006 EA is not applicable for assessing traffic noise impacts and mitigation recommendations for the current C-470 Express Lanes project.</p> <p>CDOT is required to apply established federal regulations and state guidance for traffic noise impacts and mitigation to all federally funded transportation projects. If a receptor is determined to be impacted by traffic noise, a reasonable and feasible analysis for mitigation is completed. In some cases, receptors are impacted but do not meet the feasible and reasonable criteria, so they do not receive mitigation. Property values are not a factor of this analysis.</p>

Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name

Name and Comments	Response
<p>67 Lareau, Mary: I attended the CDOT public hearing @ Lone Tree Arts Center, August 26. After the seeing the schematic of the new north/southbound ramps from I-25, I question both the safety and the cost of these dedicated to westbound C470. My routine travel is from southbound I-25 to westbound C470 and it already feels dangerous with the constant shifting of cars that are in the wrong lane with only the current choices. I can't imagine how dangerous it will be with an extra ramp just for HOV to add to the confusion.</p> <p>I expect a single ramp for all vehicles going westbound would not only be safer, but also more cost effective and that the savings could help pay for the much needed Noise Abatement Walls along the stretch of C470 that were promised in 2006. The road noise has increased every year. The HOV lanes will increase the capacity of the highway and will certainly add significantly to current levels in Gleneagles Village.</p>	<p>No HOV-only lane is included in the Proposed Action at the C-470/I-25 interchange or anywhere else. Please see Appendix C, Conceptual Design of the Proposed Action, in the Revised EA for a depiction of the project. It is available online at: https://www.codot.gov/projects/c470ExpressLanes At the end of the first paragraph (C-470 Express Lanes) click on "View the document".</p> <p>No HOV-only lane is included in the Proposed Action at the C-470/I-25 interchange or anywhere else.</p>
<p>68 Lilly, Claire: I am disappointed the way CDOT is handling this project!! You have misled many hundreds of people and if you continue down this path and not providing the sound mitigation that the original study in 2003 required, many will suffer...financially, medically and emotionally! We moved into our house in 1999 and the traffic noise has increased over the years to where there are days where you can't hear the person talking across the table! We were so happy in 2006 when we read about the proposed mitigation along the 470! Our tax dollars working!! Years have passed and the noise levels have increased!</p> <p>I DO NOT believe that you have our neighborhoods in your best interest, I believe it's all about the money and without the funding for the mitigation is the only way you can get the project approved!! SHAME ON YOU!! My question to you, how would you feel if this was your neighborhood...would you move?? and potentially lose thousands of dollars?? would you stay?? and watch your quality of life tumble?? Would you want this for your family members who have established a life, friendships and community in their neighborhoods?? The right thing may be hold off the project again and raise the money to DO THE RIGHT THING!! Also, I think you are misled if you think the toll roads will help pay for the project!! I haven't talked to anyone would pay to use them at the suggested tolls!! I think your committee is a bunch of MBA's that are looking at cost and nothing else! What would your Mothers say!!</p>	<p>The recommendations from the 2006 EA are not applicable to the current project (per federal regulations and state guidance). The 2006 EA provided recommendations that were identified as being subject to further change pending final design. No decision document was issued for the project. The 2006 EA has been superseded by the 2015 Revised EA, which recommends a total of approximately 17,200 linear feet of noise walls in the corridor. These 2015 noise wall recommendations are also required to be confirmed and validated through final design of the project.</p> <p>For federal projects, mitigation is recommended if it meets the requirements of both reasonable and feasible per guidance. If mitigation meets the established criteria, it is recommended. CDOT does not get to choose what mitigation gets recommended as a means to reduce overall project costs. At no time in the project development process did CDOT consider eliminating noise walls as a means of reducing overall project costs.</p>

**Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name**

Name and Comments	Response
<p>69 Lindsley, Sue: Gleneagles Village and the Links Golf course are every bit as close to the new toll road as the apartment and condo developments that are receiving tall walls to mitigate noise from a 7- 8 lane highway system running by their properties. The road noise is already at a level where conversations cannot be conducted anywhere near the C470 boundary area of Gleneagles and the Links. Three to four more lanes will make the doubling of the noise unbearable.</p> <p>This is an especially vulnerable and dangerous area not only for the residents and golfers, but for traffic that will be able to be reached with golf balls. For everyone's comfort and safety it is imperative that a tall wall be constructed between the 7 - 8 lane highway system and Gleneagles/the Links Golf course.</p>	<p>In addition to distance from the highway, density of development is a factor that affects the outcome of noise abatement analysis. Assuming that your reference to apartment and condo developments refers to Shadow Canyon complex, consider this example. The Traffic Noise Technical Report (page 88) indicates that nine residences in Gleneagles would benefit from a noise barrier estimated to cost roughly \$836,000. For Shadow Canyon, it indicates that 39 units would benefit from a wall costing an estimated \$1.4 million. With far more receptors benefiting, the Shadow Canyon case meets the established CDOT cost benefit criterion, while the Gleneagles case does not.</p> <p>Section 4.4.3 of the CDOT Noise Analysis and Abatement Guidelines indicate that, "CDOT has determined that for Colorado terrain and weather conditions, including common high wind events, 20 feet is the maximum allowable height without compromising structural integrity under typical construction design specifications." Noise walls are not used to keep golf balls from entering the roadway. The highway has existed adjacent to the golf course for many years and there has not been a concern about this issue. The Proposed Action would not increase this risk.</p>
<p>70 Lum Lung, Paul: I'm Paul Lum Lung. Me and my wife, we live at 18 Caleridge Court in Gleneagles Village, Highlands Ranch. We moved into our house in October of 2013. No one told us about the expansion at that time.</p> <p>Our understanding is that the 2006 expansion plans included the noise-abatement walls. But the 2015 plan did not. What happened? Did the noise level go down? I say no. It went up. So what happened?</p> <p>Year 2015 noise-level studies still indicate that there are few homes in our community that the noise levels exceed the acceptable standards. So why not noise-abatement walls?</p>	<p>A list of public meetings held in 2012 and 2014 is found on page 5-3 of the Revised EA. No C-470 public meetings were held in 2013.</p> <p>New FHWA noise analysis guidance became effective in 2011, replacing the prior guidance from 1995. This in turn required CDOT to update its Noise Analysis and Abatement Guidelines. The current applicable CDOT guidelines are dated January 2015.</p> <p>Seven homes in the Gleneagles Village neighborhood were predicted to meet or exceed the Noise Abatement Criteria. A hypothetical barrier was modeled but determined to not meet the criteria for reasonable and feasible mitigation. These criteria are explained on page 4-21 of the Revised EA. Results of the analysis for Gleneagles Village are presented on Revised EA page 4-21, and also in Appendix D, as well as the Traffic Noise Technical Report (page 87). Based on the analysis, no abatement was recommended for Gleneagles Village.</p>

Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name

Name and Comments	Response
<p>70 Lum Lung, Paul: (continued) We believe the C-470 expansion plan without noise abatement is already having a notorious effect on our Gleneagles Village community. Let me explain why. In 2013, we sold our house located at East Dry Creek and South Holly to downsize. We wanted to stay in the neighborhood. We were looking for a patio home, ranch-style homes. We found two communities, Gleneagles being one of them, another one in Lone Tree several miles away from C-470. So let me explain what happens.</p> <p>When we sold our house, we looked at these homes. We saw a home in that Lone Tree community. We made an offer at the listed price. Within hours, somebody came in with an offer higher than ours. That's the way it cut out. So it took us three months to find a home in Gleneagles Village, and that was only because a real estate agent was diligent enough to look at listings morning, noon, and night, and he found the one in Gleneagles Village. We made an offer on the day the "For Sale" sign went up, and, luckily, we got it.</p> <p>Sad to say that's not the case today. We believe that the word is out that the C-470 expansion is going to impact potential buyers in our neighborhood, and we don't believe that buyers will come into our neighborhood and our property values will plummet.</p> <p>We strongly urge CDOT to revert to the 2006 expansion plan and provide noise-abatement walls between C-470 and our community. Help us to maintain our property values and allow residents of Gleneagles Village to be able to live in our neighborhood without hearing the excessive noise or roar of cars across and motorcycles racing on C-470.</p>	<p>CDOT is required to apply established federal regulations and state guidance for traffic noise impacts and mitigation to all federally funded transportation projects in a consistent manner throughout the state. If a receptor is determined to be impacted by traffic noise, a reasonable and feasible analysis for mitigation is completed that considers constructability and noise reduction benefit, in addition to location, cost and other criteria. Property values are not a factor of this analysis. The decision to recommend mitigation for federal projects is based on the ability to construct a barrier that will have a noise reduction benefit that meets federal standards.</p> <p>The 2006 EA is not applicable for assessing traffic noise impacts and mitigation recommendations for the current C-470 Express Lanes project. A new noise analysis was required because the 2015 Revised EA: (1) examines a Proposed Action that differs from the 2006 Preferred Alternative, (2) includes updated traffic projection data, (3) includes more advanced survey data, (4) is subject to current applicable noise abatement guidance, and (5) uses the current traffic noise model (TNM) as opposed to the STAMINA model used in 2006.</p>
<p>71 Malek, Paul: No new tolls on our roads. The state is getting plenty of revenue from oil and gas development to pay for good roads. Eliminate all tolls from existing roads. Colorado should be a truly toll-free state. Increase the tax on diesel if you must.</p>	<p>The C-470 Corridor Coalition, comprised of all city and county governments along the route, identified tolled express lanes as the best available mechanism for funding C-470 improvements. Public policy regarding diesel fuel taxes is outside the scope of the project-specific C-470 Revised EA.</p>

Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name

Name and Comments	Response
<p>72 McCullah, Darlene: After a second test, now the noise level from traffic on C470 has been determined to be low enough to be of no concern to my community of homes in Gleneagles Village. I contest that decision. I believe a third test should be done during peak use hours. My subdivision is significantly affected by the noise level that NOW exists. The addition of the much need improvements to C470 will obviously add to the noise level. I think a noise mitigation barrier should be constructed west of Quebec as it passes by Gleneagles.</p>	<p>Noise abatement recommendations are made on a project-by-project basis in accordance with Federal and CDOT Noise Analysis and Abatement Guidelines. Results of the analysis for Gleneagles Village are presented on Revised EA page 4-21, and also in Appendix D, as well as the Traffic Noise Technical Report (page 87). Based on the analysis, no abatement was recommended for Gleneagles Village.</p>
<p>73 McGahey, Kirk: A single additional lane in each direction will dramatically improve the traffic conditions while eliminating the need to rebuild as many bridges and thus greatly reduce cost. Tolls could be applied to all drivers at a sensible rate less than 20 cents per mile to pay for the project, which would eliminate the need for more widening to separate toll/ un-tolled lanes.</p>	<p>In the C-470 Revised EA, Chapter 2, Alternatives Considered, indicates that alternative modes were considered and explains why the Proposed Action was selected. While a single additional lane could provide some relief for today's congested conditions, the Revised EA looks out to a planning horizon of the year 2035. The single added lane was considered as an alternative but does not meet the project's Purpose and Need through the year 2035.</p>
<p>74 Melick, Jordan: We stumbled onto the local news coverage from the Public Hearing that took place in Lone Tree. Regrettably we missed attending the meeting, and were appalled to hear that you have NO PLANS for a sound barrier or any kind of noise controls from Quebec to Yosemite. You have already created a nightmare for us when C-470 was first opened for traffic and now you're planning on adding to it?</p> <p>The prevailing winds are out of the South, and with a venturi effect, sound is carried up the Willow Creek corridor to our properties with a huge impact on our quality of life. We can't enjoy the outdoors on our deck or patio or sleep with our windows open because of all of the road noise. Our new Pella double-pane wood casement windows don't even stop the increased noise levels from the highway.</p> <p>How can we get you and your team to come over to our house so that you can experience the present noise levels first hand, before you double the number of lanes on C-470 without adding any noise barriers?</p>	<p>Receptors were identified for outdoor use areas of residential, commercial and recreation properties within 500 feet of C-470 as discussed on page 7 of the Traffic Noise Technical Report. As mentioned in FHWA Highway Traffic Noise: Analysis and Abatement Guidance on page 11 "Highway traffic noise is not usually a serious problem for people who live more than 500 feet from heavily traveled freeways." The Willow Creek neighborhood is outside this study zone. The Willow Creek neighborhood is more than 600 feet north of C-470 and adjacent to County Line Road, which would be the primary traffic noise generator for this community. There are also substantial commercial properties between C-470 and the neighborhood.</p>
<p>75 Milius, Raymond: Measurements taken were not adequate and were not in compliance with CDOT's own recommended practice. At the meeting I attended, the board showing the measurements for my area (between University and Broadway, north of C-470) indicates a high level over the guideline yet no sound mitigation (wall or berm) is planned. Noise levels are very high already so this is not acceptable to me.</p>	<p>A wall was considered for the Township at Highland Ranch subdivision, as documented in the Traffic Noise Technical Report, starting at page 59. At that location, a wall 20 feet tall and 1,700 feet was analyzed and was found to be unable to provide sufficient noise reduction to meet CDOT's criteria for reasonable and feasible mitigation.</p>

**Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name**

Name and Comments	Response
<p>76 Morgan, Mike: I live at 7577 South Willow Circle in the Willow Creek neighborhood of Centennial. Willow Creek is to the north of the C-470 corridor between Yosemite and Quebec. That segment is the busiest on both County Line Road and C-470, the busiest segment, therefore, the noisiest.</p> <p>Back in December of 1998, the environmental assessment was prepared by the Federal Highway Administration and CDOT with respect to the expansion of County Line Road all the way down to Santa Fe. And in that 1999 environmental assessment, it states -- and I quote -- the noise mitigation measures which will be implemented are as follows: Construct masonry noise walls adjacent to traffic analysis zones 3, 4, 5, 6, 7, 8, and 9. This was Willow Creek.</p> <p>In March 1999, a finding of no significant impact was issued by CDOT and the Federal Highway Administration. And it said -- and I quote -- noise barriers will be a masonry concrete type of wall in lieu of the less effective timber walls, which tend to require a lot of maintenance over time, unquote.</p> <p>It's now been 16 years. If you drive by that section, you'll note that that wooden wall which CDOT then said was not adequate is still there. Four or five years -- all the other masonry walls have been built, but not that one.</p> <p>About four years ago, we went to the Federal Highway Administration and CDOT and said, Why not? You made a binding commitment. You made a firm commitment to us. That was a commitment you made in order to get our support for that project. So it would not be highly a coincidence, so you would not have to do an environmental impact statement. That's a commitment you made.</p> <p>They told us at all levels, all the way up to Washington, D.C., our standards have changed. You will not be getting your town wall. That's beginning to be a familiar refrain, isn't it? Our standards have changed.</p> <p>Now we are engaged in a project which will increase traffic and speed. And I'm for that project. But it will also increase noise somewhat in our neighborhood, our neighborhood which was due a sound wall in 1999 and which has yet to get it.</p> <p>So I really have two points to make. One is in connection with this project, which will increase noise on Willow Creek. I believe doing the right thing is something you said. It means honoring your past commitment that you made in this transportation corridor. It's all part of the same transportation system going west.</p> <p>If you're going to spend this kind of money to increase the noise in our neighborhood, you need to live up to your past commitments, number one.</p>	<p>This is indeed the busiest segment of C-470, carrying an estimated 106,000 vehicles per typical weekday. It is also predicted to be the busiest segment in 2035, carrying 140,000 vehicles per day with the No-Action Alternative or 151,000 vehicles per day with the Proposed Action.</p> <p>The FHWA Highway Traffic Noise: Analysis and Abatement Guidance on page 11 "Highway traffic noise is not usually a serious problem for people who live more than 500 feet from heavily traveled freeways." The Willow Creek neighborhood is outside this study zone. The Willow Creek neighborhood is more than 600 feet north of C-470 and adjacent to County Line Road, which would be the primary traffic noise generator for this community. There are also substantial commercial properties between C-470 and the neighborhood.</p> <p>Residences north of County Line Road are outside of the C-470 project area and are not addressed in the C-470 Revised EA.</p>

Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name

Name and Comments	Response
<p>76 Morgan, Mike: (continued) Number two, on these boards here, you're talking about many sound walls that are not being built. There's also sound walls that were committed to being built. What good are those commitments? Are they worth anything? If they're worth anything, then CDOT and the Federal Highway Administration need to guarantee that those will be implemented. Otherwise, this entire process is a waste of time and taxpayer money.</p>	<p>The 2015 Revised EA recommends a total of approximately 17,200 linear feet of noise walls in the corridor. These recommendations are required to be confirmed and validated through final design of the project. This process includes a survey of benefitted receptors to determine if mitigation would be acceptable to the affected parties.</p>
<p>77 Morris, Brock: I'm director for the Highlands Ranch Community Association. There's several of us here tonight, and we are here in support of the Coalition. There's been a tremendous amount of information and data given to us tonight, and we -- HRCA would really urge CDOT to take a real hard look, step back, and really evaluate their position and do what's right for this community.</p> <p>There's a lot of folks here who are going to be hurt by this -- the lack of noise mediation. So we are here just to support the Coalition and to seriously urge CDOT to do something that will support this community.</p>	<p>Please see the responses to HRNC members Carter Sales, Larry Graber and attorney David Steinberger in Tables 3-2, 3-3 and 3-4.</p>
<p>78 Mount, Patricia: I do not agree with the decision to add toll lanes to c 470</p>	<p>Comment noted. In the C-470 Revised EA, Chapter 2, Alternatives Considered, indicates what alternative modes were considered and explains why the Proposed Action was selected.</p>
<p>79 Moyle, Kirk: I live in the Highgate neighborhood between University and Colorado Boulevard. We just recently bought a house, four months ago, in the neighborhood. One of the reasons we did buy the house -- it does back to C-470, but we were told that there would be walls put up along the highway based on the 2006 assessment by CDOT.</p> <p>Imagine my surprise two months later when, Oops, the walls are now gone And the gentleman who spoke before me [Waldenstrom, C.], your home is still there. I'm still on that list of homes affected by the noise. I guess we're up here to ask questions and don't answer. What happened between the two studies to affect the noise level? Did they use any of the first study or is it all based on the two 20-minute studies in 2013 published in 2015?</p>	<p>Many substantial changes affecting traffic noise analysis have occurred over the past decade. Therefore a new noise analysis was required. The 2015 Revised EA: (1) examines a Proposed Action that differs from the 2006 Preferred Alternative, (2) includes updated traffic projection data, (3) includes more advanced survey data, (4) is subject to current applicable noise abatement guidance, and (5) uses the current traffic noise model (TNM) as opposed to the STAMINA model used in 2006.</p>
<p>80 Mrla, Jannell: Please build the sound barrier wall. Do the right thing for the good people of Colorado.</p>	<p>Comment noted.</p>

Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name

Name and Comments	Response
<p>81 Mueller, S.: I was just reading the Transportation Impacts document, and I am prompted to write you a quick note. Table 3.1 has some errors: 1) Lucent Blvd currently has full access to C-470 - crosses over it. 2) Broadway - crosses UNDER C-470, not over it. 3) University - crosses UNDER C-470, not over it. 4) I-25 - mainline C-470 crosses under I-25, but ramps from EB to NB and NB to WB cross over I-25. Check it out on Google Maps. Only the Lucent Blvd interchange may have an impact on the traffic studies if they assumed the information in this table was correct. Clearly it is not. Hope this helps.</p>	<p>These corrections are appreciated. No analysis in the Revised EA relied on these descriptions in any way. A corrected version of this table is provided in Chapter 5 of this decision document.</p>
<p>82 Mumfrey, Chris: My name is Chris Mumfrey, and I'm a friend of Mike Morgan's actually who has just stepped out. But it's a hard act to follow him. And I also live in the Willow Creek community. I've lived there since 1980 when my parents moved here from Louisiana.</p> <p>And what I find interesting about this is when I got involved with the neighborhood homeowner associations was that all the way back into the mid-80s, there were noise-abatement studies. There was FONSI, all kinds of fun stuff that was promised to the folks of Willow Creek, which would also directly affect anybody that lives in the Highlands Ranch area, that we would be receiving this sound-abatement wall.</p> <p>And I won't rehash all of the fun things that Mike Morgan spoke of, all of which are 100 percent true, but I would like to point out that some of you may or may not be aware that lovely wooden fence that he spoke of had two sections of it knocked down in 2014, 2013. And it took our lovely state and local governments over six months to decide whose responsibility that lovely wall was, which meant that there were at least three homes that were directly exposed, not only to all the noise, but to all the traffic flow along County Line Road. I don't know about you, but that, to me, is a criminal act. There are children that live in those homes that were directly affected by all of that.</p> <p>My point in standing up here and saying all this is this: I don't know that anything that we've said tonight will matter. And I hate to be Debbie Downer because the truth of it is that we have gone to the government numerous times and asked for them not to raise the taxes to makes things better, but to responsibly spend the money that we already pay in taxes. And that has yet to happen.</p> <p>I want the wall as badly as anybody else in this room does -- well, maybe not as badly. There's probably certain officials here that don't want the wall to be built. But the truth of the matter is, is that we should all be working on this project together. But I don't know that our voices are going to be enough. So I would ask that anybody that's in this room that knows of a neighbor or somebody in your neighborhood that didn't show up to this meeting responds through the e-mails and the different avenues that we have in order to make the voices heard.</p>	<p>For the C-470 noise analysis, receptors were identified for outdoor use areas of residential, commercial and recreation properties within 500 feet of C-470 as discussed on page 7 of the Traffic Noise Technical Report. As mentioned in FHWA Highway Traffic Noise: Analysis and Abatement Guidance on page 11 "Highway traffic noise is not usually a serious problem for people who live more than 500 feet from heavily traveled freeways." The Willow Creek neighborhood is outside this study zone. The Willow Creek neighborhood is more than 600 feet north of C-470 and adjacent to County Line Road, which would be the primary traffic noise generator for this community. There are also substantial commercial properties between C-470 and the neighborhood.</p>

Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name

Name and Comments	Response
<p>83 Nadrash, Brandon: I am OPPOSED to making C470 into a tollway. C470 was never envisioned as a tollway and the development around it has been predicated upon C470 as a normal public road. Further, the tolls on E470 have become some of the highest in the nation - and that is exactly why so few people use it relative to other roads. Once a toll is in place, it can be increased. A C470 tollway would be no different than E470. Finally, this is what we pay taxes for. Roads and other civil infrastructure are the main uses for tax dollars. But the tollway proponents would tax us AND have their tolls. If you want to make C470 a tollway then I expect a major tax rate reduction.</p>	<p>Under the Proposed Action, only the newly added C-470 express lanes will be tolled. Motorists will still have the choice to drive for free in the two existing C-470 lanes each direction. This is different from the private tollway, E-470, where there are no free lanes and all users pay tolls.</p>
<p>84 Nicholas, Scott: Do it. But these tolls need to stay IN LINE WITH US 36 RATES, NOT E470 RATES. E470 IS A JOKE. As a Colorado native, I would like those that are planning this to keep in mind you placed the most expensive highway in state history, in the poorest demographic of Colorado (Aurora.) While the wealthiest neighborhoods in CO (Ken Caryl) have never had to pay a cent on their morning commute. E470 is not drive able due to how expensive it is. We need a road network that fits for everybody and is financially reasonable, not treasonous. US 36 rates appear to be effective, the same should be considered for all of them. Don't think CO residents would not vote e-470 contract void if it was placed as a ballot proposal. You've pissed off some educated people. Tolls are great for effective traffic management but they cannot be overpriced.</p>	<p>C-470 will not be privately owned, as E-470 is. As noted immediately above, C-470 motorists will have the choice of using free lanes or tolled express lanes. It is expected that toll rates on C-470 will be set at levels that provide a reliable trip for express lane users. Tolls would vary by time of day, with the highest rates charged during times of highest demand, which are the morning and evening commuter rush hours.</p>
<p>85 Nicholson, Dan: Need to put the noise walls back into the project, a very small percentage of overall budget, our neighbors are committed to seeing this turned around.</p>	<p>The 2015 Revised EA recommends noise mitigation in all locations where they were found to be both reasonable and feasible in accordance with the currently applicable (2015) CDOT Noise Analysis and Abatement Guidelines.</p>
<p>86 Norton, John: Hello, I'm a homeowner in Highlands Ranch Venneford Ranch area, and I think the Wilson Company and CDOT grossly underestimated the number of noise receptors in our neighborhood. And I know that because, I mean, there's 10, 20 houses just in our neighborhood where I can hear the noise. And when we're in a meeting just the other night, we could hardly hear each other speak. So that's all I have to say.</p>	<p>Noise mitigation decisions are not based on whether or not someone can "hear the noise" at a particular location. The noise must be loud enough to reach the established Noise Abatement Criteria and then a determination is made as to whether abatement would be reasonable and feasible.</p>

Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name

Name and Comments	Response
<p>87 Norton, Michelle: I support the widening of C-470 IF noise barriers are put up. There are areas along C-470 where the noise has already grown greater than projected and is louder than acceptable. Although the extra lanes are needed to move traffic, it should not ruin the ability of residents to enjoy our homes and lower our property values by 30-50K. Whatever engineering firm CDOT used did not give accurate noise levels if they are saying a noise barrier is not necessary. It is situations like this that make citizens not trust government agencies. The noise barriers are necessary would make a minimal difference in the overall cost of the project.</p>	<p>CDOT is required to apply established federal regulations and state guidance for traffic noise impacts and mitigation to all federally funded transportation projects in a consistent manner throughout the state. If a receptor is determined to be impacted by traffic noise, a reasonable and feasible analysis for mitigation is completed that considers constructability and noise reduction benefit, in addition to location, cost and other criteria. Property values are not a factor of this analysis. The decision to recommend mitigation for federal projects is based on the ability to construct a barrier that will have a noise reduction benefit that meets federal standards.</p>
<p>88 Not Provided: Build additional traffic lanes and they will fill-up. SF Bay Area uses BART, CALTRAIN & buses. LA got smart and finally built train lines. More traffic lanes contribute to more smog and create a severe environmental impact - removing trees, no sound walls, high grass berms = ugh! Noise pollution, air pollution, impact on wildlife and plant life.</p>	<p>In the C-470 Revised EA, Chapter 2, Alternatives Considered, indicates that alternative modes were considered and explains why the Proposed Action was selected.</p>
<p>89 Not Provided, Benjamin: I am not a fan of this. Toll Lanes are a bad idea. No one likes tolls. Why don't we spend the \$385 million on adding lanes instead? Seems to me like a better use of money.</p>	<p>CDOT does not have \$385 million, which is the estimated cost of the project. CDOT will be borrowing more than two-thirds of this amount. Future toll revenues will be used to pay off the debt incurred for constructing the project.</p>
<p>90 Not Provided, Cheryl: I am wondering if the on ramps on C470 will be made longer. This seems to be the biggest issue when traveling on 470 of vehicles slowing down at an almost stopped position to allow oncoming traffic merge in. And it affects the fast lane as well. If the on ramps were longer to allow the cars to merge at a great deal of distance rather than a short distance it would eliminate congestion. There doesn't seem to be any congestion on C470 along the stretch of road where there are no on ramps. Other than accidents! The biggest issues are merging eastbound on C470 from Kipling & Wadsworth and the worst is merging westbound onto C470 from Santa Fe which should be extended to Platte Canyon.</p>	<p>In many locations along C-470, the Proposed Action would extend existing on-ramps as an auxiliary lane dropping at the subsequent off-ramp. This will give motorists more time and distance to merge onto or off of the highway more safely. Please see page 2-17 of the Revised EA for a diagram depicting the locations of proposed auxiliary lanes (shown in yellow). These include auxiliary lanes between Kipling Parkway and Wadsworth Boulevard, as well as westbound from Santa Fe Drive to Platte Canyon Road, the areas where you have experienced merging problems.</p>

Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name

Name and Comments	Response
<p>91 Not Provided, Jim: Express tolls do not work. Just another way to wring out more money from tax payers. It forces more cars to take alternate routes witch jams up local roads to bypassing tolls. Good example is E-470. It is way too expensive to drive on it. One of most expensive in the country for the amount of miles you go. I'm just sick & tired of Colorado political mess forcing us taxpayers to bail them out for their financial mess they got our state in. Cut the fat on administration make it leaner, you wouldn't have to put in Toll road here.</p> <p>I'm big no on all toll roads and most people I talk are the same way. I'm disgusted on all our toll way projects in Colorado are out sourced to other countries to administer them. Our highway system should be free.</p>	<p>Under the Proposed Action, only the newly added express lanes will be tolled. Motorists will still have the choice to drive for free in the two existing lanes each direction. This is different from the privately-owned E-470 tollway, where all lanes are tolled.</p> <p>Various project delivery options were considered for the C-470 project by CDOT and the High Performance Transportation Enterprise. CDOT and HPTE concluded that CDOT will not pursue a Public-Private Partnership for this corridor. The road will not be privatized and will not be under the control of any foreign entity.</p>
<p>92 Not Provided, Teresa: Making C470 a toll way is a very, very bad idea.</p> <p>This highway is already setup to support the traffic flows in east and westbound directions. The Only place I can foresee lane expansion is somewhere near the Park Meadows mall. As you approach this area, the traffic gets denser and slows down to a crawl. It is in the area that the traffic flows are insufficient due to high volume commute times, but only during those peak commute times. I'm guessing about a 5 mile stretch. Other than that it is a very pleasant drive. I choose to drive on C470 because I detest the traffic on I-25. That is where CDOT can focus their attention to fix that mess! How about opening the express lanes and let everyone drive in them, it would open the flow considerably--in my opinion. I truly hate to see C470 become a toll when it clearly does not need to be. Don't ruin a good thing.</p>	<p>Under the Proposed Action, only the newly added express lanes will be tolled. Motorists will still have the choice to drive for free in the two existing lanes each direction.</p> <p>Please see Chapter 1, Purpose and Need, of the C-470 Revised EA. The Denver Regional Council of Governments (DRCOG), which is the federally designated transportation planning agency for the region, has identified C-470 as a "key congested area" on the regional transportation system. (Daily traffic volumes on C-470 (indicative of peak-hour congestion) are found from Lucent Boulevard east to I-25. The eastern portion of the C-470 project area is congested today and has been for a number of years. Compared to existing traffic, predicted 2035 volumes reflect approximately a 50 percent increase, attributed to ongoing local and regional growth.</p>
<p>93 Novak, Bob: I am a 19 year homeowner in the High Gate subdivision. The proposed widening of C/470 will probably be a welcome relief from the daily congestion that takes place. Therefore, it is probably needed.</p> <p>However, this proposed project will, without proper planning, will negatively impact our neighborhood's quality of life due to increased noise from C-470. It seems to me as if noise mitigation should be something that is on your radar screen, especially since you had some specific noise remediation recommendations all the way back in 2006.</p>	<p>Comment noted. See response immediately above regarding the project's Purpose and Need.</p> <p>New FHWA noise analysis guidance became effective in 2011, replacing the prior guidance from 1995. This in turn required CDOT to update its Noise Analysis and Abatement Guidelines. The current applicable CDOT guidelines are dated January 2015.</p>

Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name

Name and Comments	Response
<p>93 Novak, Bob: (continued) It has been independently confirmed that today the noise impact on our neighborhood is higher than CDOT's computer model predicts after the highway is doubled to eight lanes in front of my neighborhood. Therefore, the noise level after widening will far exceed any of your previous expectations. I cannot understand why you won't do, at the least, what has been determined to be feasible and build screening barriers to block/divert the noise that will engulf our neighborhood if you don't.</p>	<p>Please see responses to HRNC representatives Carter Sales, Larry Graber, and attorney David Steinberger in Tables 3-2, 3-3 and 3-4. In particular, the response to Mr. Graber's comment #2 addresses how noise measurements are used in the modeling process. The response also notes unresolved questions about HRNC's reported monitoring results.</p>
<p>94 Osborne, Susan: When the project was first proposed, sound mitigation was proposed, now the rules have been changed based on noise studies that appear to be flawed in that they were not done in the same manner and time frame as prior noise studies. CDOT, own up to your mistake and do the right thing for the taxpayers who are paying your salaries.</p>	<p>New FHWA noise analysis guidance became effective in 2011, replacing the prior guidance from 1995. This in turn required CDOT to update its Noise Analysis and Abatement Guidelines. The current applicable CDOT guidelines are dated January 2015.</p>
<p>95 Oslund, Scott: I live at 3598 East Meadow Creek Court in Highlands Ranch with my wife, September. I'm here to support my neighbors in Highlands Ranch Neighborhood Coalition. Thanks for my neighbors for showing up tonight. I've lived at my house for 20 years. I've seen two things; the traffic has increased and noise continues to increase. I'm here for two reasons. One, I'm concerned about the noise. I'm concerned about my property value. I support the highway expansion. I demand noise abatement.</p> <p>Thank you, neighbors. Thank you, CDOT, for listening, and thank you for showing up tonight.</p>	<p>CDOT is required to apply established federal regulations and state guidance for traffic noise impacts and mitigation to all federally funded transportation projects in a consistent manner throughout the state. If a receptor is determined to be impacted by traffic noise, a reasonable and feasible analysis for mitigation is completed that considers constructability and noise reduction benefit, in addition to location, cost and other criteria. Property values are not a factor of this analysis. The decision to recommend mitigation for federal projects is based on the ability to construct a barrier that will have a noise reduction benefit that meets federal standards.</p>
<p>96 Owens, William: What will it take for CDOT to honor its commitment made in 2006 and to respect the comments & data presented tonight to build noise abatement walls along C-470 from I-25 to Broadway? Is the testimony given tonight enough? I doubt it. Will it take legislation? Will it take litigation? Will it take petitioning the governor? Will it take replacement of CDOT management? What will it take to be honorable?</p>	<p>CDOT respects each and every comment provided on this project.</p> <p>The C-470 noise analysis was completed per established FHWA and CDOT guidance. Federal dollars can only be spent on mitigation that meets all applicable criteria in the guidance.</p>
<p>97 Pendery, Judy: Thank you. We live in Gleneagles Village, and the back of our home faces C-470 and our patio and master bedroom also face C-470. There are times that it's impossible for us to sit on our patio due to the traffic noise. At night, we prefer to leave our bedroom windows open. And the only time we do not have loud road noise is between 3:00 and 4:00 a.m.</p>	<p>Noise analysis was conducted for your Gleneagles Village neighborhood. Seven residences on Caleridge would be impacted by noise with the Proposed Action. Mitigation was considered but did not meet the reasonable and feasible criteria of the CDOT Noise Analysis and Abatement Guidelines.</p>

**Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name**

Name and Comments	Response
<p>97 Pendery, Judy: (continued) Some nights it's impossible to sleep with the windows open, and this interferes with our right to enjoy our home and the livability of it. We're not opposed to the expansion of the highway. We just need to have some relief from the unbearable noise. I would invite all of you who work for CDOT to come have drinks with us on our patio some evening and enjoy what should be a peaceful and quiet evening.</p>	<p>Comment noted.</p>
<p>98 Peters, David: My home is on White Cloud Drive, between Broadway and University in Highlands Ranch. My back yard and dining room are on the north side of the house, facing 470. The noise that comes from the traffic is so heavy that we barely ever eat in the dining room anymore. It starts at about 6:00 am and lasts right through 7:00 pm on weekdays. The worst is the noise acceleration from diesel pickup trucks with loud mufflers and the motorcycles that go racing by. Our back yard is no longer enjoyable. Weekend traffic coming east from leaving the mountains is often heavy on Sunday nights. Aside from the horrid noise, it is an eyesore to constantly view a steam of vehicles whizzing by at speeds over 70 mph. Please reinstate the recommended barrier walls and keep our community sane and peaceful. Adding 4 more lanes of traffic without compensating for noise and air pollution that will permeate is ludicrous.</p>	<p>The noise modeling results for the Revised EA confirm that your home is one of 17 in your neighborhood that would exceed the 66 dB(A) Noise Abatement Criterion the implementation of the Proposed Action. A noise wall was modeled for this area and did not meet reasonable or feasible requirements per guidance. Please see the discussion of the Highlands Ranch Dad Clark area beginning on page 61 of the C-470 Revised EA's Traffic Noise Technical Report. It is available online at: https://www.codot.gov/projects/c470ExpressLanes At the end of the first paragraph (C-470 Express Lanes) click on "View the document".</p>
<p>99 Peterson, Karin: PLEASE, PLEASE put noise abatement walls as originally promised between University and Quebec. The highway expansion is going to have such a negative impact on the properties that border the C470 corridor. Please do what you originally promised to maintain our quality of life.</p>	<p>The recommendations from the 2006 EA are not applicable to the current project (per federal regulations and state guidance). The 2006 EA provided recommendations that were identified as being subject to further change pending final design. The 2015 Revised EA recommends a total of approximately 17,200 linear feet of noise walls in the corridor, and that these 2015 Revised EA noise wall recommendations are also required to be confirmed and validated through final design of the project.</p>
<p>100 Prince, Joyce: As a homeowner in the Oakbrook neighborhood, the noise from C470 combined with that on County Line is most annoying. When C470 is increased to 8 lanes, the noise increase will make outdoor activities most unpleasant. The added pollutions are a real concern, also. It is imperative that barriers be built on the north (Littleton) side to help correct these problems. I implore you to reconsider installing noise barriers--they are CRITICALLY important.</p>	<p>A wall was considered for the Township at Highland Ranch subdivision, as documented in the Traffic Noise Technical Report, starting at page 59. At that location, a wall 20 feet tall (the maximum that CDOT builds) was analyzed and was found to be unable to provide sufficient noise reduction to meet CDOT's criteria for reasonable and feasible mitigation.</p>

**Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name**

Name and Comments	Response
<p>101 Pugh, Travis: Stop it, just stop it. Pay for our infrastructure, and stop with fake congestion management via toll lanes. It's already a total nightmare on the 36, and I can't think of a major project in years that CDOT doesn't want to toll. Stop it. Stop proposing toll lanes. Build enough infrastructure to handle our traffic without giving wealthy drivers a Get Out of Traffic Free card. CDOT is worthless to the average Coloradan, having completely abdicated its responsibility to build infrastructure for all of us. Just stop this idiocy now.</p>	<p>Comment noted. Chapter 2, Alternatives Considered, in the Revised EA, indicates that non-tolled alternatives were considered for this project, and why they were not selected.</p>
<p>102 Quirk, Sue: I have been a resident of Highlands Ranch (Westridge area) for 20 years. During this time C470 traffic has increased greatly. I am just astounded at how long this widening project planning has taken. My children have driven on C470 for the past four years daily to school. They attend Regis Jesuit High School so must travel the freeway entering at Lucent or Broadway. First and foremost, I read that the noise mitigation study was done in July of 2013. My thoughts are that it should have been studied during the school year traffic patterns which add many more vehicles than during the summer months.</p> <p>Secondly, I am completely shocked that noise barrier walls are not included at Glenn Eagles. I've frankly stopped golfing at the Links because the noise is too loud for me to relax. My belief is that the walls should be installed on both North and South sides of the freeway completely from I-25 all the way to Santa Fe.</p> <p>When I-25 was rebuilt, walls were put up on both sides. It looks fabulous and also definitely cuts down on the noise in the neighborhoods.</p> <p><i>[comment continues on next page]</i></p>	<p>CDOT Guidance requires both noise measurements and associated traffic data to be collected for model validation at multiple sites representing sensitive receptors in the project area. Two measurements at each location are recommended and may be taken <u>at any time when traffic is free flowing at or near posted speed limits</u>. In accordance with the guidelines, both the noise measurements and associated traffic data collected by CDOT on July 2nd and 3rd 2013) are acceptable and were used to successfully validate the noise model within established requirements.</p> <p>Noise abatement recommendations are made on a project-by-project basis in accordance with Federal and CDOT Noise Analysis and Abatement Guidelines. Results of the analysis for Gleneagles Village are presented on Revised EA page 4-21, and also in Appendix D, as well as the Traffic Noise Technical Report (page 87). Expenditure of approximately \$836,000 for a wall to benefit nine residences did not meet CDOT's cost benefit criterion. Based on the analysis, no abatement was recommended for Gleneagles Village.</p> <p>It is not correct that the entire I-25 corridor, even within metro Denver and the section associated with TREX, has noise walls. One source of confusion may come from the fact that some areas have retaining walls, which in some places may look like noise walls, but are not noise walls.</p>

Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name

Name and Comments	Response
<p>102 Quirk, Sue: (continued) Perhaps the most important comment I have is the SAFETY issue of incomplete merge lanes. I see they are called auxiliary lanes. It is absolutely insane how people do not know how to merge and leave room for those to merge. Attitudes of drivers have gotten so aggressive that it is difficult to even drive between 7-8 am. Broadway to Quebec is a mess in the morning. It really opens up at Quebec since the right auxiliary lane allows for 3 lanes. Please start on the project so that it will be finished sooner rather than another 10 years! I can't believe the length of bureaucratic time spent between 2006 and now. Shameful.</p>	<p>Yes, the Proposed Action includes extensive addition of auxiliary lanes in select locations where short merge lanes exist today. Auxiliary lanes will provide motorists with more time and distance in which to safely make their merge onto or off of the highway.</p>
<p>103 Ranero, Michael: I'm against the proposal.</p> <p>There's no sound barrier. My backyard is C-470. As it is now, it's really loud. I'm between University and Colorado. All the eastbound traffic piles up. I've been driving that for close to 15 years.</p> <p>I don't understand how an earlier study could recommend a sound barrier and the new one doesn't have it. If they don't have the money, they shouldn't build it. If you can't build it right you shouldn't built it.</p> <p>If you go northbound on 25 and you get close to people's houses they have a very nice cement sound barrier wall. It has nice little reliefs. I would expect the same. So that's what I'm looking for and that's what I want to see. I've never seen CDOT come to my house, come to my backyard. I don't know where their study is. But I'm so close and the noise is so loud if anybody pulls over on the shoulder my dogs just go crazy. That's how close it is. And anything else is almost an invasion of my privacy.</p>	<p>A new noise analysis was required because the 2015 Revised EA: (1) examines a Proposed Action that differs from the 2006 Preferred Alternative, (2) includes updated traffic projection data, (3) includes more advanced survey data, (4) is subject to current applicable noise abatement guidance, and (5) uses the current traffic noise model (TNM) as opposed to the STAMINA model used in 2006.</p> <p>It is not correct that the entire I-25 corridor, even within metro Denver and the section associated with the TREX construction project, has noise walls. One source of confusion may come from the fact that some areas have retaining walls, which in some places may look like noise walls, but are not noise walls.</p>
<p>104 Recker, James: We live at 14 Caleridge Ct which has an unobstructed view of C-470. In 2006 CDOT indicated that noise mitigation was required along the stretch from Quebec to the west. The noise level has been increasing. We are unable to enjoy our home and outdoor patio as well as having windows open because of the noise level. With the proposed expansion of C470 the noise level will increase!!!</p> <p>Will CDOT please build the noise mitigation as you required in 2006?</p>	<p>Results of the analysis for Gleneagles Village are presented on Revised EA page 4-21, and also in Appendix D, as well as the Traffic Noise Technical Report (page 87). At Gleneagles Village, the Cost Benefit Index for mitigation exceeded the threshold in the CDOT guidance, and thus mitigation was concluded to be not reasonable. Based on the analysis, no abatement was recommended for Gleneagles Village.</p> <p>The 2006 EA recommended (i.e., did not require) mitigation subject to further change pending final design, but that project did not get built. Mitigation recommendations in the Revised EA also are subject to change pending final design.</p>

Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name

Name and Comments	Response
<p>105 Rehnke, Robert & Jean: Comments, major concerns. WITHOUT INSTALLING THE NOISE WALL. It will have a MAJOR financial impact on us as the value of our home will decrease by more than 35%, which will impact our quality of health and our life as we could possibly become homeless because of the decrease in our home value as it's our investment for our retirement.</p>	<p>CDOT is required to apply established federal regulations and state guidance for traffic noise impacts and mitigation to all federally funded transportation projects in a consistent manner throughout the state. These regulations and guidance do not factor estimated property values into the analysis of traffic noise impacts or recommendations for mitigation. If a receptor is determined to be impacted by traffic noise, a reasonable and feasible analysis for mitigation is completed that factors construct-ability and noise reduction benefit, in addition to location cost and other criteria, into recommendations for mitigation. Property values are not a factor of this analysis as the decision to recommend mitigation for federal projects is based on the ability to construct a barrier that will have a noise reduction benefit that meets federal standards.</p>
<p>106 Reichman, Don #1 of 2: Don't know how to relate to decibel levels, but as I sit on our deck at noon on weekdays, the sound reminds me of a roaring surf near the ocean. That is not every day, it seems to be a function of the wind direction. Some days it is more like a calm surf. Calm surf is not a problem, roaring surf is not pleasant. A plane (presumably from Centennial) was flying overhead today and it was almost completely drowned out by the traffic noise.</p> <p>As traffic increases, more complaints will arise, and I believe the cost to mitigate the noise will be far greater after the highway is completed than if it is done during construction.</p>	<p>A graphic presenting decibel levels associated with common activities is found on the Frequently Asked Questions tab of CDOT's Environmental Programs website, at: https://www.codot.gov/programs/environmental/noise/noise-faqs.html#measure.</p> <p>In cases where noise mitigation is recommended (and subsequently verified through final design), CDOT provides it as part of the project and does not have a choice to defer it.</p>
<p>107 Reichman, Don #2 of 2: Follow up to my previous comment. When we purchased our house in January 2015, the Realtor told us there would be a sound barrier erected along 470 when the expansion was completed. I believe he was going with the information available at the time. Not real thrilled that CDOT decided to change their plans.</p>	<p>New FHWA noise analysis guidance became effective in 2011, replacing the prior guidance from 1995. This in turn required CDOT to update its Noise Analysis and Abatement Guidelines. The current applicable CDOT guidelines are dated January 2015. CDOT has no oversight of real estate agent discussions.</p>
<p>108 Rold, Cindy: I am concerned about the lack of noise barriers on C470. C470 already generates a significant amount of noise, and noise barriers would make a big difference. I visited a house right next to Highway 285, where there are noise barriers, and I could hear nothing from 285. I live 1/2 - 1 mile from C470 and hear more noise from the interstate than I could hear at that house on Hwy 285. Noise barriers matter.</p>	<p>In the Revised EA, CDOT recommends provision of 17,200 linear feet of noise barriers. The full 13.75-mile corridor was analyzed for noise per CDOT Noise Analysis and Abatement Guidelines. Please see the Traffic Noise Technical Report for more information.</p>

**Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name**

Name and Comments	Response
<p>109 Rudnicki, Beth: I live in Highlands Ranch. I have been to some of your meetings and have talked to your representatives. I do not support the C470 expansion project. I do not support Toll lanes. I do not support Douglas County money going to support the C470 Expansion Project. My vote is NO expansion.</p> <p>If I am out voted than my next request is that noise mitigation is done on both sides of C470 and our community leader Carter Sales - Highlands Ranch Neighborhood Coalition works with CDOT to get this accomplished!!!!!! Instead of CDOT working against the community/Carter Sales like they have done and continue to do. Feel free to contact me. The New C470 Environmental assessment records of the C470 Expansion Project from Kipling to 125 are not valid.</p>	<p>Comment noted.</p> <p>CDOT has respectfully engaged HRNC on numerous occasions, and consistently responded to HRNC's concerns and input as demonstrated in the May and August correspondence between CDOT and HRNC. The public involvement process as required by NEPA is the appropriate forum for submitting and responding to public comments during the NEPA process.</p>
<p>110 Rymer, Kate: Please expand without the tolls! I think we've all had enough of tolls around here, and outrageous ones at that! We all pay a ton in taxes, we shouldn't have to pay even more to drive on city roads. I think a lot of the traffic issues in the Denver area would be alleviated with dropping the tolls. That will allow traffic to spread out since a lot of people avoid the E470 because the tolls are outrageous. The C470 is way overdue for expansion. Just please do it without the tolls!</p>	<p>Comment noted. Chapter 2, Alternatives Considered, in the Revised EA, indicates that non-tolled alternatives were considered for this project, and why they were not selected. Please be aware that only the newly added express lanes will be tolled. Motorists will still have the choice to drive for free in the two existing lanes each direction.</p>
<p>111 Sales, Carter: [Note: This comment and response are provided separately, outside of this table.]</p>	<p>Please see separate response in Table 3-2.</p>
<p>112 Salisbury, Barbara: Even though they are putting a wall beside my community, which is Canyon Ranch, I want to make sure that they do, and I want to thank them for doing that because the -- I'm quite a bit off the road, but I'm next to the open space so I do get a lot of the traffic noise. It's very difficult to talk to someone unless you're as close as me and you. It's very difficult to talk to anybody outside. You have to scream and then -- and sometimes then you still can't hear. You have to get closer. So the noise level is quite a problem when you're outside. So I want to thank them for building the wall there which is not built yet so hopefully they'll still do it.</p> <p>But then the other comment I have is that the regional trail which runs along 470 is -- if you put two lanes in addition to what are already there you're going to have that trail extremely dangerously close to the road where that even a simple accident on the road, if they go off the road they could hurt someone on the trail. The trail is a very busy trail. And so I would like for them to definitely take a look at moving that trail further back away from the highway, moving it from where it presently is because it will be too close. And that runs all that area from probably Broadway up to at least Colorado, it's very close.</p>	<p>The wall recommended for your development is proposed to be an average of 15.75 feet and a total length of 4,300 feet. This wall will start at Colorado Boulevard and go west, so yes, it will also protect the open space adjacent to your development.</p> <p>Safety of the trail facility is a consideration that has been considered in the project's conceptual design and will be included in the project's final design.</p>

Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name

Name and Comments	Response
<p>113 Scholz, Bob: I would like to understand how ramp metering provides an effective, up-to-date solution to highway traffic flow, safety and fuel efficiency. Shorting the distance for vehicles to accelerate to the speed and flow of the highway traffic seems to create the potential for significant speed differential and reduced safety as vehicles start from a dead stop well up the ramp. This negates the benefit of the ramp, particularly for trucks and vehicles with smaller engines that are simply incapable of accelerating to the appropriate merging speed. Two-lane metering seems to force hard fuel-inefficient accelerations by both vehicles as they often "race" to get up to speed and merge with traffic. Overall, it is my impression that ramp metering is causing more wasted fuel as merging vehicles either cannot get up to speed, thereby disrupting traffic flow on the highway, or by blowing through fuel as drivers stomp on the gas pedal in order to have a shot at getting up to the appropriate merging speed.</p>	<p>Ramp metering is intended to help maintain traffic flow on freeway through lanes. Speed reductions for large numbers of vehicles on the freeway can be more wasteful than the additional energy required for acceleration by the smaller number of vehicles entering the highway from on-ramps. Meter timing is intended to match potential traffic gaps and thus improve merging safety.</p> <p>The C-470 Proposed Action includes extensive addition of auxiliary lanes, linking one on-ramp with the next off-ramp. This would provide motorists more time and distance in which to complete a safe merge, thereby further improving safety and traffic flow.</p>
<p>114 Schwan, David, #1 of 2: I reside about two-tenths of a mile north of C-470 slightly to the east of Broadway. And in going through the noise map it showed significant numbers of noise meters that exceeded 66 decibels. I hear the traffic on C-470 now and CDOT wants me to believe that adding two toll lanes and an auxiliary lane will not bring noise significantly higher, nor to the point of requiring noise walls.</p> <p>It is incomprehensible to believe that more than doubling the number of cars and increasing the speed because this congestion is supposed to be lessened will result in acceptable noise levels.</p> <p>Further, noise is logarithmic, not linear, and so the amount of additional noise generated will be more than noticeable and unacceptable and interfere with people's lives and property values.</p> <p>I'm concerned that CDOT has adopted a different set of rules about when to build noise mitigation than was used for similar neighborhoods when the I-25 widening took place south of Evans. Those people all got noise walls and we're being told no. This isn't equal treatment.</p> <p>CDOT -- the noise expert explained that CDOT uses the readings now to validate a model.</p>	<p>Under CDOT and FHWA Noise Analysis and Abatement Guidelines, the fact that a receptor is predicted to reach or exceed 66 decibels does not necessarily mean that mitigation will be provided. The guidelines specify criteria by which it is determined whether or not mitigation would be both reasonable and feasible. Please see sections 4.4, Feasibility, and 4.5, Reasonableness, in the CDOT Noise Analysis and Abatement Guidelines that are included as Appendix A to the Traffic Noise Technical Report.</p> <p>Traffic is not expected to double (100 percent increase) anywhere on C-470 by 2035. Near your address, in the vicinity of Broadway, it is expected to increase from 97,000 vehicles per day in 2013 to 145,000 vehicles per day in 2035 with the Proposed Action. This would be a 49 percent increase.</p> <p>Noise abatement recommendations are made on a project-by-project basis in accordance with Federal and CDOT Noise Analysis and Abatement Guidelines. New FHWA noise analysis guidance became effective in 2011, replacing the prior guidance from 1995. This in turn required CDOT to update its guidance. The current applicable CDOT guidelines are dated January 2015.</p> <p>Correct. This is the purpose for the noise monitoring.</p>

Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name

Name and Comments	Response
<p>114 Schwan, David, #1 of 2: (continued) And as I owned a house prior to C-470 being built, I remember being told by CDOT at the time that it had the capacity for many more years than the time has elapsed from when it was built till now and so that questions CDOT's ability to have a model that tells what the traffic will look like in 2035 or 2040. I suspect they'll blow through those models well in advance just like what they did with the original C-470.</p>	<p>Traffic projections for C-470 in 2035 are derived from the FOCUS model developed and maintained by the Denver Regional Council of Governments (DRCOG), which is the designated regional transportation planning agency. Traffic models today are more sophisticated than those used 30 years ago.</p>
<p>115 Schwan, David, #2 of 2: The rationale for not building noise mitigation between University & Broadway on the North side doesn't pass the smell test. If homeowners hear the noise now and it exceeds 66 db now and 3 additional lanes are built it must be louder and noisier. The model predicting volume & noise is questionable since the predictions made about volume when C470 was originally built were wrong. Those models were exceeded by real traffic many years ahead of the model.</p>	<p>Under CDOT and FHWA Noise Analysis and Abatement Guidelines, the fact that a receptor is predicted to reach or exceed 66 decibels does not necessarily mean that mitigation will be provided. The guidelines specify criteria by which it is determined whether or not mitigation would be both reasonable and feasible. Please see sections 4.4, Feasibility, and 4.5, Reasonableness, in the CDOT guidelines that are included as Appendix A to the Traffic Noise Technical Report.</p>
<p>116 Showers, Jacy (Dr.): When I evaluated relocating last year to the Highlands Ranch area, my #1 criterion for purchasing a home was to be in a quiet area. I thought I was achieving that by purchasing a home in a section of Gleneagles Village furthest away from C-470. Much to my chagrin, I do occasionally hear road noise from that highway and, barring the erection of noise barriers, I know the problem will worsen if C-470 is expanded. In finalizing plans for the expansion, I urge you, even plead with you, to put up noise barriers out of respect for my quality of life and the home values in the area.</p>	<p>Results of the analysis for Gleneagles Village are presented on Revised EA page 4-21, and also in Appendix D, as well as the Traffic Noise Technical Report (page 87). Based on the analysis, no abatement was recommended for Gleneagles Village.</p>
<p>117 Skansberg, Mark: I am quite concerned that the plans for the C-470 expansion does not include noise barriers on the north side of the highway. Our neighborhood has homes just across County Line Road and mere blocks or less from C-470. The noise is already quite loud, and will only get much worse as the highway volume doubles in the next few years. This will undoubtedly have a negative impact on our outdoor way of life, and will result in a tremendous decrease to our property values with the increased noise.</p>	<p>Receptors were identified for outdoor use areas of residential, commercial and recreation properties within 500 feet of C-470 as discussed on page 7 of the Traffic Noise Technical Report. As mentioned in FHWA Highway Traffic Noise: Analysis and Abatement Guidance on page 11 "Highway traffic noise is not usually a serious problem for people who live more than 500 feet from heavily traveled freeways." The Willow Creek neighborhood is outside this study zone. The Willow Creek neighborhood is more than 600 feet north of C-470 and adjacent to County Line Road, which would be the primary traffic noise generator for this community. There are also substantial commercial properties between C-470 and the neighborhood.</p>

Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name

Name and Comments	Response
<p>117 Skansberg, Mark: (continued) I understand that there are plans to install a noise fence on the south side of the highway, and feel that it would be very unfair not to do the same for us on the north side. Please reconsider your plans for the sake of our neighborhood. Thank you.</p>	<p>Noise abatement recommendations are made on a project-by-project basis in accordance with Federal and CDOT Noise Analysis and Abatement Guidelines.</p>
<p>118 Smoody, Karen & Mike: We find some of the reasons given to eliminate sound barriers to be a joke...</p> <p>With increased traffic over the years, noise has NOT decreased, but rather increased!</p> <p>Our back yard is literally C-470, so we hear the road noise 24/7. We purchased a decibel meter and have tested the noise level at all times during the day and night, during heavy and low traffic times, and during various types of weather and wind conditions, resulting in several readings over the threshold of 65 db - even up to 91. That's certainly a HUGE difference! We also just replaced our bedroom window with a triple pane...and still hear noise both day and night. We would like to join the folks in Gleneagles and invite CDOT, the meter readers who conducted the 'noise level tests', and whoever else is against noise barriers, for drinks on our deck so they can experience the reality of the noise we listen to day in and day out. Are they even interested in viewing our record of levels? Thank you for this opportunity to express our concerns.</p>	<p>No noise walls have been "eliminated". The recommendations from the 2006 EA are not applicable to the current project (per federal regulations and state guidance). The 2006 EA provided recommendations that were identified as being subject to further change pending final design. The 2015 Revised EA recommends a total of approximately 17,200 linear feet of noise walls in the corridor, and that these 2015 Revised EA noise wall recommendations are also required to be confirmed and validated through final design of the project."</p> <p>Nothing in the Revised EA or the Traffic noise Technical Report suggests that noise on this highway has decreased. Further noise increases are expected due to local and regional growth.</p> <p>Noise levels vary from instant to instant. CDOT and FHWA noise analyses are based on one-hour average sound levels. The hourly equivalent sound level is abbreviated as L_{eq}. Due to averaging, noise can exceed 65 decibels for some portion of an hour but still result in an L_{eq} that is not more than 65 decibels. Please see page 7, Noise Fundamentals and Traffic noise Impacts Criteria, in the 2015 CDOT Traffic Noise Analysis and Abatement Guidelines. This document is Appendix A of the C-470 Traffic Noise Technical Report.</p>
<p>119 Snow, Francine: As a young person I found out City/State/Fed dept. would play under the table politics. Borrow use funds when and where at time at their discretion. Plans were given to us...I answered questionnaires/phones call/surveys...but we the people really don't matter... who gets the deal, .who makes the gov contract to cut/\$\$\$ never minding lives of those affected. Sound effect noise levels need to be addressed!!!! Re instate the plan from 2003-2006</p>	<p>New FHWA noise analysis guidance became effective in 2011, replacing the prior guidance from 1995. This in turn required CDOT to update its Noise Analysis and Abatement Guidelines. The current applicable CDOT guidelines are dated January 2015.</p>
<p>120 Steinberger, David (HRNC attorney): [Note: This comment and response are provided separately, outside of this table.]</p>	<p>Please see separate response in Table 3-4.</p>

Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name

Name and Comments	Response
<p>121 Suhaka, Andrea: I live a couple hundred feet from Arapahoe Road. My concern is not the highway itself. I'm glad this is happening because I have fought that traffic going east or west.</p> <p>My concern is what's going to happen to our neighborhoods as the highway is being built. And that's going to be a huge problem on County Line Road, on Dry Creek Road, on Arapahoe Road. And right now, all of us along those roads have cut through traffic problems.</p> <p>And I foresee one solid year of absolutely -- maybe even two -- of absolute misery while the road is being built. I don't think anyone has even considered the traffic that won't be able to take the highway while the highway is being built.</p>	<p>Comment noted.</p> <p>Page 3-29 of the Revised EA reports that CDOT will maintain two through lanes open in each direction during construction, and list several other strategies for minimizing construction-related congestion of C-470.</p> <p>Near-term construction of the Interim construction project is expected to take two years or less. Completion of the Proposed Action at a future date may comparable time, but would focus on the western half of the project area.</p>
<p>122 Sundlof, L.: The people who back to C470 need to have the sound barrier walls. The traffic is continuing to increase and the noise has increased as well. Please reconsider and give those people the quiet they deserve.</p>	<p>Noise abatement recommendations are made on a project-by-project basis in accordance with Federal and CDOT Noise Analysis and Abatement Guidelines.</p>
<p>123 Tanberg, Kim: My question is why are you so against building a sound wall?</p> <p>Don't you think you would have less push back from the community if you just add that! Sometimes I wonder why people make things so difficult. Why can't CDOT just do the right thing - honestly, how you sleep at night is beyond me.</p> <p>I get it... it is all about the money, not people.</p>	<p>CDOT and FHWA neither favor nor support any particular sound wall. In cases where noise mitigation is recommended in accordance with CDOT's Noise Analysis and Abatement Guidelines (and subsequently verified through final design), CDOT provides it as part of the project and does not have a choice to do otherwise.</p> <p>Page 4-23 of the Revised EA indicates that an estimated \$11.1 million would be spent on the recommended noise barriers. All mitigation recommendations were based on the established CDOT Noise Analysis and Abatement Guidelines, not on any cost savings goal.</p>
<p>124 Tepper, Dan: No more private companies getting to reap the profits from toll roads in our state. No more toll roads. CDOT gets enough money via taxes, and the existing toll roads, to maintain our roads - without giving away 50 year leases that they refuse to allow the public to view. If you keep adding toll roads, and giving that money to private companies... lower our taxes so you're no longer double dipping</p>	<p>There are no plans to sell or otherwise privatize C-470. CDOT and the High Performance Transportation Enterprise has concluded that C-470 is not a good candidate for a public-private partnership (P3) project delivery.</p>

Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name

Name and Comments	Response
<p>125 Theobald, Jean: I am writing today as I am a Realtor in the Highlands Ranch community (since 2005) I have represented in the past, and will be in the future, many home owners in the High Gate community in Highlands Ranch. This community has many homes that will be negatively impacted - real estate marketability/home values - if the sound mitigation barriers and walls are not included with the expansion of the 470 corridor. As a real estate professional, I request you reconsider the sound mitigation barriers and walls to ensure these homeowners are not impacted further not only by the increased road noise, but financially when they go to sell their homes. These are homeowners who have lived in the community many, many years and have taken pride in maintaining their investment along with maintaining the neighborhood in very positive ways - where it would be not only disappointing, but more importantly can be financially devastating to some of these families. Thank you, in advance, for your consideration. Jean Theobald, Realtor</p>	<p>CDOT is required to apply established federal regulations and state guidance for traffic noise impacts and mitigation to all federally funded transportation projects in a consistent manner throughout the state. These regulations and guidance do not factor estimated property values into the analysis of traffic noise impacts or recommendations for mitigation. If a receptor is determined to be impacted by traffic noise, a reasonable and feasible analysis for mitigation is completed that factors construct-ability and noise reduction benefit, in addition to location cost and other criteria, into recommendations for mitigation. Property values are not a factor of this analysis as the decision to recommend mitigation for federal projects is based on the ability to construct a barrier that will have a noise reduction benefit that meets federal standards.</p>
<p>126 Vogt, Richard #1 of 2: I think the funding for this particular project is ill-conceived at the present time. Something happened between 2013 of February when the decision was made to make tolling lanes for this particular highway. And that was that oil prices cratered.</p> <p>And in those particular circumstances, we have a real obligation to relook at our finances for this particular project, which is necessary in order to provide some relief for residents in this area.</p> <p>I calculated out the average price per gallon, and it's 85 cents less at this particular time period than one year ago. That leaves a little bit of room for, I'm sorry to say, a slight hike in gasoline taxes to pay for the whole thing without tolls. And I think that this should be re-evaluated because landscape has changed.</p> <p>And under those circumstances, I think the statement that we have a situation where the only answer for everything is to put toll lanes on I-70 and U.S. 36 and C-470 -- we've got to rethink this whole strategy. And this is one area where we should undertake this particular process.</p>	<p>Public policy regarding gasoline taxes outside the scope of the project-specific C-470 Revised EA.</p>

**Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name**

Name and Comments	Response
<p>127 Vogt, Richard #2 of 2: Congratulations on a plan that has taken 9 years! It is impressive. C-470 needs more lanes.</p> <p>However, within the past year the economics of the proposal has drastically changes due to the substantial reduction in the price of gasoline & diesel. Gas costs about 85 cents less per gallon than one year ago. CDOT's universal answer is to create toll lanes if they are needed. What we need is an increase in the state gasoline & diesel tax to pay for additional lanes. The Denver Post has reported a possible bi-partisan agreement to raise these taxes just this week. This is important especially with more fuel-efficient vehicles. It's no wonder that there are currently not enough funds to make necessary improvements. Thank you for your consideration.</p>	<p>Public policy regarding gasoline taxes is outside the scope of the project-specific C-470 Revised EA.</p>
<p>128 Waldenstrom, Carl: Our home at 26 Caleridge happens to be one of the seven receptors and, therefore, double-barrel shotgun here. A project of this magnitude with federal funding requires compliance of many outside Interests, which take priority. It must be met simply to have funds available. However, it also reduces the application of those funds towards various important projects.</p> <p>The National Environmental Policy Act, as referred to earlier, actually demands environmental justice. And I quote, to ensure the full and fair participation by all potentially affected communities in the transportation decision-making process, in the •process of making decisions.</p> <p>On the 28th of July, we received the CDOT decision without any consideration given to outside engineering data or representation. Given the policy statements of 1969 and its attached strings to qualify for federal funds, there are only a few areas that can be altered or modified.</p> <p>Comparing the CDOT noise reading of 2006 with the revised conclusion or decisions expressed in the July report, the requirements for noise barriers have changed in favor of saving money.</p> <p>Finally, my wife and I, as I said, own one of the receptor homes. We moved in November 1, 1999, with the Realtor's statement a noise wall will be built.</p> <p style="text-align: center;"><i>[comment continues on next page]</i></p>	<p>Please see the environmental justice assessment in the Revived EA, starting at page 4-2, and the Environmental Justice Technical Report. CDOT and FHWA believe all requirements of NEPA have been met by the revised EA and decision document.</p> <p>All information presented to CDOT by HRNC has been properly and respectfully considered, analyzed, and responded to. Please see responses to HRNC representatives Carter Sales, Larry Graber, and attorney David Steinberger in Tables 3-2, 3-3 and 3-4.</p> <p>In cases where noise mitigation is recommended in accordance with CDOT's Noise Analysis and Abatement Guidelines (and subsequently verified through final design), CDOT provides it as part of the project and does not have a choice to do otherwise.</p> <p>CDOT cannot speak for the Realtor.</p>

Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name

Name and Comments	Response
<p>128 Waldenstrom, Carl: (continued) The traffic noise level has increased year after year. And by the way, a newly installed blacktop surface is much quieter and makes favorable noise measurements. When was that blacktop installed relative to the measurements taken?</p> <p>Presently, the trees, the leaves, direction of the wind and velocity, the cloud layer above, the day of the week, especially if it's a holiday, speed of traffic all are factors we have learned to evaluate and assess without fancy equipment or noise computer models.</p> <p>Noise mitigation must be included in the project, and it must not be scrapped by manipulating data or standards like reducing the number of homes affected.</p> <p>We lost 54 homes between the two reports. And as I travel the neighborhood, I can assure you they are all there.</p> <p>Gleneagles Village is a delightful, great place to live, and I want to be able to say that 10 years from now.</p>	<p>Attached to the C-470 Revised EA Traffic Noise Technical Report is the 2015 CDOT Noise Analysis and Abatement Guidelines document. Page 17 of that attachment states the following: "A related topic that has been researched for many years is the noise emissions that are due to the tire-pavement interaction. While it is accepted that different tires, pavements, and pavement surfacing textures do result in varying noise levels, it is difficult to forecast the overall pavement surface condition 20 years into the future. Due to this fact, and the requirement that noise mitigation must provide a readily perceptible reduction in noise levels over a long period of time (i.e., permanent), the use of different pavement types or surface textures cannot be considered as a noise abatement measure."</p> <p>No data was manipulated by CDOT. In the Revised EA, CDOT recommends provision of 17,200 linear feet of noise barriers, an increase of more than 7% from the 16,000 linear feet recommended in the 2006 EA.</p> <p>The Noise Technical Report for the 2006 EA indicated (page 50) that 61 Gleneagles residences would benefit from noise mitigation, based on adding a "correction factor" of 3 dB(A) as noted on page 7. The report for the Revised EA (page 88) indicates that seven residences would be impacted and nine residences would benefit. The Revised EA needed no correction factor and therefore did not add 3 dB(A).</p>
<p>129 Waldenstrom, Sharon: I'm the wife of Carl. We live in Gleneagles Village. Let me start off with a quote from George Carlin, who died in July of 2008.</p> <p>The paradox of our time in history is that we have taller buildings but shorter tempers, wider freeways but narrower viewpoints. We spend more but have less. We buy more but enjoy less. We have bigger homes and smaller families, more conveniences but less time. We have more degrees, but we have less sense. We have more knowledge, but we have less judgment. We have more experts but, yet, more problems. We cleaned up the air but polluted the soul. We've conquered the atom but not our prejudice. We write more but learn less. We learn to rush but not to wait.</p> <p><i>[comment continues on next page]</i></p>	

Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name

Name and Comments	Response
<p>129 Waldenstrom, Sharon: (continued) Bill Antico kind of outlined the first point that I want to make tonight in the fact that Gleneagles Village was not -- we talked to all people in affected areas and listened to what recommendations they had.</p> <p>We were not contacted except in 2006.</p> <p>So when you revised your plan, you did not include all of our homes in our neighborhood.</p> <p>So we've learned to rush, but not to wait. You haven't included us nor what your paper said in the Highlands Ranch Herald.</p> <p>Highlands Ranch Neighborhood Coalition, on 7/13, submitted an independent noise study to CDOT and requested you perform an independent noise study, but you refused. You refused. You just kind of pushed us away. Why? What makes your noise study gospel and another not relevant? Why won't you consider an independent study? More knowledge, but less judgment. More experts, yet more problems.</p> <p>The freeway will expand from four lanes to eight lanes, increasing traffic by 50 percent, but you say there will be less noise levels. How did you, CDOT, arrive at that conclusion? Common sense doesn't apply. Wider freeways, but narrower viewpoints. We have more degrees, but we have less sense.</p> <p>In conclusion, I and my husband support the freeway, but we request -- but, no; maybe I should reiterate -- we demand a noise barrier be erected between Quebec and Broadway to maintain our community, vitality, uniqueness, and quality of life.</p>	<p>Responses to comment by Mr. Antico are provided at the beginning of this table.</p> <p>Notices for CDOT's February 2015 public meetings to present findings of the C-470 noise analysis were mailed to 19 residences on your street, Caleridge Court. One of these notices was addressed to Carl Waldenstrom at your address.</p> <p>All homes on your street were included as receptors in the 2015 noise analysis. Please see page 87 of the Traffic Noise Technical Report. In Figure 44 on that page, your address is identified as receptor #33, colored green to indicate impacted by traffic noise.</p> <p>CDOT responded to all comments in the 7/13 letter with a letter and technical memorandum dated August 20, 2015.</p> <p>All information presented to CDOT by HRNC has been properly considered, analyzed, and responded to. Please see responses to HRNC representatives Carter Sales, Larry Graber, and attorney David Steinberger in Tables 3-2, 3-3 and 3-4.</p> <p>The Revised EA clearly indicates that traffic noise would increase all along the C-470 corridor with the Proposed Action, as compared with the No-Action Alternative.</p> <p>Mitigation recommendations are made in accordance with the federal and CDOT Noise Analysis and Abatement Guidelines.</p>
<p>130 Welte, Noreen: How/has CDOT reviewed the data regarding noise abatement presented by the Highlands Ranch Neighborhood Coalition? How does CDOT square their noise data in comparison to the Highlands Ranch Neighborhood Coalition? After the VA and EPA debacles can CDOT prove that gov't works for the people and with the people?</p>	<p>All information presented to CDOT by HRNC has been properly considered, analyzed, and responded to. Please see responses to HRNC representatives Carter Sales, Larry Graber, and attorney David Steinberger in Tables 3-2, 3-3 and 3-4.</p>

**Table 3-5 (continued)
Comment Submittals Ordered Alphabetically by Last Name**

Name and Comments	Response
<p>131 Willers, Kathy: This highway should have been 6 lanes from the very beginning. Don't really think it's fair to ask people to pay extra to fix something that was done wrong in the first place. C470 was expanded to 6 lanes from Morrison Rd to I70 without using toll lanes, so you should do the same thing for the rest of the highway.</p>	<p>Chapter 2, Alternatives Considered, in the Revised EA, indicates that non-tolled alternatives were considered for this project, and why they were not selected. Please be aware that only the newly added express lanes will be tolled. Motorists will still have the choice to drive for free in the two existing lanes each direction.</p>
<p>132 Woodland, Don: I'm Don Woodland, licensed real estate broker for 40 years in Colorado, proud residents of Gleneagles for 20 years. I can even give you a case study in there. Sorry to say, the house next to where Carl [Waldenstrom] lived, put it on the market there last year. It sold -- let me describe this house. Beautiful walk-out ranch, backs to the golf course, all the amenities you'd have. It sold for 83 percent of the asking price. You know how long it took? Seven months.</p> <p>But it wasn't just the noise there. We could see the golf course and all, beautiful tee box and all. The sound was pretty loud. But it was the line of sight. We haven't even talked about that. We can see the cars going by. That's why no one bought this house until we finally got a young lady that -- I think she backed to O'Hare.</p> <p>So, anyway, to protect our property values, that's the Realtor's perspective on that. We need to get that barrier.</p>	<p>CDOT is required to apply established federal regulations and state guidance for traffic noise impacts and mitigation to all federally funded transportation projects in a consistent manner throughout the state. If a receptor is determined to be impacted by traffic noise, a reasonable and feasible analysis for mitigation is completed that considers constructability and noise reduction benefit, in addition to location, cost and other criteria. Property values are not a factor of this analysis. The decision to recommend mitigation for federal projects is based on the ability to construct a barrier that will have a noise reduction benefit that meets federal standards.</p>

CHAPTER 4 AGENCY INPUT

4.1 INTRODUCTION

Substantial agency input was received in the development of the C-470 Revised EA, and thus few project details generated further input once the EA was approved in July 2015. Three agencies were expected to provide input and have done so. These are:

- U.S. Army Corps of Engineers (USACE)
- South Suburban Parks and Recreation District (SSPRD)
- Highlands Ranch Metropolitan District (HRMD)

4.2 USACE

USACE was a Cooperating Agency for the C-470 Revised EA. Approximately three miles of C-470 exist on an easement provided by USACE in the vicinity of the Chatfield Dam, a regional water storage and flood control resource. USACE is responsible for ensuring that activities on its land (including easements) do not interfere with the important functions of the dam. Accordingly USACE has final say over what can and cannot be built on the C-470 easement.

USACE provided 25 comments on the C-470 Revised EA. These comments and responses thereto are provided in **Section 4.2** of this chapter.

Additionally, CDOT and FHWA are coordinating with USACE to develop a Section 408 permit application for the portion of the Proposed Action that is located on the USACE easement. Federal regulations pursuant to 33 U.S.C. § 408 require that any proposed modification to an existing USACE project must obtain permission from the Secretary of the Army by demonstrating that such proposed alteration or permanent use and occupation of the Federal flood control project is “not injurious to the public interest

and will not impair the usefulness of such work.”

This demonstration may require more detailed plans than the conceptual plans developed to date. The C-470 Revised EA noted that a design-build delivery approach is expected to be used for the C-470 Express Lanes project.

4.3 SSPRD

The C-470 Revised EA indicated that SSPRD has jurisdiction over two trails that cross under C-470. These are the Willow Creek Trail and the Mary Carter Greenway. Both trail crossings would be affected by the Proposed Action. Temporary closure of the former and reconstruction of the latter would be accomplished under Section 4(f) of the U.S. Department of Transportation Act through a temporary occupancy exception and a transportation enhancement exception, respectively. CDOT formally requested written SSPRD concurrence with these exceptions. SSPRD’s formal written concurrence is provided in **Section 4.5** of this chapter.

4.4 HRMD

The C-470 Revised EA indicated that HRMD has jurisdiction over the High Line Canal Trail that crosses under C-470. The same crossing is also part of CDOT’s C-470 Trail. This trail crossings would be closed temporarily to facilitate construction of the Proposed Action. The temporary closure would be accomplished under Section 4(f) of the U.S. Department of Transportation Act through a temporary occupancy exception. CDOT formally requested written HRMD concurrence for this exception. SSPRD’s formal written concurrence is provided in **Section 4.5** of this chapter.

**Table 4-1
USACE Comments and CDOT/FHWA Responses**

ID	Comment	Response
1	<p>6169826: Name, address, e-mail, and telephone number of contact person was not included on the cover sheet. A cover sheet is optional for an Environmental Assessment (EA). Since a cover sheet was included for the C-470 EA, the name, address, e-mail, and telephone number of contact person should be included.</p> <p>Concern: Low</p>	<p>The name, address and telephone number of two contact persons is provided in the Information Availability section of the back of the EA signature page. Also provided is a project website address where a link is provided for further inquiries. The signature page is formatted in accordance with the CDOT NEPA Manual. No document revision is needed.</p>
2	<p>6169827: The abstract is longer than one paragraph. This is optional for an EA, so it may be fine as is. The abstract is longer than one paragraph. Paragraphs two and three could be deleted as this information is covered in the Executive Summary. Paragraph four could be combined with paragraph 1. Contact information included on this page should be moved to the Cover Sheet.</p> <p>Concern: Low</p>	<p>An abstract was included in the draft reviewed by USACE but was subsequently removed.</p> <p>See response above regarding contact information.</p>
3	<p>6169828: The Executive Summary adequately covers CEQ Reference 1502.12</p> <p>Concern: None.</p>	<p>Comment noted. No document revision needed.</p>
4	<p>6169830: A matrix should be provided at the beginning of this chapter that lists alternatives and shows the environmental impacts of each alternative in a comparative form. This would assist the reader in the comparison of alternatives. Table 4-21 could be copied and moved to this location.</p> <p>Concern: High</p>	<p>Only two alternatives were advanced for environmental evaluation. The others were screened out for other reasons (e.g. inability to meet purpose and need). Table 4-22 on page 4-75 shows the environmental impacts of each alternative (Proposed Action and the No-Action Alternative) in a comparative form. In the interest of keeping the EA succinct, we prefer to not repeat this four-page table.</p>
5	<p>6169833: Include a significance call for each resource discussed to allow the Decision Maker to make an informed decision on whether a FONSI is appropriate of an EIS is needed.</p> <p>Concern: High</p>	<p>Pursuant to FHWA's Guidance for Preparing and Processing Environmental and Section 4(f) Documents (FHWA Technical Advisory T 6640.8A), this is a section routinely included in Environmental Impact Statements but not Environmental Assessments. Accordingly, no changes to the EA will be made regarding this comment. However, please see Chapter 6, Findings (in this Decision Document) for an overall discussion of significance.</p>
6	<p>(Un-numbered - 6169834?): Page 3-41 Water Quality Line 49: the text concerning 303(d) listed water is missing. Please add the missing information.</p> <p>Concern: Medium</p>	<p>Section 303(d) listed impaired waters are specified on page 4-34 of the signed EA.</p>

**Table 4-1 (continued)
USACE Comments and CDOT/FHWA Responses**

ID	Comment	Response
7	(Un-numbered - 6169834?): Include a section on the irreversible and irretrievable commitments of resources. Concern: Medium	Pursuant to FHWA's Guidance for Preparing and Processing Environmental and Section 4(f) Documents (FHWA Technical Advisory T 6640.8A), this is a section routinely included in Environmental Impact Statements but not Environmental Assessments. Accordingly, no changes to the EA will be made regarding this comment.
8	(Un-numbered - 6169834?): Include a section on Energy requirements. Concern: Medium	This was not included in the original, approved 2006 EA for C-470 and was not identified as a need in project scoping. Pursuant to FHWA's Guidance for Preparing and Processing Environmental and Section 4(f) Documents (FHWA Technical Advisory T 6640.8A), the primary purpose of an EA is to help the FHWA and Highway Agency decide whether or not an EIS is needed. Therefore, the EA should address only those resources or features which the FHWA and the highway agency decide will have a likelihood for being significantly impacted.
9	6169835: Include a Chapter containing the names, together with their qualifications of persons primarily responsible for preparing the document. Concern: High	Pursuant to FHWA's Guidance for Preparing and Processing Environmental and Section 4(f) Documents (FHWA Technical Advisory T 6640.8A), this is a section routinely included in Environmental Impact Statements but not Environmental Assessments. Accordingly, no changes to the EA will be made regarding this comment.
10	6200609: Regarding Figure 4-6 on page 4-21, will there be a noise barrier on the bridge replacement over USACE property? Question	No. There will be no noise barrier on the bridge replacement over USACE property. Per page 103 in the Traffic Noise Technical Report, it was concluded that mitigating noise impacts to the Mary Carter Greenway Trail would not be reasonable and feasible. On page 103, this trail is referred to as recreational receptor 11 and "Trail North".
11	6200611: Regarding Figure 4-6 on page 4-21, is Chatfield Avenue noise barrier on USACE property? Question	Yes, the recommended Chatfield Avenue noise barrier would be constructed within the C-470 easement granted to CDOT by USACE. The wall would be constructed on USACE property.
12	6200629: Regarding page 4-56, line 46, should Prairie Dog be added to the bullet list? Was discussed earlier as a potential impact. Question	Prairie dogs are discussed separately on page 4-60 (in Section 4.4.2, Threatened and Endangered Species), because they are a Colorado Species of Concern.
13	6200640: Regarding Table 4-17 on page 4-58, impacts to Prairie Dogs should be added.	Prairie dogs are discussed separately in Section 4.4.2, Threatened and Endangered Species, because they are a Colorado Species of Concern. Please see page 4-60 of the signed EA.

**Table 4-1 (continued)
USACE Comments and CDOT/FHWA Responses**

ID	Comment	Response
14	<p>6200646: Regarding page 4-60, line 57, where is Table 4-18? Document goes from table 4-17 to table 4-19.</p> <p>Question</p>	<p>This problem in an earlier draft was corrected. The signed EA includes: Table 4-17 on page 4-55, Table 4-18 on page 4-58, and Table 4-19 on page 4-61</p>
15	<p>6200649: Regarding Table 4-19 on page 4-61, what about the Black Footed Ferret?</p> <p>Concern: Critical/flagged</p>	<p>The USFWS has not listed the Black-footed ferret as an endangered species in any of the three counties that include the C-470 project area.</p>
16	<p>6200649: Regarding Table 4-19 on page 4-61, where is your effects determination? You need to make an effect call and USFWS should review anything on any may affect determination.</p> <p>Concern: Critical/flagged</p>	<p>The C-470 Revised EA Biological Resources Tech Report is included as an appendix in the EA. The June 2015 USFWS concurrence letter for determination of project effects is included in the technical report appendices. In Section 3.1.3 of the technical report, the June 2015 USFWS Concurrence Letter is referenced. This letter addresses the “Not likely to adversely affect” determination for Preble’s meadow jumping mouse, Colorado butterfly plant, and the Ute ladies’ tresses orchid. Table 4-61 indicates that there is no suitable habitat for four species and three other species are unlikely to occur. Page 4-62 indicates that no adverse effects would occur. There are no Federally listed species with a “may effect” determination.</p>
17	<p>6200663: Regarding page 4-65, line 58, what are the permanent impacts on USACE property (i.e. tree removal, shrubs, etc.)? Any mitigation?</p> <p>Question</p>	<p>The estimated impacts within the USACE easement are as follows:</p> <p>119 trees removed Permanent wetland impact 0.07 acre Temporary wetland impact 0.33 acre Permanent riparian impact 0.87 acre Temporary riparian impact 0.61 acre Permanent prairie dog impact 0.03 acre Temporary prairie dog impact 0.94 acre</p> <p>These numbers are not found in the EA but have been calculated from GIS data in response to this question from USACE. They are included as part of the impacts reported on pages 4-62, 4-65 and 4-67 of the Revised EA.</p> <p>Project-wide mitigation commitments for these resources (i.e., not focused only on the USACE portion) are listed in Table 4-23 of the Revised EA.</p> <p>All impact estimates noted above will be verified through the final design process. All necessary permits and required mitigation will be finalized at that time.</p>
18	<p>6200673: Regarding Table 4-22 on page 4-78, What about the Black Footed Ferret?</p> <p>Concern: Critical/flagged</p>	<p>Please refer to the earlier response to comment 15.</p>

**Table 4-1 (continued)
USACE Comments and CDOT/FHWA Responses**

ID	Comment	Response
19	<p>6200678: Regarding page 4-85, line 57: I think some sort of mitigation is needed on the impacts over prairie dog colonies. You're basically saying you will have permanent impacts.</p> <p>Concern: Critical/flagged</p>	<p>The EA refers to the <i>2009 CDOT Impacted Black-tailed Prairie Dog Policy</i>. This policy will be followed to mitigate permanent impacts to black-tailed prairie dogs in the corridor. During the final design process, impacts will be verified, mitigation will be finalized, and necessary permits will be obtained.</p>
20	<p>6200695: Regarding the Biological Resources Tech Report, Section 3.13, page 10, paragraph 2: I did not see concurrence dated 2015.</p> <p>Concern: Critical/flagged</p>	<p>Section 3.1.3 (page 10) of the Biological Resources Technical Report references the June 2015 USFWS concurrence letter. That letter is found in the report's appendices.</p>
21	<p>6200695: Regarding the Biological Resources Tech Report, where are the effects determinations?</p> <p>Concern: Critical/flagged</p>	<p>Table 1 on page 7 in the Biological Resources Technical Report indicates that no listed species are likely to occur in the project area. Section 3.1.3 (page 10) in the Tech Report addresses the effects determinations. In addition, the June 2015 USFWS Concurrence Letter is located in the Tech Report appendices.</p>
22	<p>6202594 Risk Assessment: It should be ensured that the proposed project is in compliance with floodplain management criteria of Jefferson, Douglas and Arapahoe County and the State of Colorado. It is recommended that the applicant obtain a local floodplain permit prior to construction.</p>	<p>The draft technical requirements for the project include a requirement for the contractor to comply with any local agency review and permitting requirements associated with floodplains impacted by the project. (This is required in Book 2, Section 12.1.2.5 of CDOT's Request for Proposals).</p>
23	<p>6202598 Risk Assessment: The proposed project may have adverse impacts on the operation of the Chatfield flood control pool. The proposed project is possibly within the Chatfield flood control pool. The proposed project must be in compliance with Appendix A (Typical Cut and Fill Volumes for Land Development Proposals) of NWDR 1110-2-5, Land Development Guidance at Corps Reservoir Projects and plans of cut/fill balances and elevations shall be developed and submitted for review and approval prior to construction.</p>	<p>The project team has designed a retaining wall along both edges of C-470 to eliminate spill slopes from encroaching into the flood control pool elevation (5,500 feet) These walls would be considered a requirement of the EA and will be a requirement of the Design-Build Contract. The Section 408 process will ensure that as well.</p>

**Table 4-1 (continued)
USACE Comments and CDOT/FHWA Responses**

ID	Comment	Response
24	6202599 Risk Assessment: The proposed project may have adverse impacts on the operation of the Chatfield releases. USACE requires a comparison of the hydraulic models for existing and with-project conditions be developed to ascertain potential impacts associated with the proposed development. This shall include a no-rise assessment to be developed and submitted for review and approval prior to construction of the portion of the project that is located on Corps owned land. This includes the bridge that is 1.25 miles downstream of the Chatfield gates.	<p>A hydraulic model was developed to determine the project impacts on the maximum Chatfield Dam design discharge of 5,000 cubic feet per second as stated in the Chatfield Reservoir Storage Reallocation Study, USACE, July 2013. The results of the model and comparison of the pre and post project conditions are included in the Hydraulic Study for the C-470 Corridor Revised EA, 2015. This study is included in the Technical Reports volume.</p> <p>The model indicated a post-project small increase in water surface elevation for a short segment at the downstream side of the bridge and a small decrease in water surface elevation at the upstream side of the bridge.</p>
25	Compliance with EO11988 is not provided in the documentation. The applicant should develop information consistent with the processes identified in ER 1165-2-26 sufficient for the District to determine compliance with EO11988.	EO 11988 pertains to Floodplain Management (2-1/6 pages) ER 1665-2-26 is for implementation of EO 11988 (7-1/2 pages). While it may not exactly follow all of the listed steps included in ER 1165-2-26, the "Hydraulic Study for the C-470 Corridor REA", 2015 does identify the floodplains in the project area, identifies minimal impacts to the floodplain where they occur and discusses mitigation provided by the proposed project to avoid and or minimize impacts to the floodplain. One of the requirements is for public notice regarding impacts to the floodplain. The 45-day EA public review process that ended September 11, 2015 includes the Hydraulic Study and thus satisfies the requirement.
26	6231547 Environmental: Is there analysis in the EA that addresses the potential cumulative effect of utilities that may have to be relocated as a result of the highway expansion?	On page 4-91 of the Revised EA, Table 4-25 indicates there is low potential for cumulative effects resulting from utility relocation. It says: "Utility relocation is a routine occurrence. Utility service is not ordinarily disrupted. Relocation costs ultimately get passed along to customers through rate increases." This is the assessment.
27	6231698 Environmental (Revised EA Section 4.2.5): Do all of the construction areas on Corps property also fall within the road easement ROW? Any construction areas that fall outside of the easement ROW should be evaluated for impacts in the EA as well.	Yes. No construction impact would occur on USACE property outside of the existing easement.
28	6231699 Environmental (Revised EA page 4-48): Are there any sites proposed on Corps property to store hazardous materials (e.g. fuel, flammables, corrosives, etc.)?	No.

**Table 4-1 (continued)
USACE Comments and CDOT/FHWA Responses**

ID	Comment	Response
29	6231701 Environmental (Revised EA pages ES 4.2/ES 5): Are there any changes to land use classifications anticipated on Corps property?	No.
30	6231779 Environmental (Revised EA Section 4.3.3): Are tree plantings being considered as potential mitigation or offset for the greenhouse gas emissions?	No.

4.5 CONCURRENCE LETTERS

As discussed previously in this chapter, the contents of this section are as follows:

- SSPRD concurrence letter regarding Willow Creek Trail impacts
- SSPRD concurrence letter regarding Mary Carter Greenway impacts
- HRMD concurrence letter regarding High Line Canal Trail impacts



COLORADO
Department of Transportation
Office of Major Project Development

4201 E. Arkansas Avenue, Room 158
Denver, CO 80222

August 10, 2015

Mr. Brett Collins
Director of Planning and Development
South Suburban Parks and Recreation District
6315 S. University Boulevard
Centennial, CO 80121

RE: C-470 Environmental Assessment: Temporary Closure/Section 4(f) Temporary Occupancy of the Willow Creek Trail

Dear Mr. Collins:

The Colorado Department of Transportation (CDOT) has completed the *C-470 Revised Environmental Assessment* for proposed improvements between Kipling Parkway and Interstate 25. As part of this process, CDOT must evaluate impacts to Section 4(f) resources. Section 4(f) of the US Department of Transportation Act of 1966 affords special protection to parks and recreational resources and requires specific mitigation when a resource is converted to a "transportation use". The Willow Creek Trail and the Mary Carter Greenway Trail, both managed by the South Suburban Parks and Recreation District (SSPRD), fall under the jurisdiction of Section 4(f). These two trails would be subject to different types of impacts, so to avoid confusion, I am sending you a separate letter regarding each trail. This letter pertains to the Willow Creek Trail.

While the design of proposed C-470 improvements is not complete at this time, and will be completed at a later date by the Design-Build contractor yet to be selected, the basic configuration of the improvements has progressed to the point that impacts to trails that cross under C-470 can be identified.

Location and Impact Description: The existing 450-foot long culvert carrying Willow Creek Trail under C-470 will be lengthened by 15 feet southward to accommodate widening of the highway overhead. No trail changes are needed.

The Willow Creek Trail is a paved trail generally oriented north-south as it traverses the CDOT right-of-way for the generally east-west State Highway 470 (C-470). The trail crosses under C-470 at approximately C-470 mile marker 25.058 through a culvert identified as CDOT structure F-17-IC-3. This is a compartmentalized culvert carrying the creek separately from the trail. Widening C-470 to add tolled express lanes would necessitate lengthening this culvert. For the safety of Willow Creek Trail users, the trail would be closed temporarily during construction. CDOT has identified a potential detour using existing local streets and/or their sidewalks, for SSPRD consideration. Please see the graphics in Attachment 1 for more information.

CDOT commits to coordinating with SSPRD prior to the C-470 improvements to discuss potential detour routes, timing, signage, specification duration of impacts and mitigation. CDOT understands the following criteria for a Section 4(f) temporary occupancy exception [23 CFR 774.13(d)] to be true and applicable to the proposed Willow Creek Trail temporary closure:

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1. Duration of the impact will be temporary, i.e., less than the time needed for construction of the overall project, and there will be no change in resource ownership. SSPRD will remain the entity with jurisdiction over this trail during and after construction.
2. The scope of the work will be minor, i.e., both the nature and the magnitude of the changes to the Section 4(f) property (Willow Creek Trail) are minimal. All impacts will be improvements to the trail and/or will be replacements in-kind.
3. No anticipated permanent or temporary adverse physical impacts will occur, nor will there be interference with the protected activities, features, or attributes of the property. The contractor will be required to use all efforts to minimize the duration of the temporary occupancy and to maintain access.
4. The land being used will be fully restored, i.e., the property will be returned to a condition which is at least as good as that which existed prior to the project. The project will be responsible for reestablishing any disturbed vegetation or other features near the trail.
5. Documented agreement with the official(s) with jurisdiction over the Section 4(f) resource regarding the above conditions is hereby provided, with your concurrence at the end of this letter.

Therefore, CDOT finds that the C-470 Proposed Action does not present temporary or permanent adverse effects to the trail's function or the activities associated with it. We believe that these activities will meet the requirements of the temporary occupancy exception in Section 4(f) regulation 23 CFR 774.13(d). Please provide your concurrence below for the temporary occupancy of the Willow Creek Trail during the construction of the C-470 proposed improvements.

Thank you for your assistance. Please contact me with any questions at: 303.757.9936 or jonathon.chesser@state.co.us.

Sincerely,



Jon Chesser, Environmental Program Manager
CDOT Office of Major Project Development

Cc: Jerome Estes, Engineering Project Manager
Doug Eberhart, Wilson and Company Environmental Lead

Attachment: Figure 1

Concurrence

As the party responsible for the management of the Section 4(f) resource identified in this letter, I am in concurrence that the above criteria are met by this project and that the C-470 proposed improvements do not present adverse impacts to the function or activities of the Willow Creek Trail.

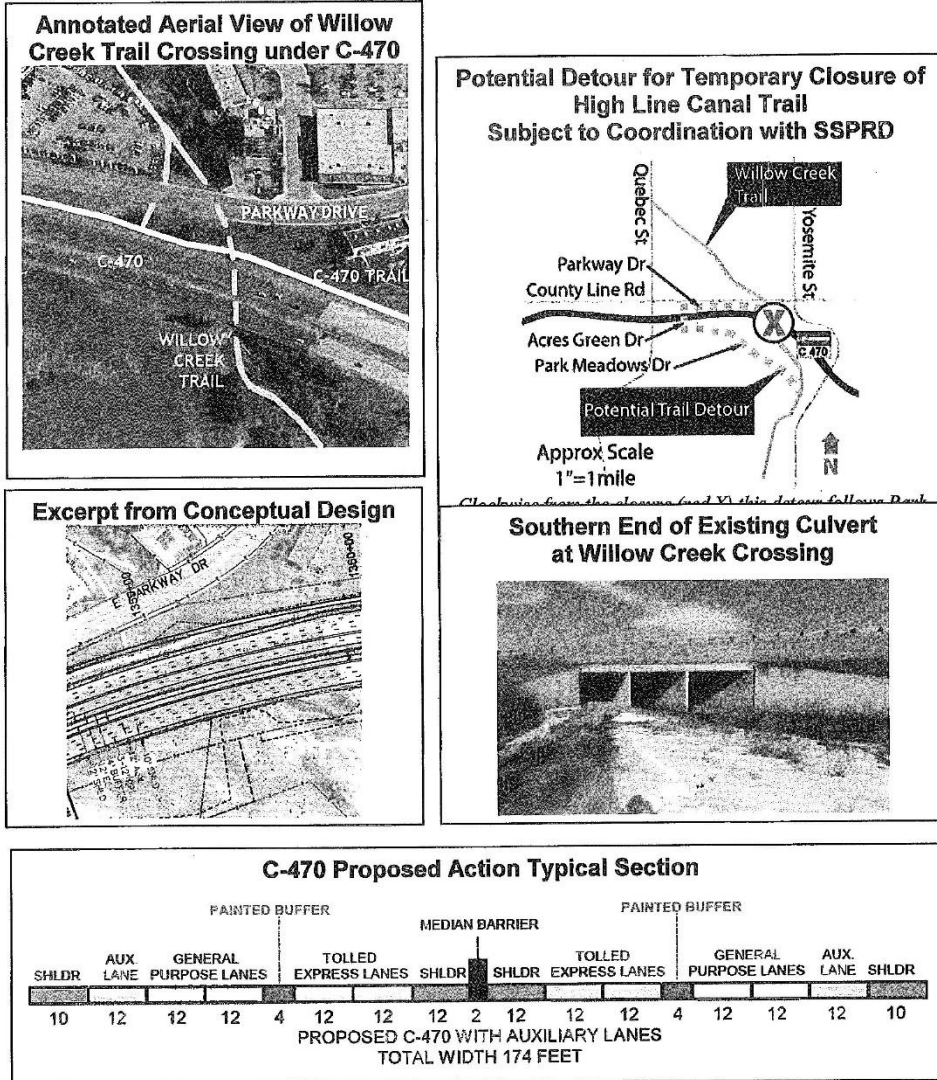
I concur:


Brett Collins

10-30-15
Date



Figure 1 – Willow Creek Trail Graphics from the C-470 Revised Environmental Assessment



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4201 E. Arkansas Avenue, Room 158
Denver, CO 80222

August 10, 2015

Mr. Brett Collins
Director of Planning and Development
South Suburban Parks and Recreation District
6315 S. University Boulevard
Centennial, CO 80121

RE: C-470 Environmental Assessment: Section 4(f) Exception for Mary Carter Greenway Trail

Dear Mr. Collins:

The Colorado Department of Transportation (CDOT) has completed the *C-470 Revised Environmental Assessment* for proposed improvements between Kipling Parkway and Interstate 25. As part of this process, CDOT must evaluate impacts to Section 4(f) resources. Section 4(f) of the US Department of Transportation Act of 1966 affords special protection to parks and recreational resources and requires specific mitigation when a resource is converted to a "transportation use". The Willow Creek Trail and the Mary Carter Greenway Trail, both managed by your district, fall under the jurisdiction of Section 4(f). These two trails would be subject to different types of impacts, so to avoid confusion, I am sending you a separate letter regarding each trail. This letter pertains to the Mary Carter Greenway Trail.

While the design of proposed C-470 improvements is not complete at this time, and will be completed at a later date by the Design-Build contractor yet to be selected, the basic configuration of the improvements has progressed to the point that impacts to trails that cross under C-470 can be identified.

Location and Impact Description: The portion of the Mary Carter Greenway Trail crossing under C-470 will be replaced with an improved trail located typically 18 feet west of the existing one. The Mary Carter Greenway Trail is a paved trail generally oriented north-south as it traverses the CDOT right-of-way for the generally east-west State Highway 470. The trail crosses under C-470 on the western bank of the South Platte River. The two existing parallel C-470 bridges crossing over the river and the trail would be replaced as part of the C-470 Proposed Action. Based on discussions with SSPRD regarding deficiencies of the existing trail at this location, CDOT would reconstruct the trail to provide more vertical clearance and better sight distance, while also creating a dedicated wildlife movement area separated from the trail. For the safety of Mary Carter Greenway Trail users, the trail would be closed temporarily during construction. CDOT has identified potential detours using nearby trails and local streets and/or their sidewalks for SSPRD consideration. Please see the graphics in Attachment 1 for more information.

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In the Revised EA, CDOT indicates that it will require its design-build contractor to coordinate with SSPRD to minimize the duration and impact of trail closures. Specifically, the contractor will be required to obtain SSPRD's list of planned trail events and to take this information into account in scheduling construction activities. CDOT would provide signage to mark any detours used and provide a minimum of two weeks' notice for any trail closures.

The proposed impacts to the Mary Carter Greenway Trail meet the requirements of 23 CFR 774.13(g), the exception allowed for transportation enhancement projects. This enhancement exception can be applied when the following criteria are met:

1. The use of the Section 4(f) property is solely for the purpose of preserving or enhancing an activity, feature, or attribute that qualifies the property for Section 4(f) protection; and
2. The official(s) with jurisdiction over the Section 4(f) resource (i.e., SSPRD) agrees in writing to the statement above.

CDOT finds that the C-470 Proposed Action does not present temporary or permanent adverse effects to the trail's function or the activities associated with it, and believe that the above criteria will be met by the project. Please provide your concurrence below for the transportation enhancement exemption of the Mary Carter Greenway Trail in conjunction with construction of the C-470 proposed improvements. Thank you for your assistance. Please contact me with any questions at: 303.757.9936 or jonathon.chesser@state.co.us.

Sincerely,



Jon Chesser, Environmental Program Manager
CDOT Office of Major Project Development

Cc: Jerome Estes, Engineering Project Manager
Doug Eberhart, Wilson and Company Environmental Lead

Attachment: Figure 1

Concurrence

As the party responsible for the management of the Section 4(f) resource identified in this letter, I am in concurrence that the above criteria are met by this project and that the C-470 proposed improvements do not present adverse impacts to the function or activities of the Mary Carter Greenway Trail.

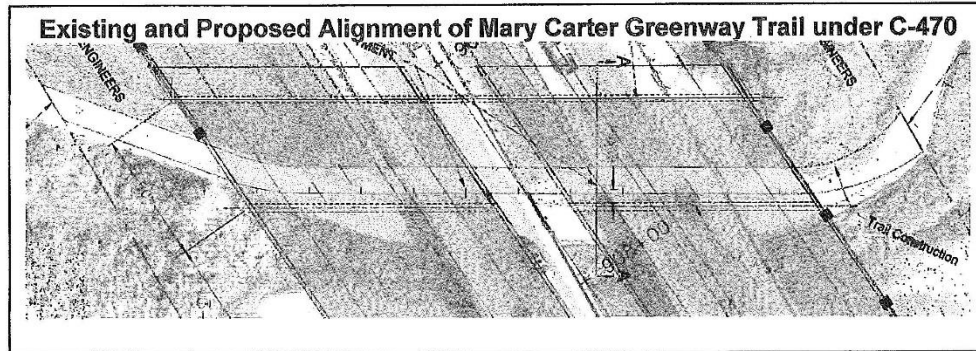
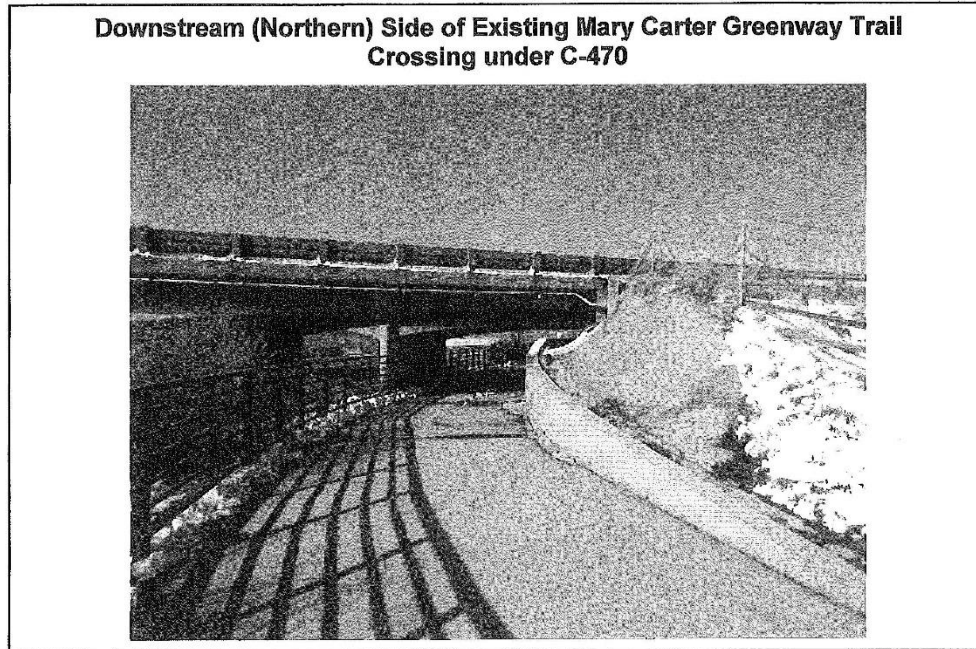
I concur:


Brett Collins

10-30-15
Date

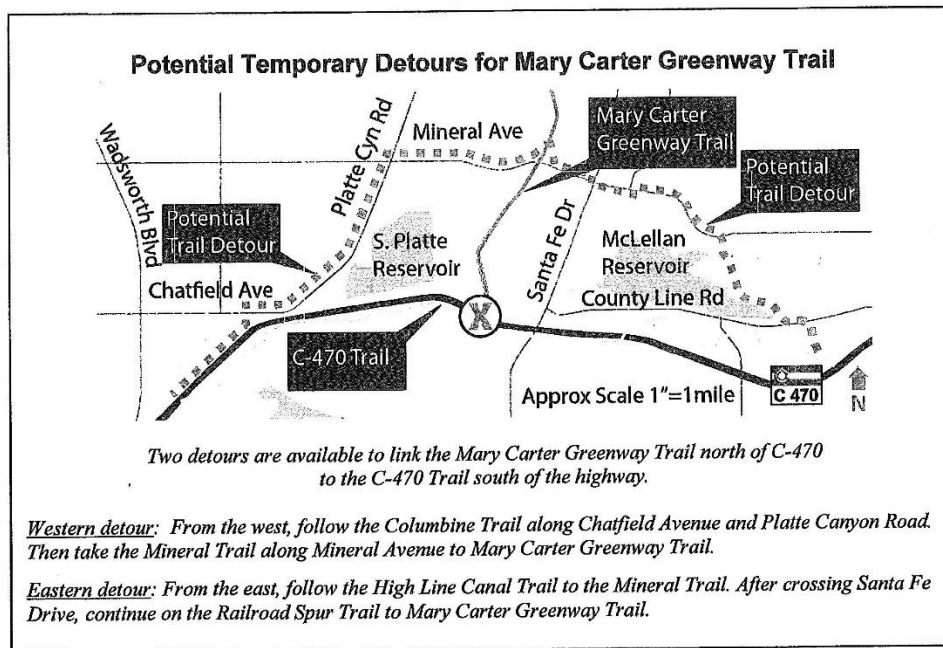
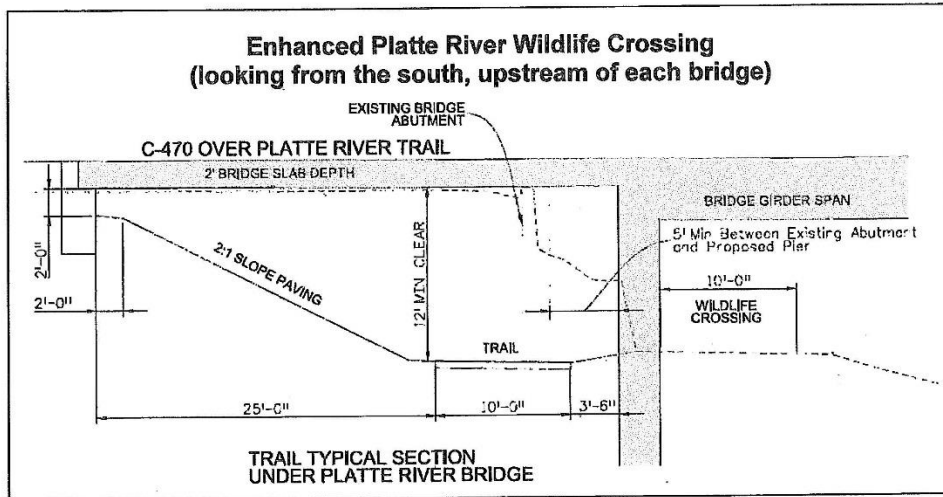


Figure 1 – Graphics Depicting the Existing and Planned Mary Carter Greenway Trail Crossing Under C-470



The figure above shows the existing C-470 bridges crossing over the existing (light/white colored trail). Superimposed on this image, the two new bridges (shaded blue) would be much wider. The new trail alignment (off-white/gray) would have less of a bend, improving horizontal sight distance, and greater vertical clearance, enabling bicyclists and equestrians to cross under the bridges more safely. The trail would be shifted generally 18 feet to the west, away from the river, opening up this space for wildlife movement. Unused portions of the exiting trail will be replaced with a natural surface for wildlife use.





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COLORADO
Department of Transportation
Office of Major Project Development
4201 E. Arkansas Avenue, Room 158
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August 10, 2015

Mr. Forrest Dykstra
Manager of Developmental Engineering
Highlands Ranch Metro District
62 Plaza Drive
Highlands Ranch, CO 80129

RE: C-470 Environmental Assessment: Temporary Closure/Section 4(f) Temporary Occupancy of the High Line Canal Trail

Dear Mr. Dykstra:

The Colorado Department of Transportation (CDOT) has completed the *C-470 Revised Environmental Assessment* for proposed improvements between Kipling Parkway and Interstate 25. As part of this process, CDOT must evaluate impacts to Section 4(f) resources. Section 4(f) of the US Department of Transportation Act of 1966 affords special protection to parks and recreational resources and requires specific mitigation when a resource is converted to a "transportation use". The High Line Canal Trail, managed by your district, falls under the jurisdiction of Section 4(f).

While the design of proposed C-470 improvements is not complete at this time, and will be completed at a later date by the Design-Build contractor yet to be selected, the basic configuration of the improvements has progressed to the point that impacts to trails that cross under C-470 can be identified.

Location and Impact Description: The existing 203.5-foot long culvert carrying the High Line Canal Trail under C-470 will be lengthened by 25 feet southward to accommodate widening of the highway overhead. No trail changes are needed.

The High Line Canal Trail is a paved trail generally oriented north-south as it traverses the CDOT right-of-way for the generally east-west State Highway 470 (C-470). The trail crosses under C-470 at approximately C-470 mile marker 18.490 through a culvert, and coincides with CDOT's C-470 Trail at this location. No reconstruction of this trail is needed. For the safety of High Line Canal Trail users, the trail would be closed temporarily during construction. CDOT has identified a potential detour using existing local streets and/or their sidewalks, for HRMD consideration. Please see the graphics in Attachment 1 for more information.

CDOT commits to coordinating with HRMD prior to the C-470 improvements to discuss potential detour routes, timing, signage, specification duration of impacts and mitigation.

Denver Water has a permanent easement allowing its staff to use this trail for inspection of the canal. After receiving documentation of the proposed impacts from CDOT, Denver Water staff indicated in June 2015 that they have no issues with the project but request at least a two-week advance notice before any closure.

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CDOT understands the following criteria for a Section 4(f) temporary occupancy exception [23 CFR 774.13(d)] to be true and applicable to the proposed High Line Canal Trail temporary closure:

1. Duration of the impact will be temporary, i.e., less than the time needed for construction of the overall project, and there will be no change in resource ownership. The Highlands Ranch Metro District (HRMD) will remain the entity with responsibility for the High Line Canal Trail during and after construction.
2. The scope of the work will be minor, i.e., both the nature and the magnitude of the changes to the Section 4(f) property (High Line Canal Trail) are minimal. All impacts will be improvements to the trail and/or will be replacements in-kind.
3. No anticipated permanent or temporary adverse physical impacts will occur, nor will there be interference with the protected activities, features, or attributes of the property. The contractor will be required to use all efforts to minimize the duration of the temporary occupancy and to maintain access.
4. The land being used will be fully restored, i.e., the property will be returned to a condition which is at least as good as that which existed prior to the project. The project will be responsible for reestablishing any disturbed vegetation or other features near the trail.
5. Documented agreement with the official(s) with jurisdiction over the Section 4(f) resource regarding the above conditions is hereby provided, with your concurrence at the end of this letter.

Therefore, CDOT finds that the C-470 Proposed Action does not present temporary or permanent adverse effects to the trail's function or the activities associated with it. We believe that these activities will meet the requirements of the temporary occupancy exception in Section 4(f) regulation 23 CFR 774.13(d). Please provide your concurrence below for the temporary occupancy of the High Line Canal Trail during the construction of the C-470 proposed improvements.

Thank you for your assistance. Please contact me with any questions at: 303.757.9936 or jonathon.chesser@state.co.us.

Sincerely,


Jon Chesser, Environmental Program Manager
CDOT Office of Major Project Development

Cc: Jerome Estes, Engineering Project Manager
Doug Eberhart, Wilson and Company Environmental Lead

Attachment: Figure 1

Concurrence

As the party responsible for the management of the Section 4(f) resource identified in this letter, I am in concurrence that the above criteria are met by this project and that the C-470 proposed improvements do not present adverse impacts to the function or activities of the Highline Canal Trail.

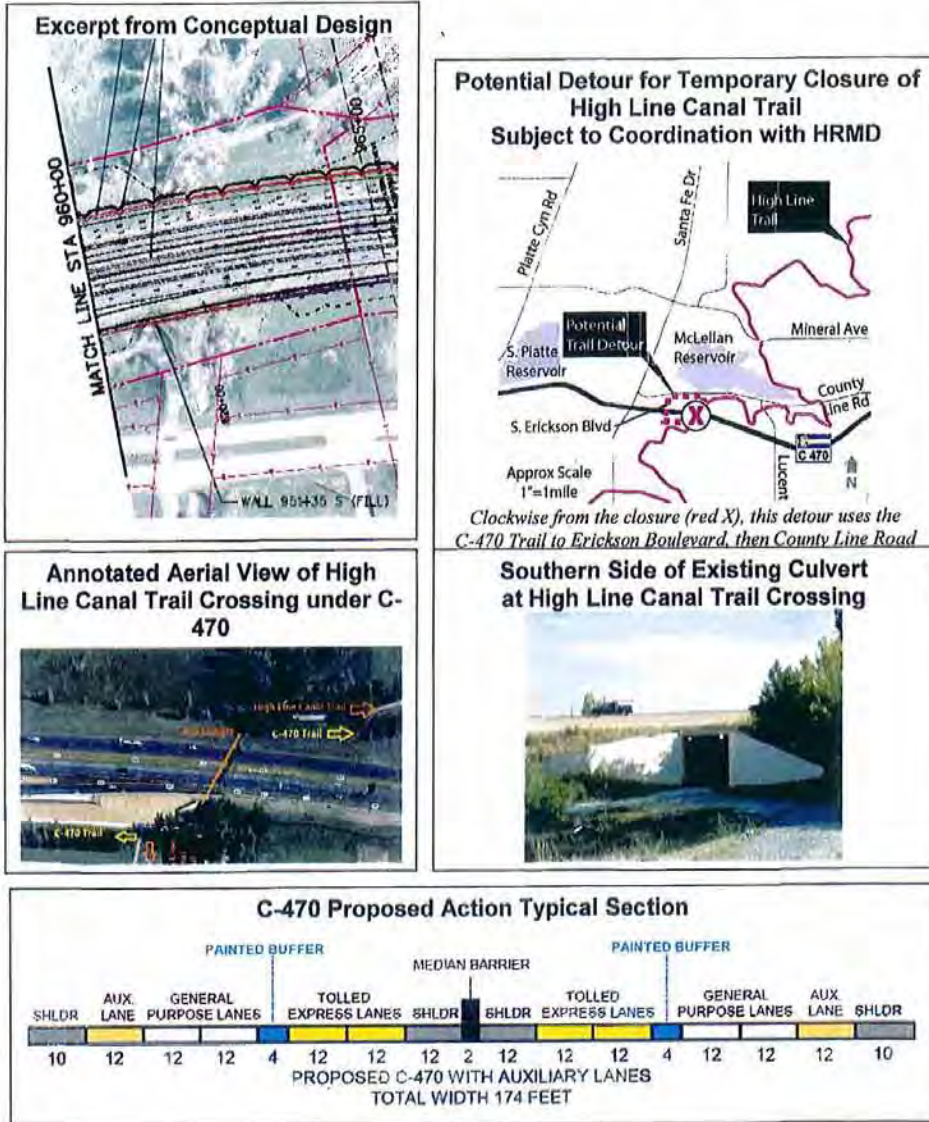
I concur:


Forrest Dykstra

10/29/15
Date



Figure 1 –Graphics Depicting High Line Canal Trail Crossing Site



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CHAPTER 5 CLARIFICATIONS TO THE REVISED EA

The Revised EA was signed by CDOT and FHWA on July 24, 2015, and since that time three informational updates have arisen that are reported in this chapter. The first is updated information on High-Occupancy Vehicle (HOV) use of C-470. The second is a set of corrections to informational Table 3-1 of the Revised EA. The third is updated information on the traffic noise analysis.

5.1 UPDATED INFORMATION ON C-470 HOV USE

In the C-470 Revised EA, Section 3.4, High Occupancy Use of Express Lanes, it was reported that, “CDOT is considering whether or not to permit high occupancy vehicles (HOVs) with three or more occupants (HOV3+) to use the express lanes in the Proposed Action without paying a toll, as will be the case on other express lane corridors in the Denver region by 2017.”

Section 3.4 included a table of pros and cons regarding a potential HOV3+ toll exemption policy. Page 3-24 reported that the financial implications of such a policy would be studied in the near future. Toll revenues were only one of several factors under consideration, but are important due to their impact on the project’s financial feasibility.

Since the Revised EA was completed and signed, a Level III Traffic and Revenue Study has been completed. This is an investment-grade study used to demonstrate with confidence to potential investors that future C-470 toll revenue would be adequate to repay the bonds/loans needed to finance the project. This study was completed by the Louis Berger Group, a full-service engineering, architecture, planning, environmental,

program and construction management and economic development firm.

Subsequently, the task of assessing the financial impacts of an HOV3+ exemption policy was assigned to Ernst & Young, a well-known international accounting firm. Based on the traffic and revenue forecasts developed by Louis Berger Group, Ernst & Young has provided information concluding that an HOV3+ exemption policy for C-470 would reduce available project financing by up to \$40 million. This includes both the cost of needed facilities and enforcement, as well as lost revenues from providing the free lane use. It also includes increased financing costs due to higher financial risk for the project.

The \$40 million funding reduction due to the toll exemption policy is quite substantial for the \$385 million C-470 Proposed Action and its \$269 million imminent first phase of construction (the “Interim” project). Tolls are the principal source of financing for the project. An added \$40 million cost would appear to make the Interim construction project financially infeasible.

Based on the results of the financial analysis, the Board of Directors of the High Performance Transportation Enterprise on October 14, 2015 recommended that the Colorado Transportation Commission (CTC) not allow an HOV-3+ exemption for the C-70 Tolloed Express Lanes.

On October 15, 2015 the CTC passed a resolution determining not to include toll-free HOV3+ travel for the C-470 Tolloed Express Lanes Project (see Appendix B of this Decision Document). The resolution noted that this decision is contingent upon a final determination from FHWA on a Proposed Action based on the C-470 Corridor Revised Environmental

Assessment. The resolution indicated that this decision could be revisited in the future if financial conditions change.

5.2 CORRECTION OF TABLE 3-1

During the 45-day public review process, two commenters brought to CDOT’s attention three errors in Table 3-1 of the

Revised EA. This table describes access conditions at various cross-streets. The information in this table was included in the Revised EA for description only and was not relied upon for any design or impact evaluation. The three corrections are noted in **bold** and underlined text in the table below.

(Corrected Table 3-1) Description of C-470 Existing Access Conditions

North-South Route	Access	Description (locations ordered from west to east)
Kipling Parkway	Full	Grade-separated interchange with signalized ramp terminal intersections.* Kipling Parkway crosses over C-470.
Wadsworth Boulevard	Full	Grade-separated interchange with signalized ramp terminal intersections. Crosses over C-470.
Platte Canyon Road	Partial	At-grade right-in, right out for westbound C-470 only. Platte Canyon Road does not cross C-470.
South Santa Fe Drive (US 85)	Full	Grade-separated interchange with signalized ramp terminal intersections, plus a flyover ramp from southbound Santa Fe to eastbound C-470. Santa Fe Drive crosses over C-470.
Erickson Road, not shown in Figure 3-2.	None	This collector street crosses under C-470 about one-third mile east of Santa Fe Drive.
Lucent Boulevard	None Full	Lucent Boulevard crosses over C-470.
Broadway	Full	Grade-separated interchange with signalized ramp terminal intersections. Crosses over under C-470.
University Boulevard	Full	Grade-separated interchange with signalized ramp terminal intersections. Crosses over under C-470.
Colorado Boulevard	None	No access. Colorado Boulevard crosses over C-470.
Quebec Street	Full	Grade-separated interchange with signalized ramp terminal intersections. Quebec Street crosses over C-470.
Acres Green Drive, not shown in Figure 3-2.	None	Crosses under C-470 between Quebec Street and Yosemite Street. Acres Green Drive is classified as a collector street.
Yosemite Street	Partial	Grade-separated interchange with signalized ramp terminal intersections, with C-470 access only to and from the west. This is a half-diamond interchange. Crosses under C-470.
Interstate 25	Full	Multi-level freeway-to freeway interchange. Free-flowing with no traffic signals. I-25 mainline crosses over C-470.

* The grade-separated intersections listed here are diamond interchanges unless otherwise noted.

5.3 UPDATED INFORMATION ON THE C-470 TRAFFIC NOISE ANALYSIS

Many comments regarding traffic noise were received during the public review period for the Revised EA, as 99 of the 132 commenters referenced traffic noise. All public comments have received a response in this Decision Document and can be found in Chapter 3 (Public Input).

In particular, multiple representatives of the Highlands Ranch Neighborhood Coalition (HRNC) stated concern with whether or not the Revised EA traffic noise analysis was prepared in compliance with the established CDOT Noise Analysis Abatement Guidelines (January 2015). Appendix C of that CDOT guidance is a 2006 report titled CDOT Traffic Noise Model User's Guide for Colorado DOT Projects, a part of which outlines processes that may be used to validate the noise model.

At issue is that the Revised EA traffic noise analysis did not include long-term noise measurement to identify the loudest-noise hour noise level and associated traffic volume for use in validating the noise model. This is one of the processes outlined in the Appendix C report mentioned earlier. Instead, another method allowed by the CDOT Noise Analysis Abatement Guidelines was used in the Revised EA traffic analysis. The following updated information is provided to address this public concern.

Technical Response regarding Compliance

CDOT maintains that the traffic noise analysis for the C-470 Corridor Revised Environmental Assessment (EA) did follow the 2015 Noise Analysis and Abatement Guidelines, including all appendices. One of HRNC's comments states that "CDOT failed to conduct or use any long-term monitoring data to validate their model, which is clearly required in the User Guide". To help clarify CDOT's position it is important to explain

that the 2015 guidance and appendices describe multiple parameters for validating a noise model, and defines that process, including both short-term and long-term measurement options.

Model Validation: Validating a noise model is described in the Section 3.2.2 and 3.3 of the CDOT Noise Analysis Abatement Guidelines. This option includes collecting short-term noise measurements and associated traffic volumes, speeds, and vehicle mix. The collection of relevant data will allow the modeling of the same conditions as was observed during the measurement exercise and does not require the analyst to attempt to measure during the worst noise hour. This data is incorporated into the noise model, and the model predicts a decibel level for that condition. Per Section 3.3 of the guidance, if the model-predicted decibel level is within 3 dB(A) of the field measurement, the model is considered validated.

Another option for validating a noise model is described in Appendix C of the guidance (2006 User's Guide), and includes collecting long-term (i.e., 24-hour) noise measurements to identify the loudest-noise hour over multiple days. Associated traffic volumes, speeds, and vehicle mix are collected in conjunction with these noise measurements. From this effort, a loudest hour is determined and the associated traffic conditions are identified. This traffic data is incorporated into the noise model, and the model predicts a decibel level for that condition. Per guidance, if the model-predicted decibel level is within 3 dB(A) of the field measurement, the model is considered validated.

CDOT validated the TNM model using short-term measurements.

Predicting Future Noise Levels for the No-Action Alternative and Proposed Action:

CDOT took a conservative approach for predicting loudest hour noise conditions. The loudest hour for noise occurs when the highest volume of traffic is traveling at the highest free flow speed for the particular roadway. This is often not the peak hour, when heavy traffic volumes result in lower speeds. For the C-470 Proposed Action this would be a theoretical point in time when the express, general purpose, and auxiliary lanes are all carrying the highest possible traffic volumes while maintaining free flow speeds.

On C-470, demand for express lanes (tolled) would not peak until the general purpose and auxiliary lanes are congested. Congested general purpose and auxiliary lanes would have lower travel speeds and thus would not represent the loudest or worst hours for noise. The same can be said for the other scenario when the general purpose and auxiliary lanes are running at free flow speed with high traffic volumes, resulting in less demand for the express lanes.

To predict the loudest possible noise condition for existing, no-build and the Proposed Action, all lanes of C-470, including cross streets, were modeled with a theoretical maximum traffic volume per lane per facility type, (i.e., freeway, non-freeway multiple lane, and two-lane roadway), at the posted speed. These values, presented in the 2015 CDOT Noise Abatement Guidelines (Page 19, Exhibit 4), were determined to produce the worst noise hour scenario for modeling purposes.

Long-Term Noise Measurements Conducted in October 2015

While CDOT maintains that the traffic noise analysis for the Revised EA did follow the 2015 Noise Analysis and Abatement Guidelines in validating the noise model,

CDOT understands and respects the comments received from the public stating concern that the Revised EA traffic noise analysis did not include long-term measurements. So in an effort to address concerns raised by the public in specific areas and provide additional validation for the traffic noise analysis, CDOT collected long-term noise measurements and associated traffic volumes at two locations in the corridor for four weekdays in October 2015. The monitoring locations are both within Highlands Ranch Metro District property. Details of how these locations were determined can be found in **Appendix C** of this Decision Document.

The long-term monitoring effort began on Monday, October 19. After two days of monitoring, heavy rain conditions forced postponement of additional monitoring until the following week. Monitoring resumed on Wednesday, October 28 and concluded on Friday, October 30. The monitoring was conducted on public land behind residences on Meadow Creek Drive and Aberdeen Circle. Traffic volume, speed and composition data were collected in conjunction with the noise measurements, as needed for purposes of noise model validation.

A summary of the results is provided below in **Table 5-1**. The two monitoring sites yielded clearly different noise levels due to their distance from C-470 and due to effects of local topography. The Meadow Creek site yielded daily highest readings around 67 decibels, the highest being 67.6 decibels. Readings at the Aberdeen site yielded daily high readings mostly just under 61 decibels, the highest being 61.0 decibels. Audible daytime roof construction noise at the Aberdeen site interfered with traffic noise monitoring, resulting in some noise measurements being invalidated. This explains why the Day 3 and Day 4 highest (valid) readings at that site are reported for

**Table 5-1
Summary of October 2015 Long-Term Noise Monitoring Results**

	Hourly Average Noise Level, Leq(h), in dB(A)			
	Meadow Creek Drive		Aberdeen Circle	
	Noise	Hour	Noise	Hour
Day 1	67.4	6-7 pm	61.0	6-7 pm
Day 2	67.6	6-7 pm	60.9	6-7 pm
Day 3	66.6	4-5 pm	60.7	9-10 pm
Day 4	66.9	Noon-1 pm	60.5	9-10 pm
Loudest Hour Leq(h)	67.6			
Loudest Hour Total Vehicles	6,904			
Loudest Hour Vehicles per Lane	1726			
Loudest Hour % Heavy Trucks	0.2%			
Loudest Hour Traffic Speed	70-75 mph			

dB(A) means A- weighted decibels

Leq(h) means the total noise energy is converted to an equivalent average for a one-hour period

Meadow Creek site corresponds to I&R site LT-1 and Aberdeen site corresponds to I&R site LT-2

the hour of 9-10 pm. For more details about the monitoring effect, see **Appendix C, Long-term Traffic Noise Monitoring Technical Memorandum**.

For each monitoring site, the traffic volume, speed and composition data collected during the loudest recorded noise hour was input into the TNM noise model which had been prepared and used in the C-470 Revised EA traffic noise analysis.

Table 5-2 indicates that using traffic inputs from the long-term measurements analysis, the TNM model predicted noise levels of 65.8 to 66.7 dB(A) for the Meadow Creek site, depending on the modeled speed (faster traffic produces more noise).

These predictions are within 3 dB(A) of the monitored loudest hour level at the site, which was 67.6 dB(A). Similarly, at the Aberdeen site, the TNM model predicted noise levels of 60.6 to 61.5 dB(A), depending on speed. These Aberdeen site predictions were very close to the monitored loudest-hour level of 61.0 dB(A).

For both long-term monitoring sites, TNM-predicted values for the observed traffic volumes, speeds and composition that were within 3 dB(A) of the loudest-hour noise that was recorded through the field monitoring effort. These results meet the requirements for successful TNM model validation as specified in Section 3.3, TNM Model Validation, of CDOT's 2015 Traffic Noise

**Table 5-2
Supplemental TNM Modeling Results**

Site	Monitored Noise	Hourly Average Noise Level, Leq(h), in dB(A)			
		Modeled Speed	Modeled Noise	Difference from Monitored	Within 3 dB(A)?
Meadow Creek	67.6	70 mph	65.8	-1.8	Yes
		75 mph	66.7	-0.9	Yes
Aberdeen	61.0	70 mph	60.6	-0.4	Yes
		75 mph	61.5	+0.5	Yes

dB(A) means A- weighted decibels

Leq(h) means the total noise energy is converted to an equivalent average for a one-hour period

and Abatement Guidelines. The requirements were also met by the results of the Revised EA traffic noise analysis based on the short-term noise measurements documented in the July 2015 C-470 Traffic Noise Technical Report.

It has been noted in this section of the C-470 Decision Document that the purpose of long-term monitoring is to identify appropriate traffic inputs needed for model validation. Long-term monitoring results are not used for any other purpose including impact and mitigation analysis. The results of the October 2015 long-term monitoring effort support the model validation presented in the Revised EA.

CDOT and FHWA conclude that the traffic noise analysis for the C-470 Revised EA remains valid based upon this updated information, and therefore no changes are made to the mitigation recommendations provided in the Revised EA.

CHAPTER 6 FINDINGS

The issuance of this finding is based on the analysis contained in the C-470 Revised EA and review of all public and agency comments received. A review has been completed to ensure that impacts resulting from the Proposed Action have been fully considered with respect to the Council on Environmental Quality's (CEQ's) Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (40 CFR 1500-1508). Under NEPA, an Environmental Impact Statement is required if the action may "significantly affect the quality of the human environment." The CEQ definition of "significantly" contained at 40 CFR 1508.27 was specifically consulted and used to make this finding.

6.1 Council on Environmental Quality's Regulations

To determine whether an action will have a "significant" impact on the human environment, CEQ's regulations require consideration of both context and intensity, as described below (see 40 CFR 1508.27).

Context

Context means that "the significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of the proposed action. For instance, in the case of a site-specific action, significance would usually depend upon the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant."

The project area between Kipling Parkway and I-25 is the 13.75-mile eastern half of C-470, a 26-mile highway around the southwestern quadrant of the Denver metropolitan area. C-470 was built in three

segments during the 1980s, finally all opened in 1990. Farms and ranches in the area gave way to rapid suburban growth over the past quarter century. The 13.75-mile Proposed Action traverse three counties but is located mostly (75%) in Douglas County, which has been one of America's fastest growing counties over the past two decades.

The busiest portion of C-470 carries 106,000 vehicles on a typical weekday. Continued regional and local development will further increase traffic (141,000 vehicles/day) and congestion under the No-Action Alternative. The Proposed Action would accommodate still more traffic (151,000 vehicles per day) but offer better traffic flow than the No-Action Alternative.

The Proposed Action includes proposed direct-connect ramps that would interface with the region's busiest north-south freeway, Interstate 25. Since the majority of C 470 trips are not through-trips but instead have an origin or destination that is along the corridor, residents along the corridor will benefit most from the proposed improvements.

The Proposed Action would offer motorists the choice of using two free lanes in each direction or paying a toll to use the express lanes. Toll prices will vary by hour of the day, structured to ensure reliable trip times during peak commuting hours. The introduction of toll lanes on C-470 continues a major trend toward toll financing in the region, as several other freeway segments have been built or planned with toll lanes over the past several years.

The Proposed Action is expected to be built in two phases. A near-term construction project would be undertaken in the 2016-2017 timeframe, accomplishing the interim

configuration that is described in Section 3.5.1 (Interim versus Ultimate Configuration) in the July 2015 C-470 Revised EA. The remainder of the Proposed Action would be built in the future, completing the Ultimate Configuration. Short-term (up to two years) construction traffic impacts thus would occur for each of these two project phases.

Intensity

Intensity refers to the severity of the impact, and identifies ten factors that should be considered in evaluating the intensity of a project's impacts and whether the impacts are substantial enough to warrant the preparation of an EIS (40 CFR 1508.27[b][1-10]).

The factors are addressed as follows:

1. Impacts that may be both beneficial and adverse: Anticipated impacts of the Proposed Action are detailed in Chapter 4 of the Revised EA and are summarized there in Table 4-22. For several resources, anticipated impacts may be considered both beneficial and adverse. With regard to water quality, for example, the Proposed Action would result in an additional 119.8 acres of impervious surface, increasing stormwater runoff. However, the project's water quality mitigation will address 185.1 acres of impervious surface, thus likely resulting in a net improvement of water quality. With regard to traffic flow, the long-term effects of the Proposed Action will be beneficial, while during construction (e.g., the near-term interim project and the future completion of the ultimate configuration), traffic delays can be expected. Similarly, the Mary Carter Greenway Trail would experience temporary closures during construction, but the trail is being reconstructed with improved geometrics, a beneficial impact for the long term.

2. The degree to which the project affects public health or safety: When complete, the Proposed Action is expected to have a

beneficial effect on public health and safety because half of the vehicle crashes occurring on C-470 today are rear-end collisions typically resulting from traffic congestion, especially during the morning and evening peak commuter periods. Improving traffic flow is expected to reduce the likelihood of rear-end crashes. Accidents also may decline due to the addition of auxiliary lanes that will provide motorists more time and distance in which to merge into or out of through lanes for freeway entry or exit. The proposed express lanes may shorten response times for emergency vehicles. Finally, the Proposed Action also includes improvements at two interchanges to allow C-470 Trail users to cross major north-south arterial streets without having to do so at-grade, through traffic.

During the public comment period, several submittals indicated concern regarding potential health effects of traffic noise. Responses to these concerns are provided in Chapter 3 of this decision document.

3. Unique characteristics of the geographical area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers or ecologically critical area: No prime farmlands, wild and scenic rivers, prehistoric cultural resources, or ecologically critical areas will be affected by the project. The most ecologically sensitive area crossed by C-470 is the South Platte River, where existing parallel C-470 bridges would be replaced with new ones. The new bridges will be wider and longer than the existing and will accommodate an expanded wildlife crossing space better separated from the creekside Mary Carter Greenway Trail. Section 4.4.3 of the Revised EA indicates that the Proposed Action would have permanent impacts to 0.70 acre of wetlands and temporary impacts to another 1.30 acres. In accordance with its longstanding policy, CDOT will provide mitigation to ensure no net loss of wetlands.

4. The degree to which the effects on the environment are expected to be highly controversial: As seen in chapters 3 and 4 of this decision document, there has been no public or agency controversy over the Proposed Action's environmental effects with the exception of traffic noise concerns. Most of the public comments received regarding noise came from neighborhoods where noise levels under the Proposed Action are predicted to be above the impact threshold, but mitigation was not found to be reasonable and feasible.

CDOT is aware of these concerns, has coordinated with the affected neighborhoods, and has responded to all concerns. See Chapter 3 of this decision document for additional details.

5. The degree to which the effects on the quality of human environment are highly uncertain or involve unique or unknown risks: Chapter 4 of the Revised EA details the anticipated effects of the Proposed Action on the quality of the human environment. The Proposed Action would not result in effects with a high degree of uncertain, unique, or unknown risks.

6. The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration: The project has independent utility and logical project termini and also represents a reasonable expenditure of funds. The project has followed all applicable regulations and guidance for a Federal-aid project. Therefore, this action will not establish a precedent regarding the requirements of NEPA as they will be applied to future projects.

7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts: Cumulative effects result from the incremental effect of the action when combined with other past, present and

reasonably foreseeable future actions. Section 4.7 of the C-470 Revised EA evaluated potential cumulative effects of the Proposed Action. Potential cumulative effects were concluded to be "moderate" with regard to visual and aesthetic character due to additional pavement and signage and the loss of the existing grassy median. Established Region 1 visual and aesthetic guidelines will be followed to ensure consistent quality of new corridor elements.

8. The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss of significant scientific, cultural, or historic resources: Potential effects to historic resources were evaluated for the Proposed Action and the results are reported in the Revised EA's Section 4.3.7 and its Historic Resource Survey (technical report). A finding of no adverse effect was made for four resources (Chatfield Dam, Columbine Hills subdivision, City Ditch and Highline Canal). For all other nearby historic resources, the evaluation found no historic properties affected. The Revised EA includes correspondence from the State Historic Preservation Officer and other consulting parties indicating their concurrence with these findings. In summary, the Proposed Action would not adversely affect any historic resources.

9. The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act: The Proposed Action's effects on threatened and endangered species are discussed in Section 4.4.2 of the Revised EA, and in the Revised EA's Biological Resources Technical Report. The Proposed Action would not adversely affect any federally threatened or endangered species or their habitat.

10. Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment: The project does not threaten a violation of any Federal, State, or local law or requirements for the protection of the environment. All applicable permits will be acquired prior to construction.

Summary Regarding Intensity

In consideration of the foregoing factors, FHWA concludes that the impacts will not be intense or severe enough to cause significant environmental impacts that would warrant preparation of an EIS.

6.2 Findings Conclusion

Taking into consideration both the context and intensity of the impacts as discussed above, FHWA has determined that the Proposed Action described in Section 2.3.2 of the Revised EA and Chapter 2 of this FONSI will have no significant impact on the human environment. This FONSI is based on the attached Revised EA which has been independently evaluated by the FHWA and determined to adequately and accurately discuss the need, environmental issues, and impacts of the Proposed Action and appropriate mitigation measures. It provides sufficient evidence and analysis for determining that an EIS is not required. The FHWA takes full responsibility for the accuracy, scope, and content of the attached EA.

CHAPTER 7 REFERENCES

- CDOT. 2006. C-470 Environmental Assessment. Retrieved December 2013 from <https://www.codot.gov/projects/c470/environmental-assessment.html>.
- CDOT. 2015a. C-470 Revised Environmental Assessment. Retrieved September 2015 from <https://www.codot.gov/projects/c470/environmental-assessment.html>.
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APPENDIX A

Three Exhibits Submitted by
David Steinberger,
Attorney for the Highlands Ranch
Neighborhood Coalition

*Submitted with an e-mailed letter dated
September 10, 2015 as public comments
regarding the C-470 Revised Environmental
Assessment*

Exhibit A

Memo

Date: June 2, 2015

To: Mr. Larry Graber
Highlands Ranch Neighborhood Coalition (HRNC)
3479 Meadow Creek Way
Highlands Ranch, CO 80126

From: Dana Lodico, PE, INCE Bd. Cert.
Senior Consultant
Illingworth & Rodkin, Inc.

RE: Results of Noise Monitoring Survey, C470 Express Lanes Project, University Boulevard to Quebec Street, Highlands Ranch, CO

A field investigation was conducted in May 2015 to measure noise levels at representative Activity Category B land uses (i.e., residences) that could be subject to traffic noise impacts from the C470 Express Lanes project near Highlands Ranch, Colorado. The focus of the noise survey was on residences located on the south side of C470 between University Boulevard and Quebec Street. Short-term measurement locations were selected to represent each major developed area of interest within the project area. These included the Highlands Ranch neighborhood, Province Center, and Gleneagle. Long-term measurement sites were selected to capture the diurnal traffic noise level patterns in the project area. The pavement through this portion of C470 consists of a large aggregate and highly textured asphalt in dirty but good condition. Measurement locations are illustrated in Figures 1 and 2. Photographs of the measurement sites are provided in Attachment A. Definitions of technical terms are provided in Appendix B.

1.1. Field Measurements

A field noise study was conducted in accordance with recommended procedures in the *Colorado Department of Transportation Noise Analysis and Abatement Guidelines (January 2015)*. Noise measurements were made with Larson Davis Model 820 Integrating Sound Level Meters (SLMs) set at “slow” response. The sound level meters were equipped with G.R.A.S. Type 40AQ ½-inch random incidence microphones fitted with windscreens. The sound level meters were calibrated prior to the noise measurements using a Larson Davis Model CAL200 or Model CA250 acoustical calibrator. The response of the system was checked after each measurement session

and was always found to be within 0.2 dBA. No calibration adjustments were made to the measured sound levels. At the completion of each monitoring event, the measured interval noise level data were obtained from the SLM using the Larson Davis SLM utility software program.

1.1.1. Meteorology

Spring weather conditions, including periods of rain, thunder, and high winds, occurred during the measurement period. Air temperatures ranged from 42 to 71°F, with lower temperatures occurring during nighttime periods. Due to the extraneous noise sources generated by thunder and rain, noise levels measured during these periods were excluded from the calculations of the worst-hour traffic noise levels as indicated in the data. Periods where the roads remained wet after the rain had ended were also excluded due to the splash and spray component of the traffic sounds. Although high winds (wind speeds exceeding 11 mph) were identified during the measurement period from available local weather data, these wind speeds were local to the weather station, which is in a more exposed location. Wind speeds at the microphone locations, which were shielded from wind by adjacent residences and foliage, were lower and did not exceed 11 mph. During the short-term measurements, air temperatures were measured locally to be 68 to 71°F, with wind speeds in the range of 0-4 mph.

1.1.2. Long -Term Measurements

Long-term (LT) reference noise measurements were made at two (2) locations in the project area and vicinity to quantify the diurnal trend in noise levels and to establish the worst-hour traffic noise levels. The noise measurements were made over a six-day period from May 12th to 18th, 2015. Long-term noise measurement locations were selected to generally represent existing noise levels in the vicinity of the selected areas of interest. Care was taken to select sites that were primarily affected by traffic noise and to avoid those sites where extraneous noise sources, such as barking dogs, pool pumps, or air conditioning units, that could contaminate the noise data. After the data was downloaded from the sound level meter, the data was reviewed to identify any time periods possibly contaminated by local noise sources or meteorological conditions, as described above. Data points were excluded from the data set where significant contamination was noted.

Long-term noise measurement LT-1 was made in the open space adjacent to residences on Forest Drive, at a distance of about 400 feet from the center of eastbound C470. This location is elevated by about 25 feet above the freeway with clear line-of-sight to the vehicles traveling along the freeway. The primary noise source at this location was traffic on C470. Worst-hour noise levels at this location ranged from 64 to 69 dBA L_{eq} with higher noise levels occurring during periods with winds blowing from the north. The daily trend in noise levels at LT-1 is shown in Figures 3 to 9.

Long-term noise measurement LT-2 was made in the open space adjacent to homes on South Aberdeen Circle, at a distance of about 490 feet from the center of eastbound C470. This location is elevated significantly above the elevation of the freeway (about 40 feet) and receives partial shielding from intervening terrain. The primary noise source at this location was traffic on C470. Worst-hour noise levels at this location ranged from 60 to 66 dBA L_{eq} with higher noise levels occurring during periods with winds blowing from the north. The daily trend in noise levels at LT-2 is shown in Figures 10 to 16.

1.1.3. Short-Term Measurements

Four (4) short-term (ST) noise measurements were made in representative outdoor use areas at neighborhoods of interest in the vicinity of the project. Short-term measurements were made in concurrent time intervals with the data collected at the long-term reference measurement sites. This method facilitates a direct comparison between both the short-term and long-term noise measurements and allows for the identification of the loudest-hour noise levels at land uses in the project vicinity where long-term noise measurements were not made. Two or more consecutive 10-minute measurements were made at each noise measurement site. At all locations, noise levels were measured five feet above the ground surface and at least 10 feet from structures or barriers. Existing worst-hour traffic noise levels were calculated at each short-term noise measurement location through comparison to the representative long-term location. The results of the short-term measurements are shown in Table 1.

Short-term noise measurement ST-1 was made in the backyard of 8502 Forrest Street, at a distance of about 420 feet from the center of eastbound C470. Eastbound C470 is depressed through this area, which provides partial shielding to residences from tire/pavement noise sources. This location had full line-of-sight to westbound C470. Average noise levels measured at this location between 11:40 am and 12:00 pm ranged from 62 to 63 dBA L_{eq} . The calculated worst hour noise level at this location, based on comparison to data collected simultaneously at LT-1, ranged from 66 to 71 dBA L_{eq} .

Location ST-2 was made in the backyard of 8552 South Mallard Place, at a distance of about 420 feet from the center of eastbound C470. This location was elevated by about 20 feet above C470 with clear line-of-sight the freeway. The average noise level measured at this location between 12:10 and 12:30 pm was 57 dBA L_{eq} . The calculated worst hour noise level at this location, based on comparison to LT-1, ranged from 62 to 67 dBA L_{eq} .

Measurement ST-3 was made in the backyard of 28 Caleridge Court, at a distance of about 490 feet from the center of eastbound C470. This location is partially shielded from the freeway by the intervening terrain. The average noise level measured at this location between 1:00 and 1:20

pm was 59 dBA L_{eq} . The calculated worst hour noise level at this location, based on comparison to LT-2, ranged from 66 to 71 dBA L_{eq} .

Noise measurement ST-4 was made in the front yard of 8602 Canongate Lane, at a distance of about 400 feet from the center of eastbound C470. This location is partially shielded from the freeway by the intervening topography. The average noise level measured at this location between 1:40 and 2:00 pm was 59 dBA L_{eq} . The calculated worst hour noise level at this location, based on comparison to data collected simultaneously at LT-2, ranged from 65 to 70 dBA L_{eq} .

TABLE 1 Summary of Short-Term Noise Measurement Data

Noise Measurement Location	Date/Time	$L_{(1)}$	$L_{(10)}$	$L_{(50)}$	$L_{(90)}$	L_{eq}	Worst Hour Noise Level, L_{eq} dBA
ST-1: Backyard of 8502 Forrest Street	11:40-11:50 am	66	64	61	59	62	66-71
	11:50 am-12:00 pm	66	65	63	60	63	
ST-2: Backyard of 8552 S. Mallard Place	12:10-12:20 pm	61	60	58	56	57	62-67
	12:20-12:30 pm	62	59	57	54	57	
ST-3: Backyard of 28 Caleridge Court	1:00-1:10 pm	62	61	58	56	59	66-71
	1:10-1:20 pm	69	62	59	56	60	
ST-4: Front yard of 8602 Canongate Lane	1:40-1:50 pm	63	60	59	57	59	65-70
	1:50-2:00 pm	63	60	58	57	59	

1.2. Results

As shown in Table 1, the worst-hour noise levels measured at Category B receptors ST-1 through ST-4 ranged from 67 to 71 dBA $L_{eq[h]}$ during free flow peak traffic periods with winds from the north (downwind conditions) and 62 to 66 dBA $L_{eq[h]}$ during upwind conditions (winds blowing from the south). Noise levels approach or exceed the Category B Noise Abatement Criteria (NAC)¹ at all representative noise measurement locations (ST-1 through ST-4) during downwind conditions and continue to approach or exceed the Category B Noise Abatement Criteria (NAC) at many of the receptors under upwind conditions. Daytime hourly average noise levels were about 5 to 8 dB louder

¹ Category B Receptors (i.e., residences) are subject to an approach criterion of 66 dBA worst-hour L_{eq} .

during downwind conditions than during upwind conditions. This is similar to results from prior research².

1.3. Conclusions

A noise monitoring survey was conducted from May 12th to 18th, 2015 at residences located on the south side of C470 between University Boulevard and Quebec Street. The monitoring survey included two long-term (6-day) and four short-term (2 x 10-minute) measurements. The following are conclusions resulting from the analysis of the data:

- Worst-hour noise levels at receptors ST-1 through ST-4 ranged from 67 to 71 dBA $L_{eq[h]}$ during free flow peak traffic periods with winds from the north (downwind conditions) and 62 to 66 dBA $L_{eq[h]}$ during upwind conditions (winds blowing from the south);
- Worst-hour noise levels exceeded the NAC at all representative noise measurement locations (ST-1 through ST-4) during downwind conditions and at all but one (ST-2) of the receptors during upwind conditions;
- Daytime hourly average noise levels were about 5 to 8 dB louder during downwind conditions than during upwind conditions; and
- Worst-hour noise levels were calculated at short-term locations based on a comparison between long-term and short-term data. Due to the effects of wind conditions on the data, it was important to be able to compare the short-term data to long-term diurnal measurements in order to calculate the worst-hour noise levels at the short-term locations.

² "I-80 Davis OGAC Pavement Noise Study, 12-Year Summary Report", Illingworth & Rodkin, Inc., May 2011.

FIGURE 1 Measurement Locations, University Boulevard to Colorado Boulevard

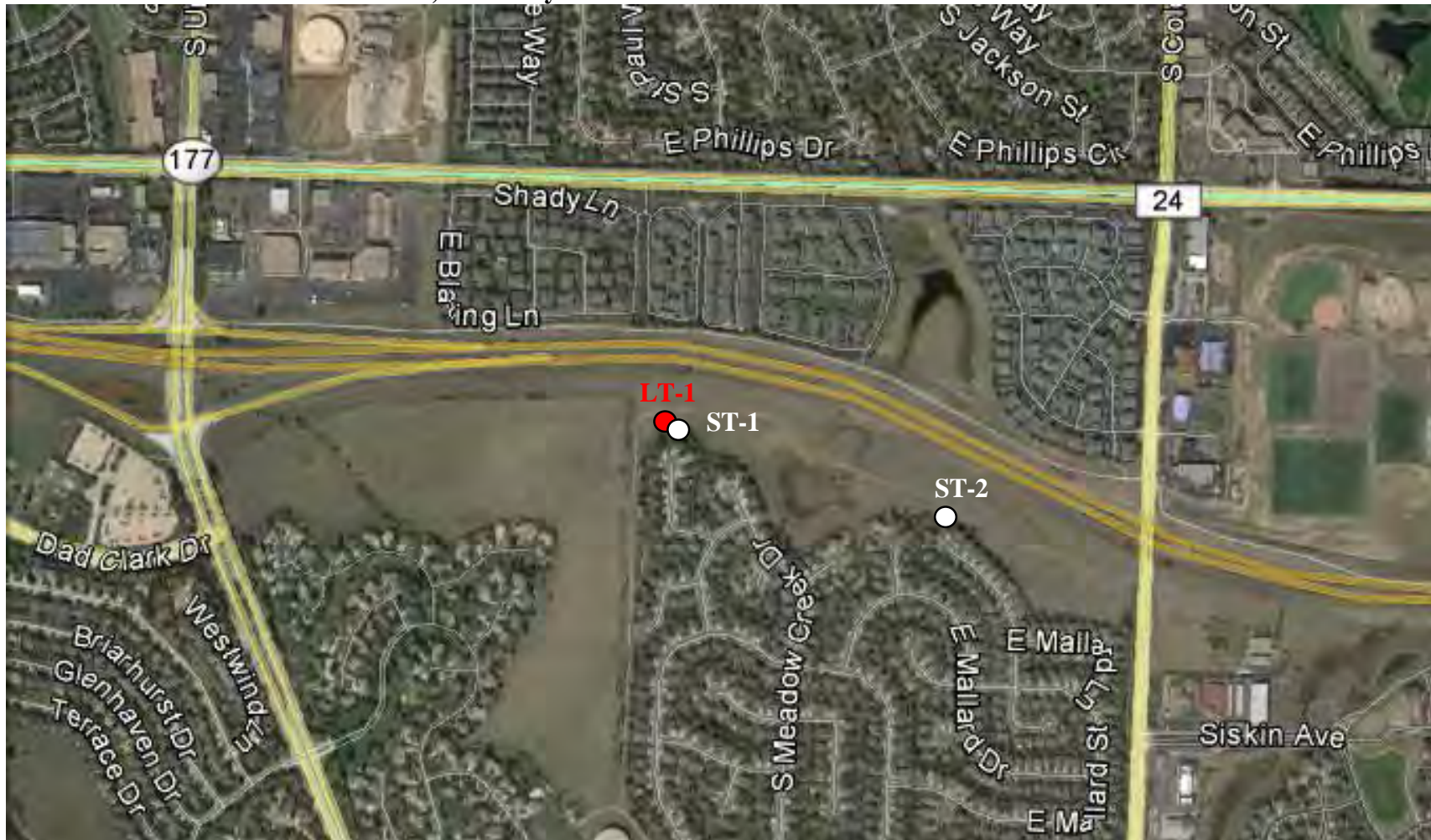
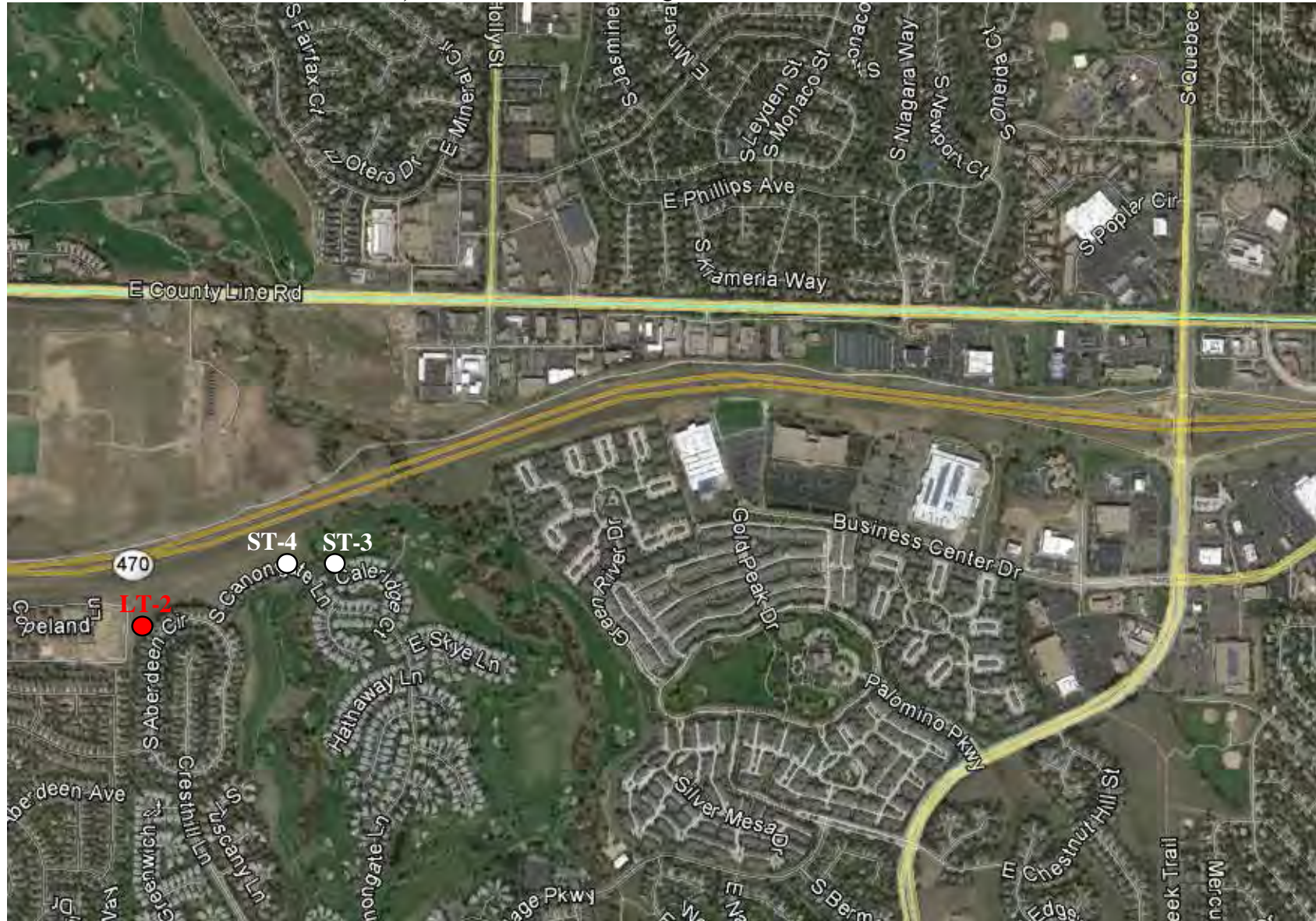
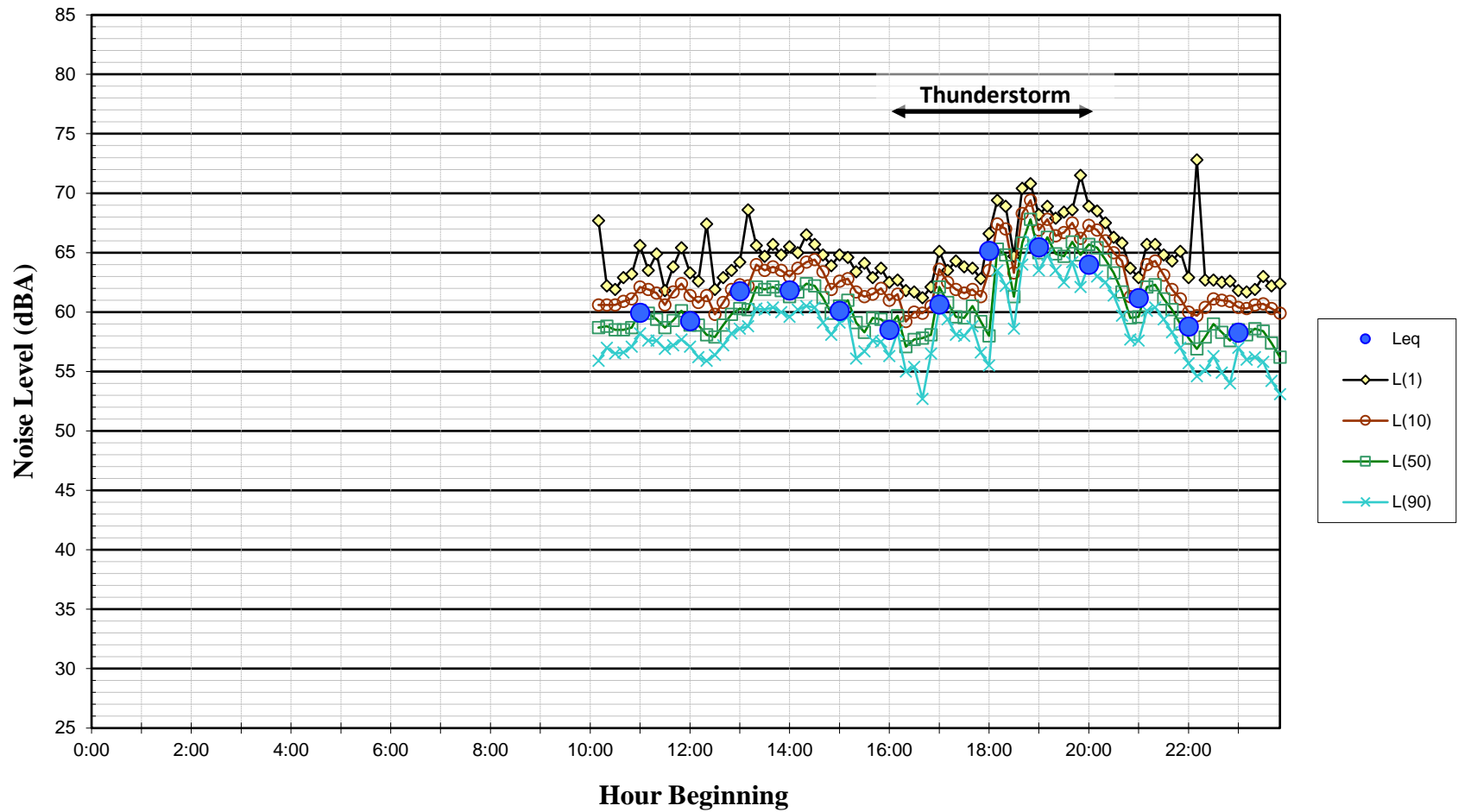


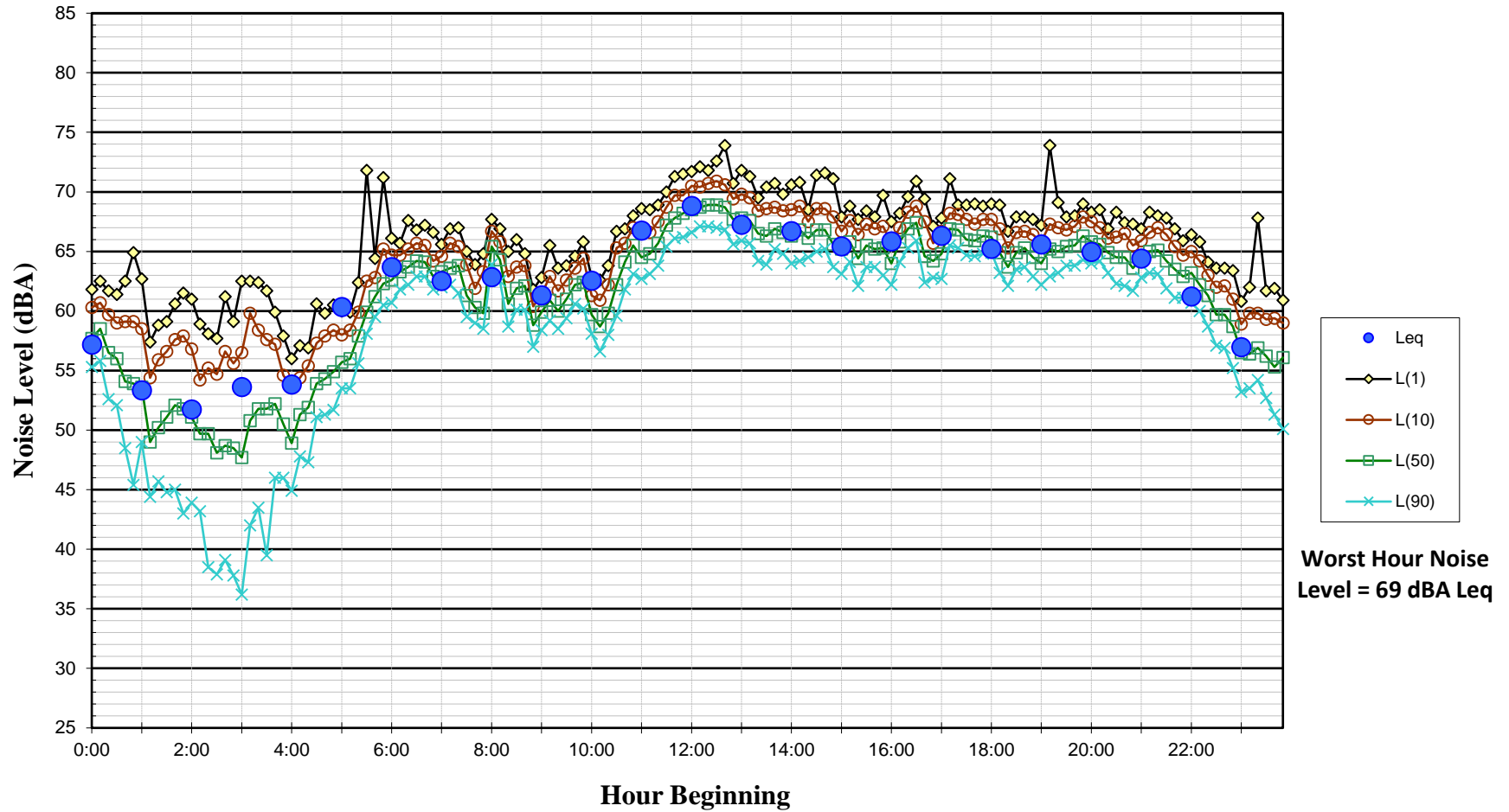
FIGURE 2 Measurement Locations, Colorado Boulevard to Quebec Street



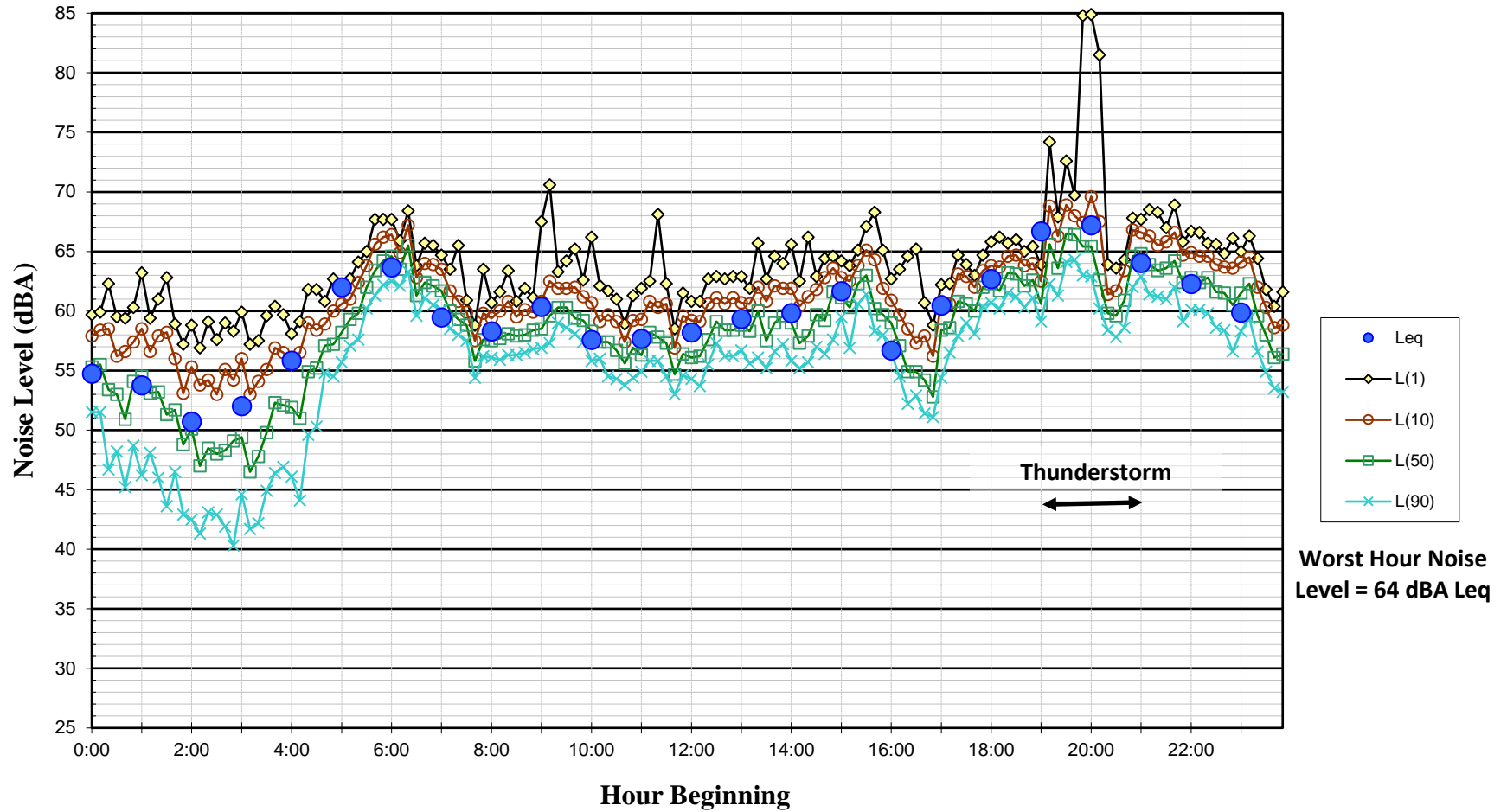
**Figure 3: Noise Levels at LT-1
Open Space Adjacent to Forest Drive Homes
Tuesday, May 12, 2015**



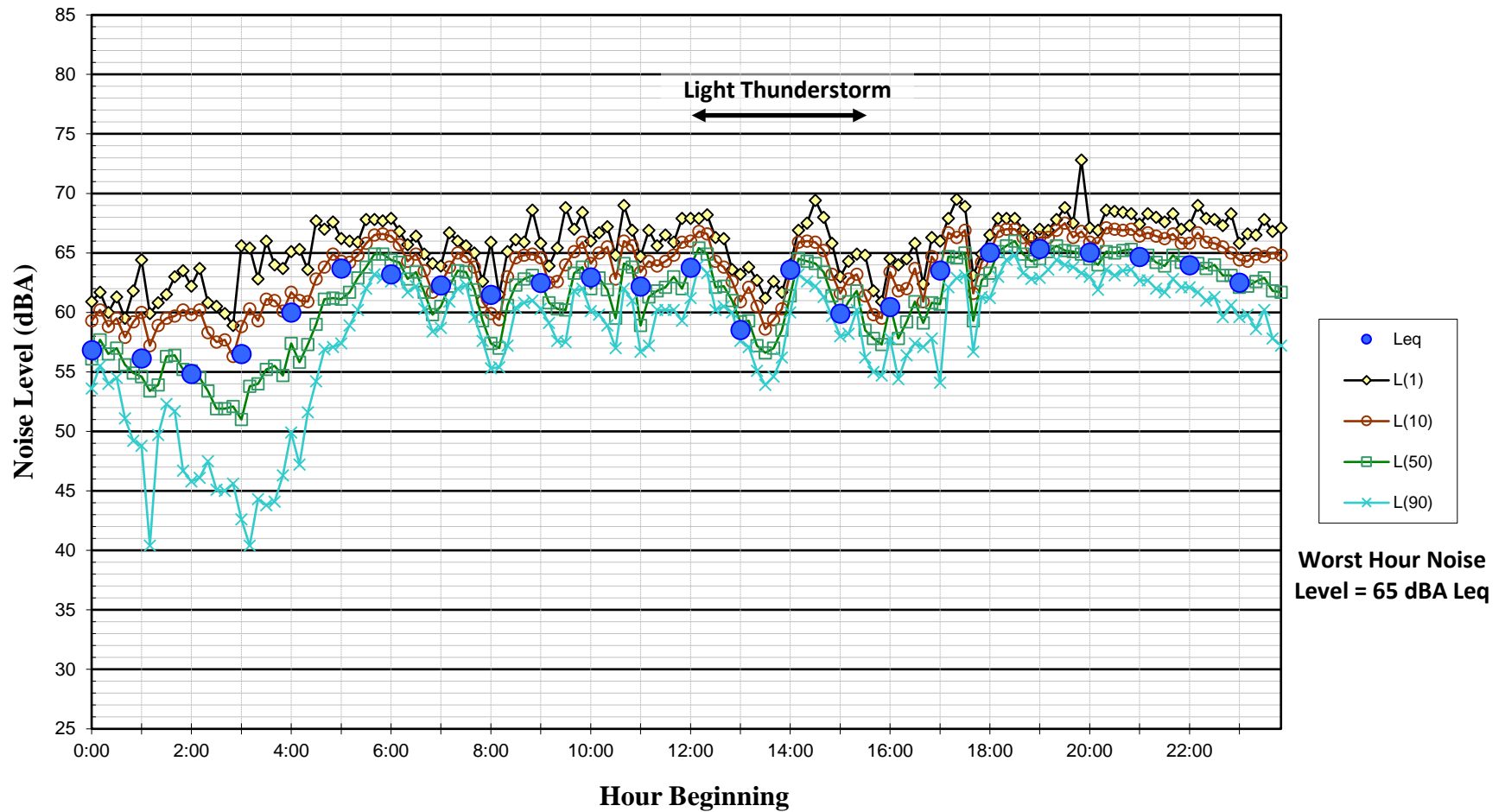
**Figure 4: Noise Levels at LT-1
Open Space Adjacent to Forest Drive Homes
Wednesday, May 13, 2015**



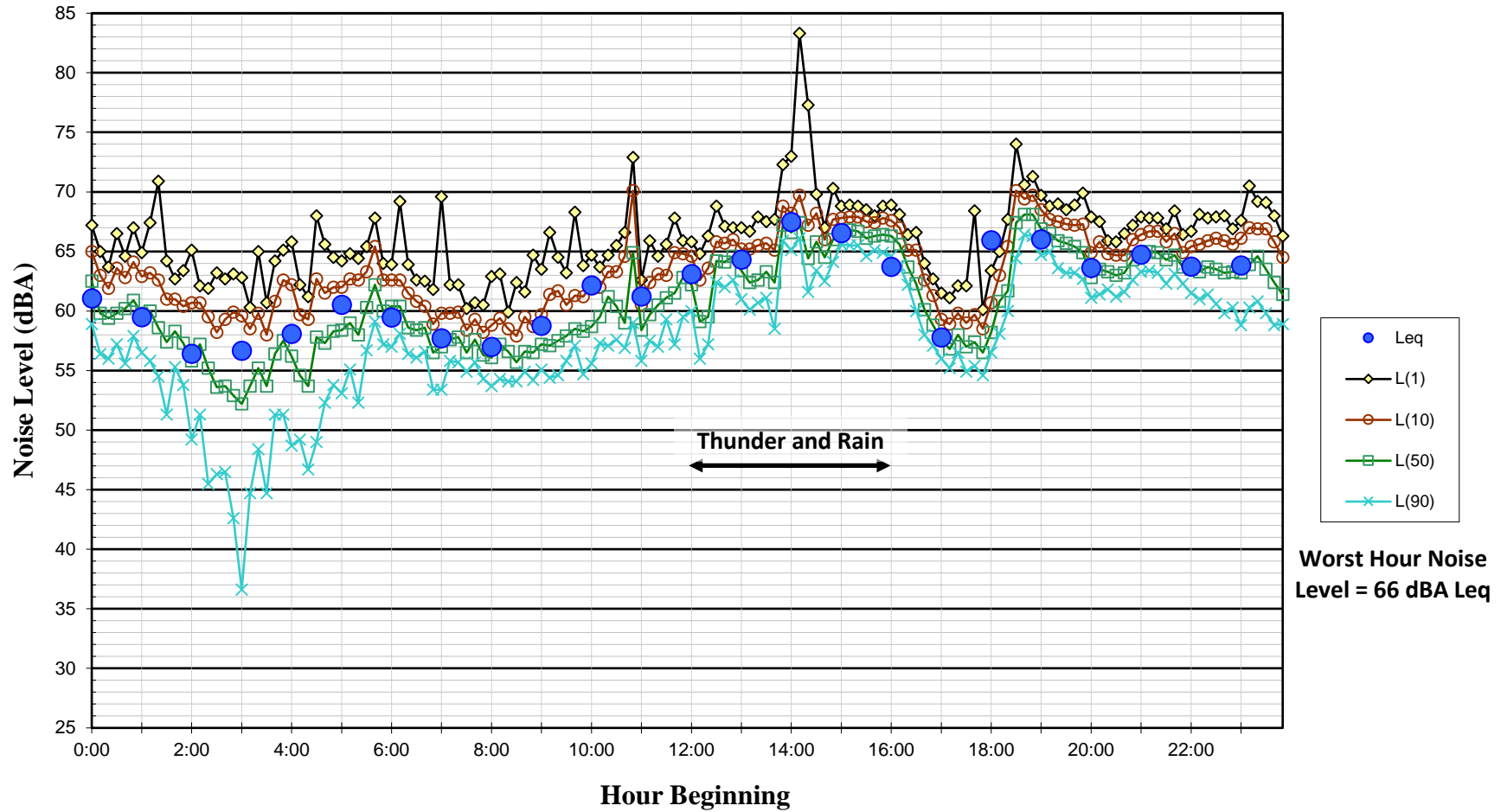
**Figure 5: Noise Levels at LT-1
Open Space Adjacent to Forest Drive Homes
Thursday, May 14, 2015**



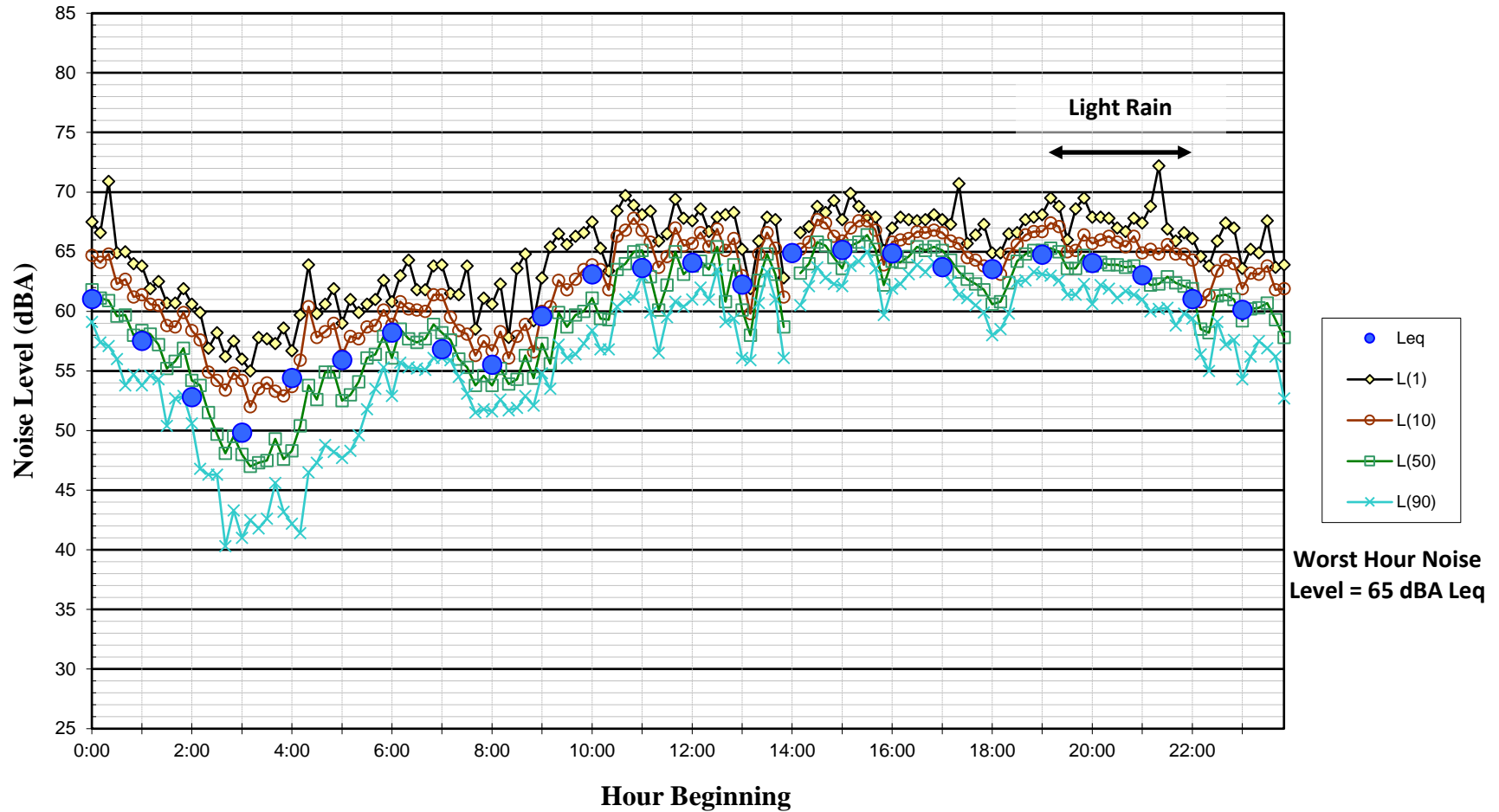
**Figure 6: Noise Levels at LT-1
Open Space Adjacent to Forest Drive Homes
Friday, May 15, 2015**



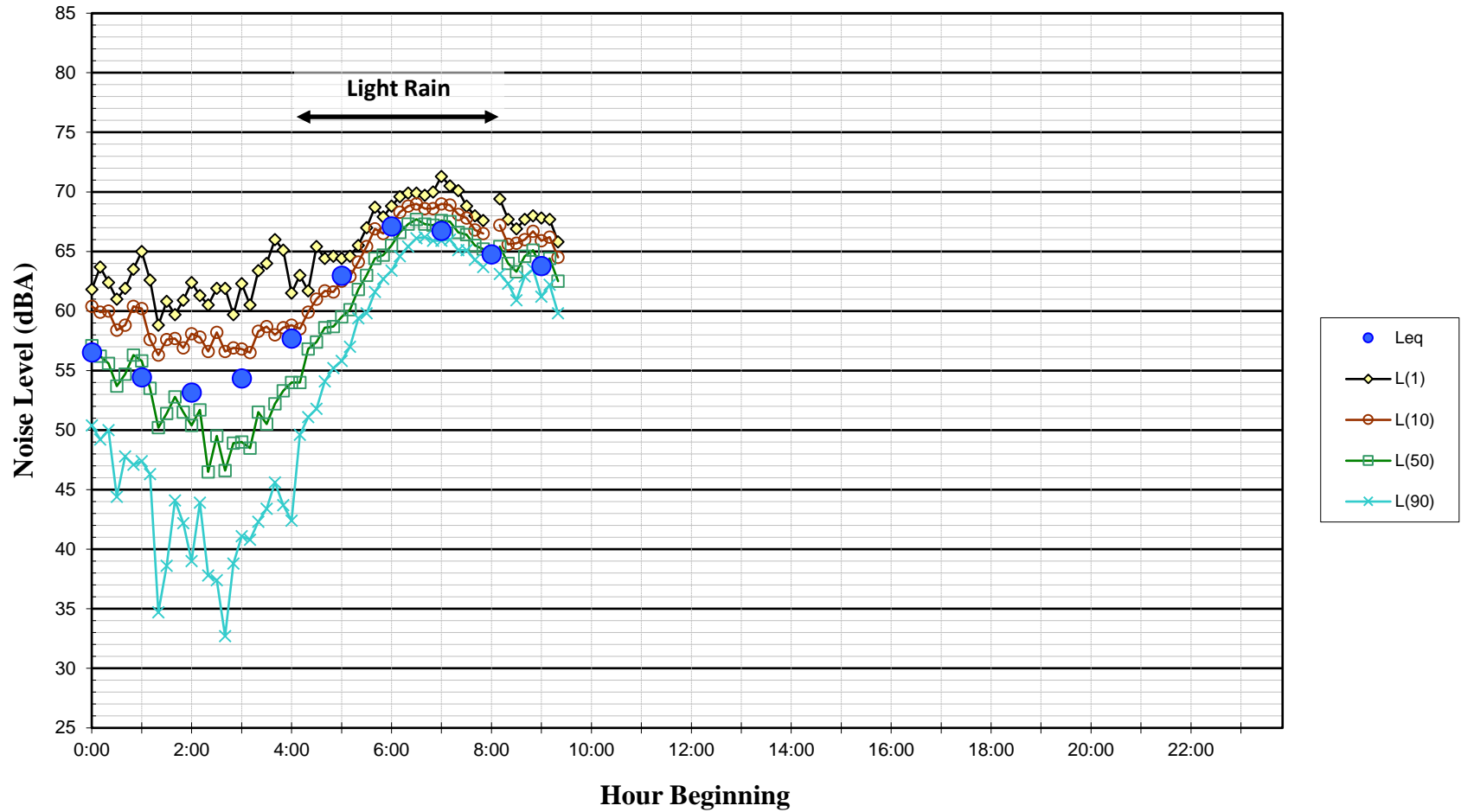
**Figure 7: Noise Levels at LT-1
Open Space Adjacent to Forest Drive Homes
Saturday, May 16, 2015**



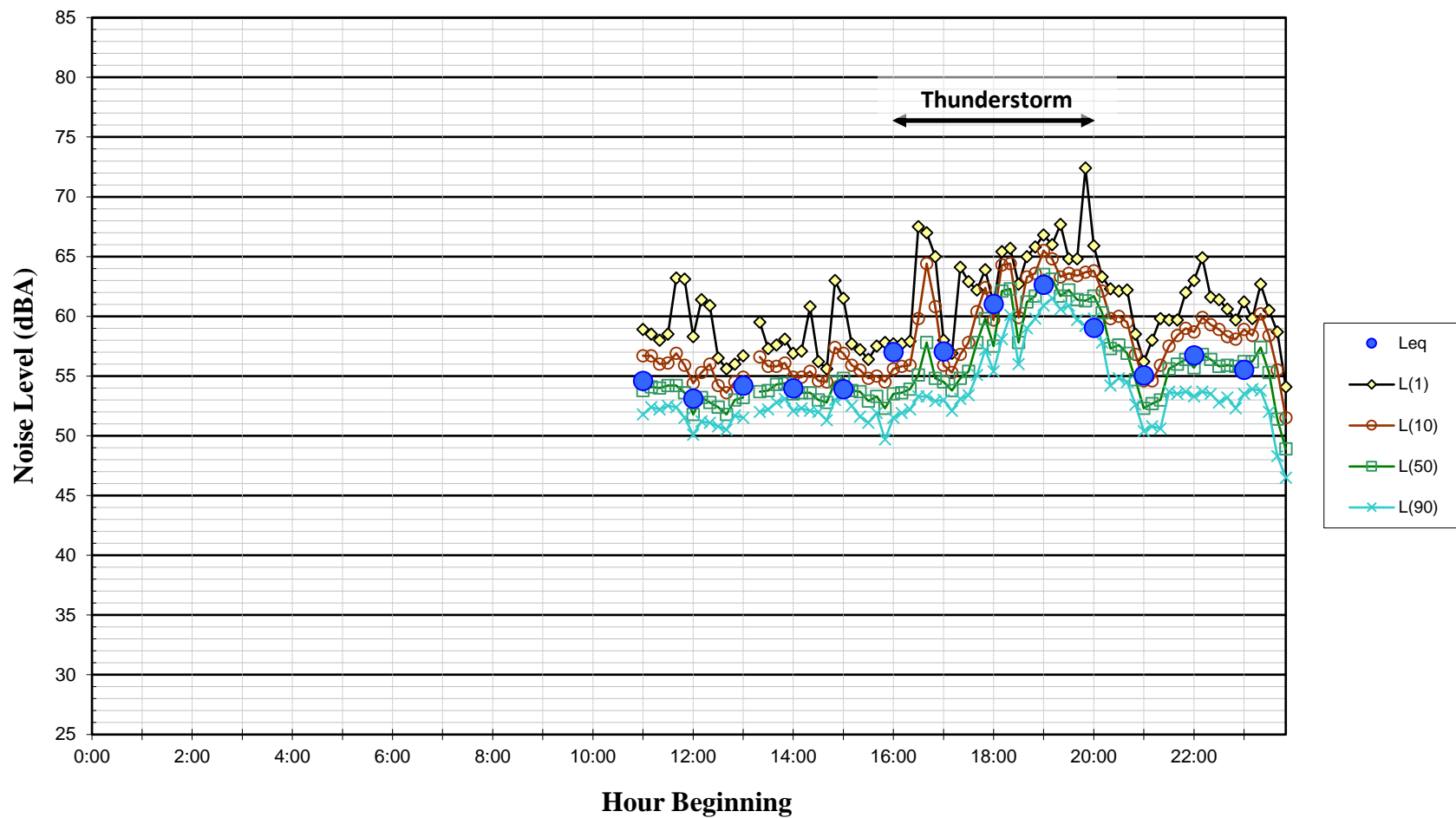
**Figure 8: Noise Levels at LT-1
Open Space Adjacent to Forest Drive Homes
Sunday, May 17, 2015**



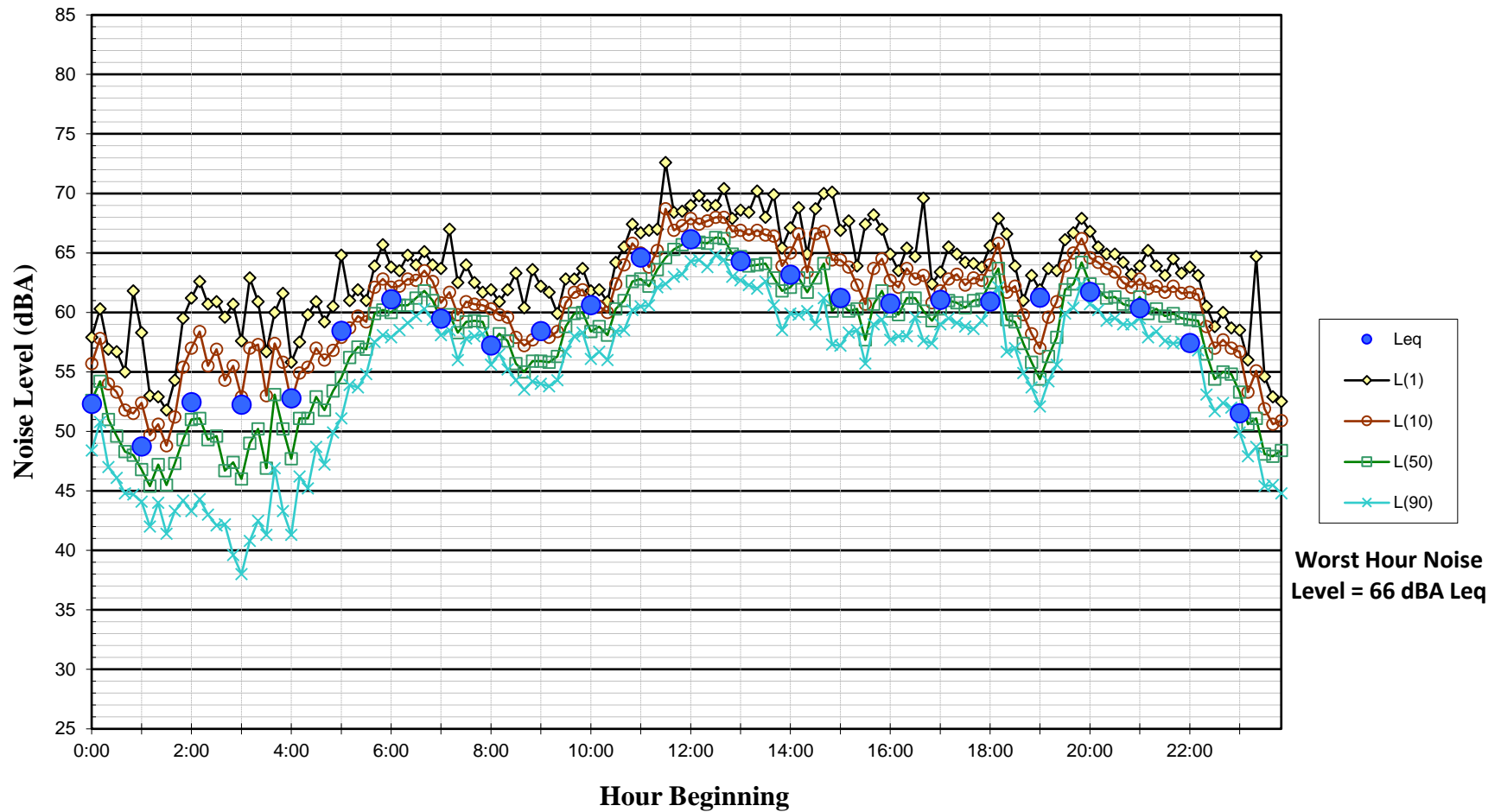
**Figure 9: Noise Levels at LT-1
Open Space Adjacent to Forest Drive Homes
Monday, May 18, 2015**



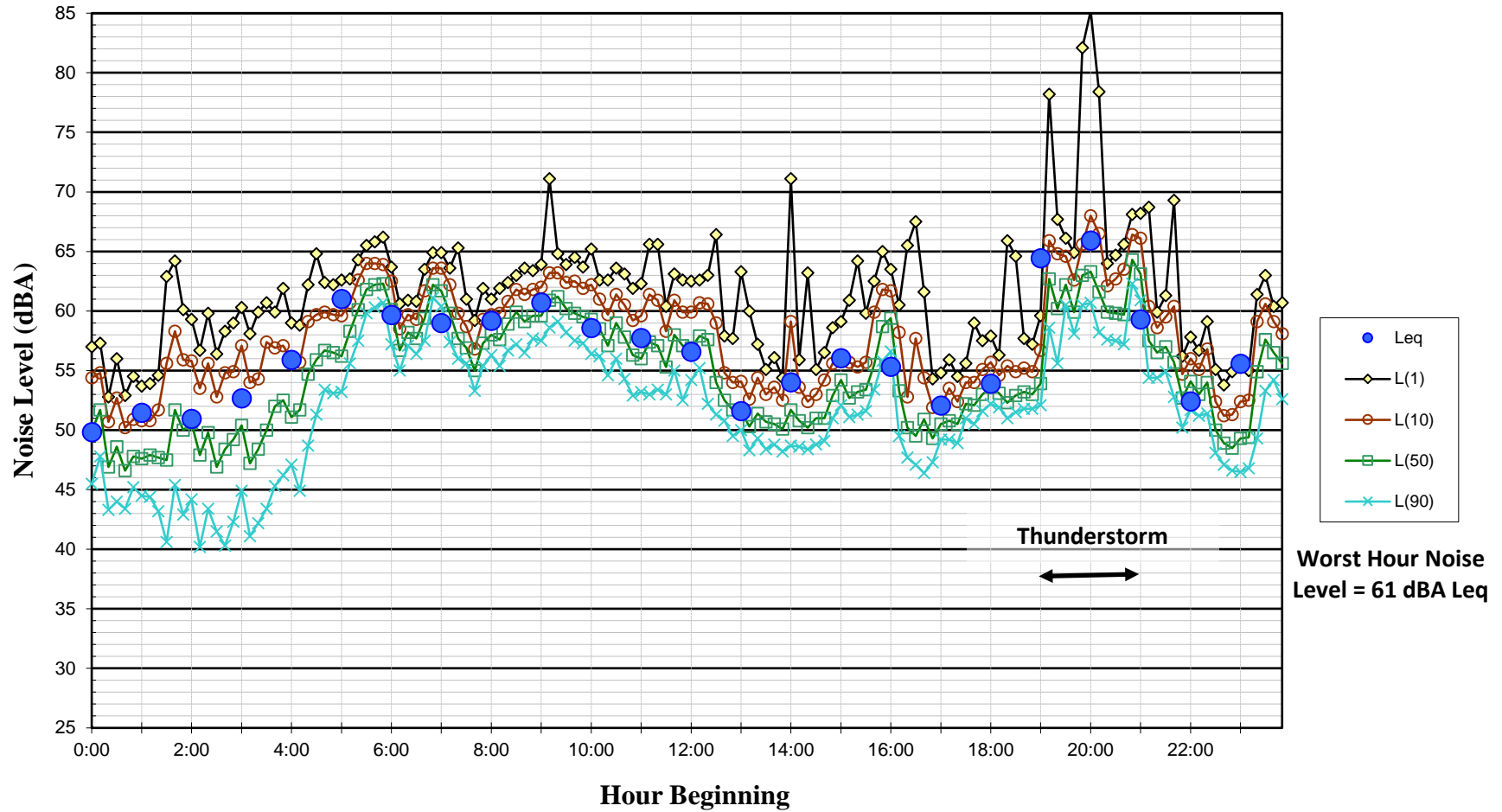
**Figure 10: Noise Levels at LT-2
Open Space Adjacent to Aberdeen Circle Homes
Tuesday, May 12, 2015**



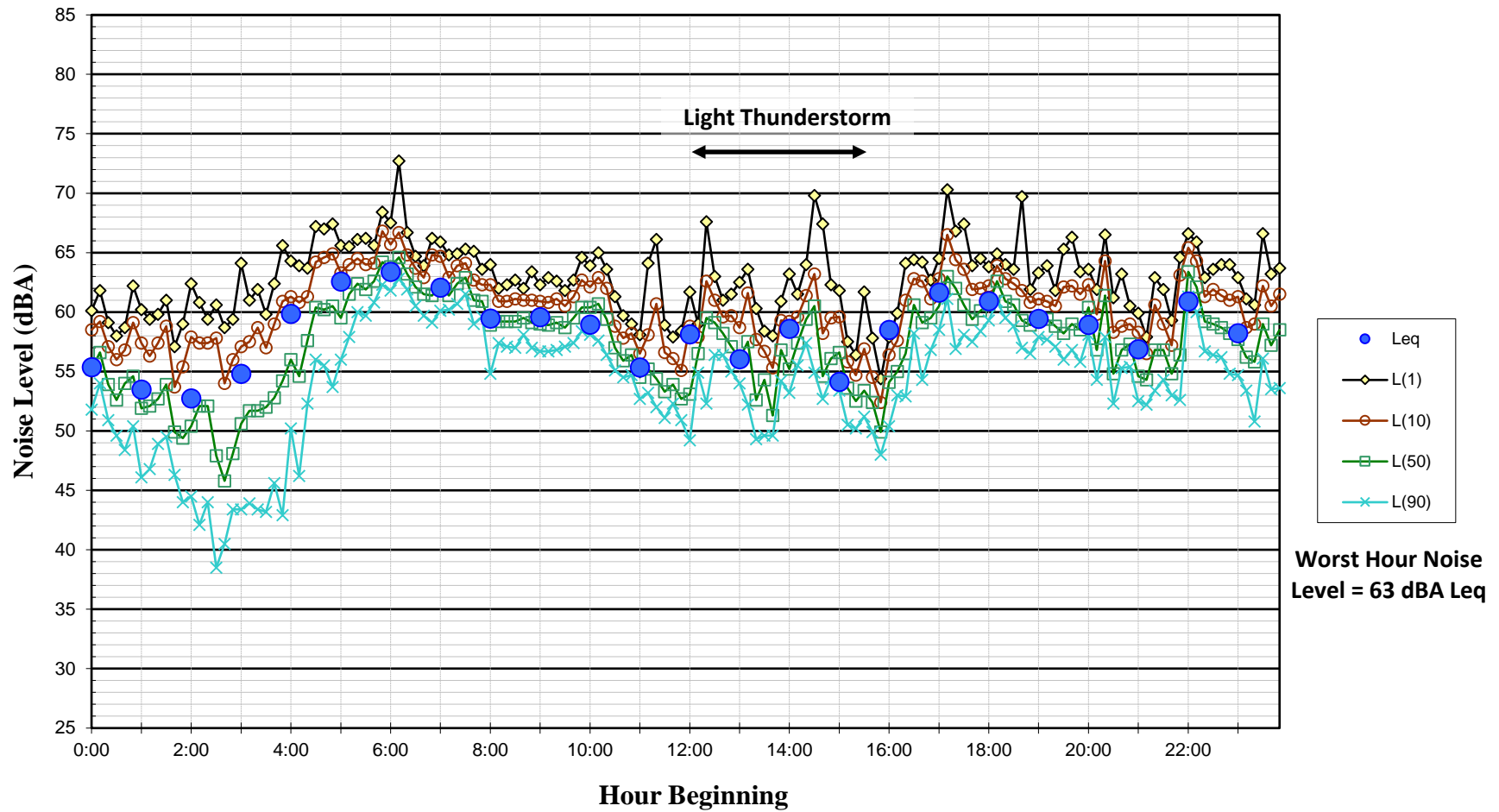
**Figure 11: Noise Levels at LT-2
Open Space Adjacent to Aberdeen Circle Homes
Wednesday, May 13, 2015**



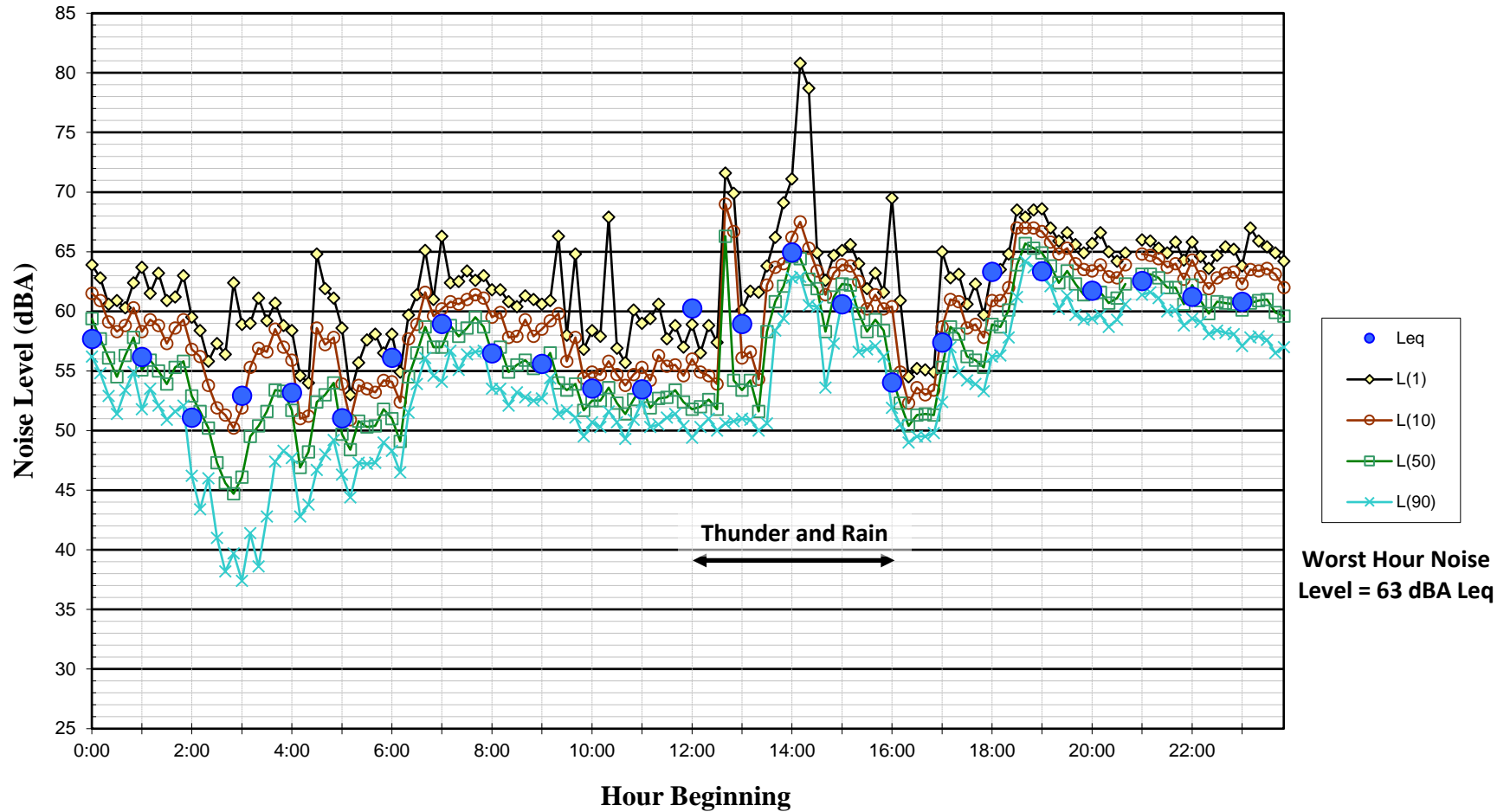
**Figure 12: Noise Levels at LT-2
Open Space Adjacent to Aberdeen Circle Homes
Thursday, May 14, 2015**



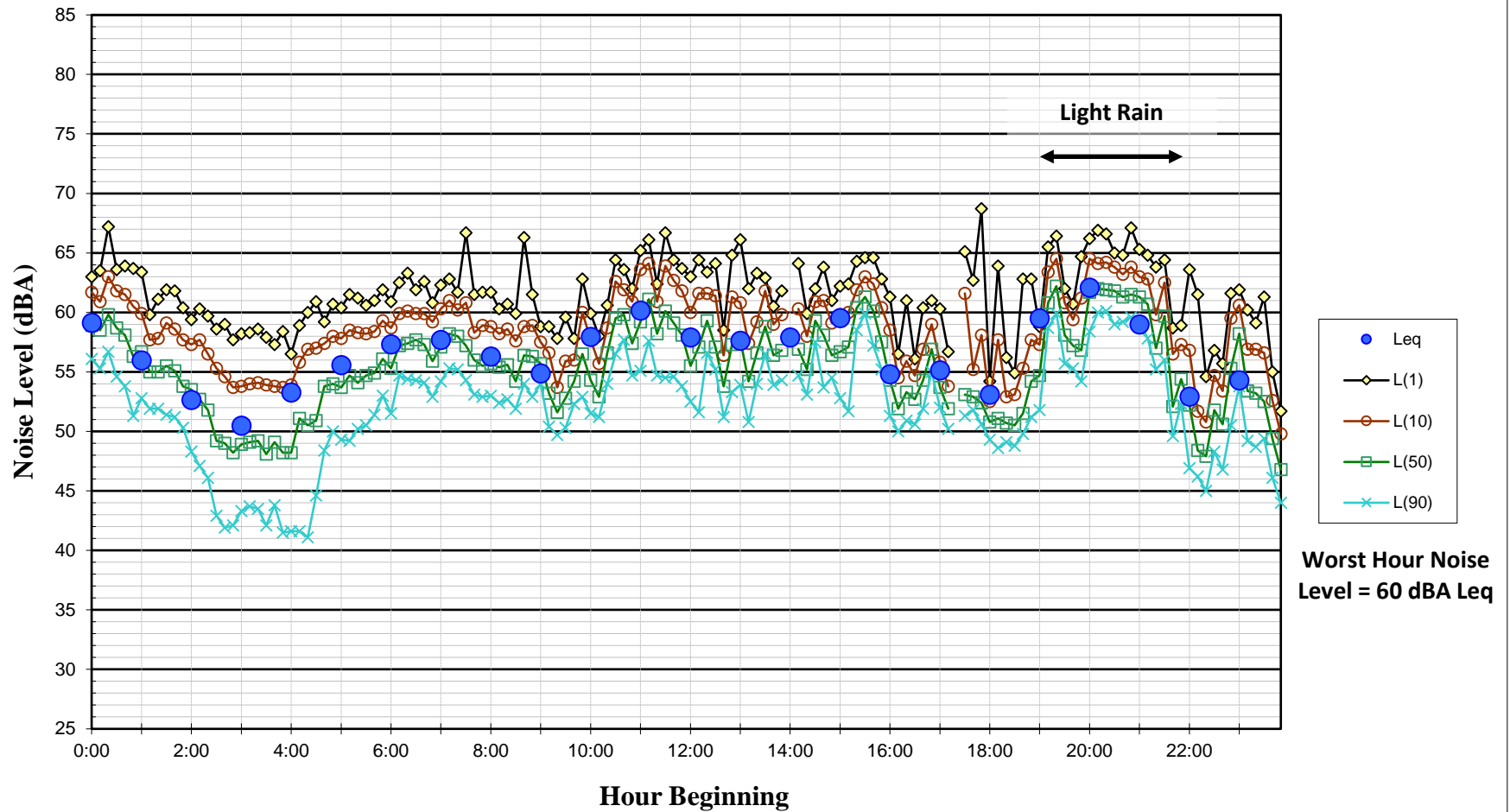
**Figure 13: Noise Levels at LT-2
Open Space Adjacent to Aberdeen Circle Homes
Friday, May 15, 2015**



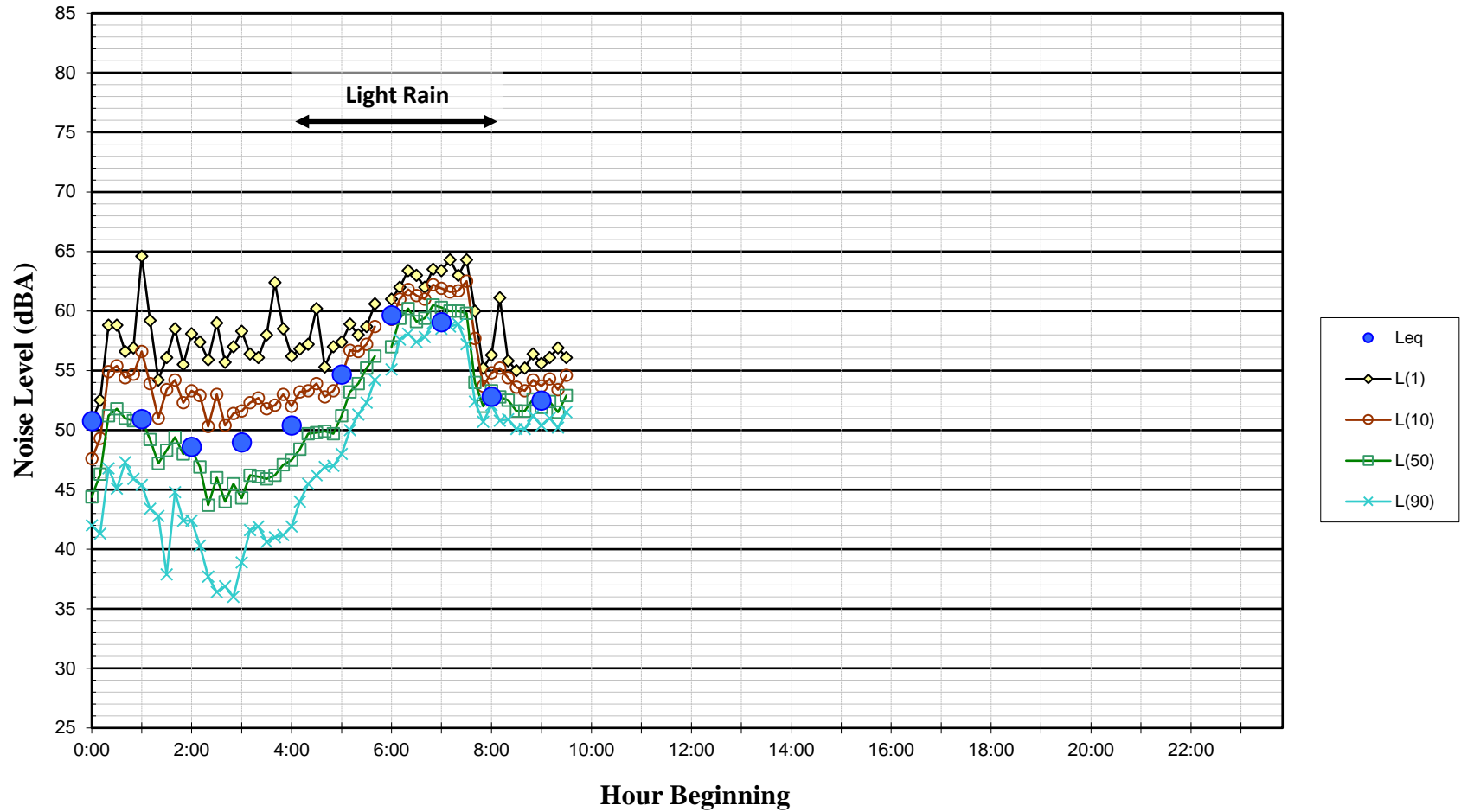
**Figure 14: Noise Levels at LT-2
Open Space Adjacent to Aberdeen Circle Homes
Saturday, May 16, 2015**



**Figure 15: Noise Levels at LT-2
Open Space Adjacent to Aberdeen Circle Homes
Sunday, May 17, 2015**



**Figure 16: Noise Levels at LT-2
Open Space Adjacent to Aberdeen Circle Homes
Monday, May 18, 2015**



Appendix A Site Photographs



LT-1: Open Space Adjacent to Forrest Drive Homes



LT-2: Open Space Adjacent to Aberdeen Circle Homes



ST-1: Backyard of 8502 Forrest Street



ST-2: Backyard of 8552 S. Mallard Place



ST-3: Backyard of 28 Caleridge Court



ST-4: Front Yard of 8602 Canongate Lane

Appendix B Definition of Technical Terms

Term	Definition
Decibel, dB	A unit describing, the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20 micro-Pascals.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in micro Pascals (or 20 micro Newtons per square meter), where 1 Pascal is the pressure resulting from a force of 1 Newton exerted over an area of 1 square meter. The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g., 20 micro Pascals). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sound are below 20 Hz and Ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Equivalent Noise Level, L_{eq}	The average A-weighted noise level during the measurement period.
L_{max} , L_{min}	The maximum and minimum A-weighted noise level during the measurement period.
L_{01} , L_{10} , L_{50} , L_{90}	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Day/Night Noise Level, L_{dn} or DNL	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 p.m. and 7:00 a.m.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels in the evening from 7:00 p.m. to 10:00 p.m. and after addition of 10 decibels to sound levels measured in the night between 10:00 p.m. and 7:00 a.m.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

Source: Handbook of Acoustical Measurements and Noise Control, Harris, 1998.

Exhibit B

2015 EA dB Results Compared to HRNC Results

CDOT Modeled Receptor ID	Address	Worst Hour					
		CDOT 2006 Measured Worst Hour dB(A)	CDOT 2013 Existing dB(A) Model	HRNC 2015 Measured Worst Hour dB(A)	Existing Difference CDOT - HRNC dB(A)	2035 CDOT Proposed Action dB(A) Model	Predicted Difference to Existing CDOT - HRNC dB(A)
5	8502 Forrest St. (High Gate) (420' from C-470)	71	64.9	71	-6.1	69.0	-2.0
28	8552 S. Mallard PL (Summerhill) (425' from C-470)		60.5	67	-6.5	63.4	-3.6
33	28 Caleridge CT (GEV) (490' from C-470)		63.0	71	-8.0	67.9	-3.1
28	8602 Canongate LN (GEV Gate) (400' from C-470)		60.1	70	-9.9	65.1	-4.9

CDOT Existing Modeled noise levels are 6 - 10 dB(A) less than HRNC measured worst hour noise levels.

CDOT Future noise levels in 2035 are less than HRNC 2015 existing measured worst hour noise levels.

Benefitted Receptors Comparison	2006	2015	Difference	% Reduction
Venneford Ranch	115	22	-93	-80%
GEV	61	9	-52	-85%

Notes:

2006

CDOT measured long-term noise levels for 24 hours for one week at 11 locations at actual residences STAMINA under predicted noise levels for locations east of Kipling. CDOT used a correction factor of +3dB(A) added to each location

2015

CDOT only measured short term noise levels at the HR sign 200' from the highway and at David Lorenz Park and not at actual residences
 CDOT Research Study: CDOT -2005-21 concludes that TNM is under predicting and average of 2 to 3 dB at distances of 300' - 500' from the road and under predicting by 2 to 6 DB at distances between 500' and 1,000' from the roadway

HRNC measured short-term noise levels at four actual residences
 HRNC measured long-term noise levels at two locations for 24 hours for six days.
 HRNC monitored traffic and speed results during short term measurements

CDOT changed the noise measurement methodology from 2006 to 2015 and obtained immensely different results
 CDOT protocol for use of the TNM can be found in the Traffic noise Model User's guide for Colorado DOT Projects (2006)
 Section 4.0 Noise Model Validation: L-T Measurements: 3-4 days of data is required at a minimum and one week of data is desired.

Exhibit C

From: Carter Sales [<mailto:csales3@aol.com>]
Sent: Friday, August 21, 2015 9:33 AM
To: Larry Graber <LRGraber@swissenergy.com>
Subject: FW: C-470- HRNC Cover Letter & Technical Response

Hi Larry I received this from Mr. Chesser.

From: Chesser - CDOT, Jonathon [<mailto:jonathon.chesser@state.co.us>]
Sent: Friday, August 21, 2015 9:19 AM
To: Carter Sales <csales3@aol.com>
Cc: Estes - CDOT, Jerome <jerome.estes@state.co.us>; Michael Lewis - CDOT <michael.p.lewis@state.co.us>; Paul Jesaitis - CDOT <paul.jesaitis@state.co.us>; Carrie DeJacommo - CDOT <carrie.dejiacommo@state.co.us>; Art Griffith <AGriffit@douglas.co.us>; Melinda Urban (FHWA) <melinda.urban@dot.gov>
Subject: Re: C-470- HRNC Cover Letter & Technical Response

All,

A couple of notes regarding Mr. Sales' email:

1. His email admits that although they did collect vehicle traffic counts at the time of field measurements, they have not presented or used this information as they did not develop and calibrate their own traffic model. Per 2015 CDOT guidance, the use of traffic data and field measurements to calibrate a noise model is **required** as part of the process for assessing noise impacts and mitigation recommendations. Therefore, they did not follow current CDOT guidance in the development of their impact numbers. The fact that they did follow guidance in the collection of field measurements is only part of the required process.
2. The impact numbers Mr. Sales is using for comparison to CDOT's model results are not supported by their raw data. The numbers have been inflated and the inflation assumptions are not presented in the report or his email. For example, 71 db(A) is used in two of the four measurements, yet no actual raw data measurement exceeds 69 db(A) for Station 1 and 66 db(A) for the Station 2. For station 1, 69 was hit once over five days and all other readings were below 66. For station 2, 66 was hit only once and all other readings were below 63. This is for the worst reading of the day over 5 days. So how they conclude and use worst hour readings of 71, 71 and 70 as stated in their documentation is not explained.
3. Because HRNC did not develop a calibrated noise model using traffic data associated with the field measurements, their existing data and future impact results are not per guidance and therefore not applicable to this project.
4. Challenging Larry Sly's credentials as a noise specialist is no problem to us. If deemed appropriate by CDOT management, Wilson can provide Larry's resume which outlines his extensive experience in this field.

5. Final conclusion - a) HRNC has admitted to not following all of CDOT's guidance for developing noise impacts. The only part they followed was in the collection of field measurements, which is only part of the required process. b) They have not explained the inflation in their stated noise measurements when compared to their own raw data provided in the consultant report. c) CDOT's responses remain true and valid as Mr. Sales' email provides no new information on their conclusions.

Please let me know if you would like to discuss any of this in further detail. Thank you.

Jon

Jon Chesser
Environmental Program Manager



P [303.757.9936](tel:303.757.9936) | C [303.709.4864](tel:303.709.4864)
4201 E. Arkansas Ave., Room 158, Denver, CO 80222
jonathon.chesser@state.co.us | www.coloradodot.info | www.cotrip.org

On Fri, Aug 21, 2015 at 8:41 AM, Carter Sales <csales3@aol.com> wrote:

Dear Jerome: I am in receipt of your letter. Please be aware that we did monitor the vehicle traffic counts and vehicle speed data via video camera and speed gun at the same day and time periods that we took our short-term noise readings. We have this data archived and have not used it since we did not develop or validate our own TNM.

Our noise monitoring survey was performed according to FHWA and CDOT guidelines and was done to compare the results of the CDOT TNM model in the study areas. Logically a valid TNM model would confirm our actual noise data from actual residences and this is not the case. Now that we have the modeled noise results from the CDOT noise technical report, we have compared our existing noise readings at the actual residences to the corresponding identified receptor sites. At every location, our noise readings exceed the noise modeling for both Existing 2013/2035 No-Action sites and Proposed Action 2035 sites. Our existing noise levels exceed the modeled Existing 2013/2035 No-Action levels by 6 to 10 dB(A) and Proposed Action 2035 sites by 2 to 5 dB(A). Our results are also supported by the CDOT-2005-21 study which concludes that the TNM 2.5 under predicts noise levels by more than 2dB at distances greater than 300 feet from the roadway. Note all of our residences are greater than 300 feet from the roadway. The compilation of the CDOT noise data and TNM translates into the

enormous reductions in benefitted receptors from 2006 compared to 2015 and the consequential failure of the “reasonable” test. Please see the attached comparison of our noise results to CDOT modeled results.

It is also our understanding that Wilson & Co performed the noise study “in house” by Larry E. Sly as the noise engineer. I am not able to find any information on Wilson & Co.’s web site citing their expertise in highway noise studies and noise modeling experience. Please forward Larry’s resume and supporting information relating to Wilson & Co.’s direct highway noise consulting and modeling experience by COB 8/24.

Attached is our engineer, Dana Lodico’s, resume. Please visit [Illingworth & Rodkin, Inc.](#) for their expertise in highway noise consulting.

We stand by our statement that we have offered substantive evidence that the TNM is flawed and we will continue to pursue our challenge to the noise abatement issue by utilizing all available means.

Sincerely, Carter

From: Estes - CDOT, Jerome [mailto:jerome.estes@state.co.us]

Sent: Thursday, August 20, 2015 10:42 AM

To: Carter Sales <csales3@aol.com>

Cc: Michael Lewis - CDOT <michael.p.lewis@state.co.us>; Paul Jesaitis - CDOT

<paul.jesaitis@state.co.us>; Carrie DeJiacomo - CDOT <carrie.dejiacomo@state.co.us>; Jonathon

Chesser - CDOT <jonathon.chesser@state.co.us>; AGriffit@douglas.co.us; melinda.urban@dot.gov

Subject: C-470- HRNC Cover Letter & Technical Response

Hello Carter,

Please find attached as requested.

--

Best regards,

Jerome Estes, P.E.

Project Director



Region 1 - South Area Design/Construction

P [303.757.9295](tel:303.757.9295) [1-9295]

2000 S. Holly Street, Denver 80222

Jerome.Estes@state.co.us | www.coloradodot.info | www.cotrip.org



APPENDIX B

Transportation Commission Resolution on HOV Policy

October 2015

Resolution #TC-15-10-6

Determining Not to Include Toll-Free HOV3+ Travel for the C-470 Tolled Express Lanes Project

Approved by the Transportation Commission on October 15, 2015

WHEREAS, pursuant to § 43-1-106(8), C.R.S., the Transportation Commission is responsible for formulating the general policy of the Colorado Department of Transportation (CDOT) with respect to the management of public highways in the state; and

WHEREAS, the Transportation Commission is authorized, pursuant to § 42-4-1012(1)(a), C.R.S., to designate exclusive or preferential lanes that carry a specified number of persons; and

WHEREAS, the Transportation Commission recognizes the benefits of HOV accessibility in encouraging carpooling and transit use, with resulting reductions in vehicle emissions, congestions mitigation, and improvements in the safety, capacity, and accessibility of the surface transportation system; and

WHEREAS, by Resolution #TC-3052, approved February 21, 2013, the Transportation Commission recognized the importance of consistency among tolled managed lane corridors with regard to encouraging high occupancy vehicle (HOV) use; and

WHEREAS, by Resolution #TC-XXXX, approved October 15, 2015, the Transportation Commission updated Resolution #TC-3052 to provide that the feasibility of toll-free travel for vehicles carrying three or more occupants (HOV-3+) be considered with respect to its impact on safety, the ability to achieve established performance measures on tolled managed lanes, financial feasibility, and other factors which may be applicable, for all planned or future tolled managed lanes that are part of the state highway system; and

WHEREAS, pursuant to § 43-4-806, *et seq.*, C.R.S., the General Assembly created the High Performance Transportation Enterprise (HPTE) as a government-owned business within CDOT to pursue innovative means of more efficiently financing important surface transportation projects that will improve the safety, capacity, and accessibility of the surface transportation system; and

WHEREAS, HPTE and CDOT are currently undertaking the procurement of the C-470 Express Lanes Segment 1 Project, which is planned to add two tolled express lanes westbound from I-25 to Colorado Blvd., one tolled express lane westbound from Colorado Blvd. to Wadsworth Blvd.; and one tolled express lane eastbound from Platte Canyon Road to I-25, with a desire to extend the tolled express lanes in each direction to Kipling Blvd. as funding allows; and

WHEREAS, in accordance with the general policy in favor of HOV-3+, HPTE and CDOT staff undertook a HOV-3+ Analysis with respect to the C-470 Tolloed Express Lanes Project; and

WHEREAS, the HOV-3+ Analysis determined that accommodating HOV-3+ is not currently financially feasible for the C-470 Express Lanes Segment 1 Project, as it would result in a funding gap of approximately \$40 million in the preferred financing scenario for the project and there are currently no other funding sources available to close the gap; and

WHEREAS, the analysis further determined that accommodation of HOV-3+ is projected to reduce excess toll revenues by approximately \$100 million over 40 years, potentially delaying future additional corridor improvements; and

WHEREAS, in order to facilitate the financing of the C-470 Express Lanes Segment 1 Project, the Board of Directors of the HPTE has recommended that the Transportation Commission not include toll-free HOV-3+ travel for the C-470 Tolloed Express Lanes; and

WHEREAS, the Transportation Commission's determination in the resolution with respect to toll-free HOV-3+ travel is not intended to affect or prejudice in any way the ongoing NEPA process, and the determination not to include toll-free HOV-3+ travel for the C-470 Tolloed Express Lanes is contingent upon a final determination from FHWA on a Proposed Action based on the C-470 Corridor Revised Environmental Assessment.

NOW THEREFORE BE IT RESOLVED, the Transportation Commission hereby determines that offering toll-free HOV-3 travel in the C-470 Tolloed Express Lanes is not feasible at this time, and declares that the C-470 Tolloed Express Lanes will be exempted from the general policy that tolloed managed lane corridors permit HOV-3 vehicles toll-free.

BE IT FURTHER RESOLVED, if financing conditions permit reconsideration of this determination at a future date, HPTE and CDOT staff should evaluate a re-designation of the C-470 Tolloed Express Lanes as an HOV-3+ corridor in accordance with Transportation Commission HOV policy guidance and, if conditions warrant such re-designation, present such findings to the Transportation Commission for its consideration.


Herman Stockinger, Secretary
Bridge Enterprise Board of Directors

10-20-15
Date



APPENDIX C

Long-term Traffic Noise Monitoring Technical Memorandum

*For the C-470 Corridor
Revised Environmental Assessment*

November 2015

Submitted To:
CDOT Region 1
2000 S. Holly Street
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1.0 Introduction

During the C-470 Corridor Revised EA public review period, CDOT received multiple comments stating concern that CDOT had not collected long-term (i.e., 24-hour) (LT) noise measurements to validate the Traffic Noise Model (TNM) used to determine noise impacts and mitigation for the C-470 corridor. These public comments referenced the 2006 CDOT Traffic Noise Model User's Guide which states that *Long-term measurements provide a clear understanding of the loudest-hour noise level that repeats from day to day.*

While CDOT has maintained that the noise analysis conducted for the Revised EA included validation of the noise model consistent with the January 2015 CDOT Noise Analysis and Abatement Guidelines. CDOT understands the concerns raised by the public and therefore commissioned an effort to collect additional long-term (i.e., 24-hour) noise measurements and traffic data in October 2015 along the south side of C-470 between Quebec Street and University Boulevard. The purpose of collecting LT measurements, as described in CDOT's Traffic Noise Model User's Guide (2006), is to determine the loudest-hour noise levels and traffic volumes that repeat from day to day. These LT loudest-hour noise levels and traffic volumes may be used in conjunction with short-term field monitoring to validate the noise model.

1.1 Site Selection

The Highlands Ranch Neighborhood Coalition (HRNC), whose members submitted many of the comments related to long-term measurements, contracted Illingworth & Rodkin, Inc. (I&R), a noise consultant, to collect LT noise measurements in May 2015. I&R collected long-term field measurements at two locations. However, traffic data was not collected at the time of the long-term readings. CDOT selected two sites for long-term measurements within Highlands Ranch Metro District property, shown in Figure 1, CDOT LT-1 and CDOT LT-2, that were in close proximity to the previous I&R study locations. However, they were not in the exact locations as discussed below.

Figure 1 – Long-term Measurement Locations



CDOT LT-1 Site – LT-1 Site, shown in Figures 1 and 2, is north of 8568 and 8576 Meadow Creek Drive within Highlands Ranch Metro District property. This site was selected for long-term measurements based on the view of C-470, as seen in Figure 3, minimal potential for non-traffic noise generators (i.e., back yard play sets, dogs), and no solid fencing (split rail only) in the immediate area. The previous site selected for I&R LT-1 was not chosen due to the presence of a large dog barking in the immediate vicinity, roughly 30 feet from the monitoring location. Due to the proximity of this dog to the monitoring location, this would have a negative impact on the data and not be representative of the traffic noise conditions that are of value to collect for validation.

Figure 2 – CDOT LT-1 Measurement Location



Figure 3 – View of C-470 from CDOT LT-1 Site



CDOT LT-2 Site – CDOT LT-2 site, shown in Figure 4, is within Highlands Ranch Metro District property and approximately 90 feet west of the previous I&R LT-2. This site was selected for long-term measurements based on the proximity to I&R LT-2, limited opportunities for other locations adjacent to the Gleneagles golf course, minimal potential for non-traffic noise generators, (i.e., back yard play sets, dogs), and no solid fencing in the areas to reflect noise. The previous I&R LT-2 site was not selected because it was immediately adjacent to a solid wooden fence which has the potential to reflect noise and affect the noise levels of the traffic that are being collected. It should be noted that the parking area to the west of the site is associated with the future development of Shadow Canyon Condominiums and is not in active use at this time.

Figure 4 – LT-2 Measurement Location



1.2 Data Collection

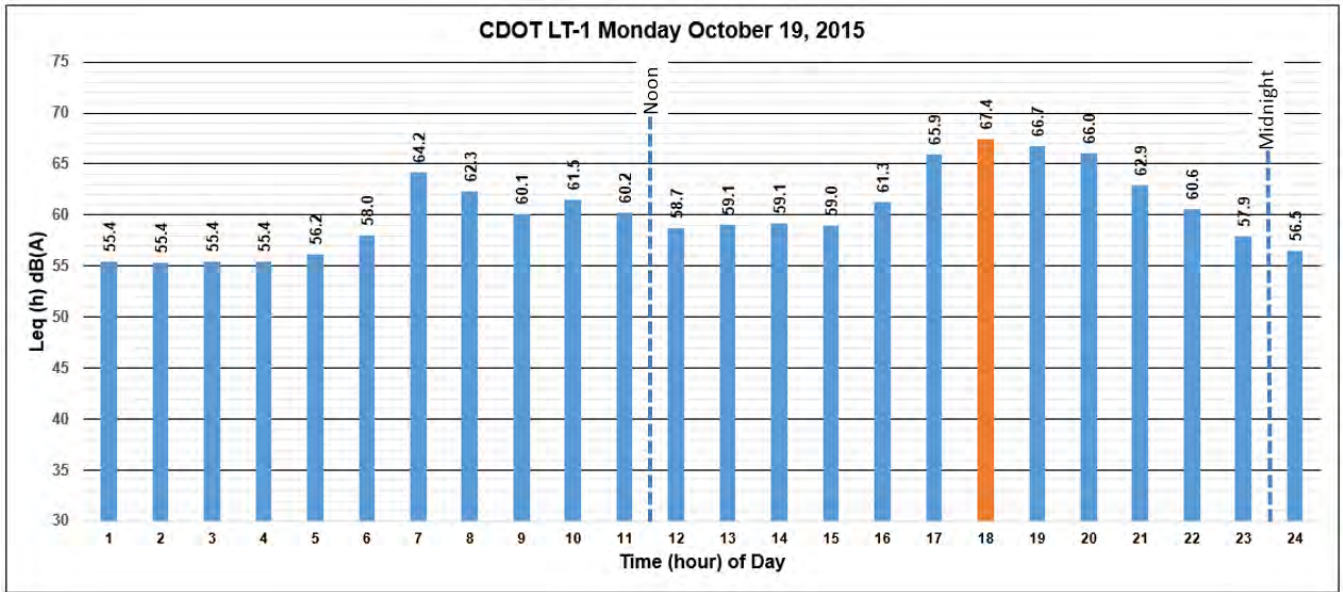
Field Measurements - Long-term (i.e., 24-hour) field measurements were collected with 3M™ SoundPro™ SE/DL Series Sound Level Meters SP-DL-2-1/3 in accordance with CDOT guidelines for four days between October 19, 2015 and October 30, 2015. The measurement periods were broken up over two weeks in an effort to avoid major weather fronts that were passing through the Highlands Ranch area which would void the collected data for that time period. It rained several times during these days which is why continuous monitoring in 1 week was not able to be completed. However it is not required that long term monitoring be taken all in one week or be continuous in order to validate a model.

The hourly Leq db(A) sound levels collected in the field at CDOT LT-1 and LT-2 are shown in Figures 5 through 12. The loudest valid hour for each period is shown in orange on each graph.

Traffic – Directional traffic volumes with vehicle classification data were collected during the measurement periods. Travel speeds were determined by traveling in the traffic stream during and around peak periods. Travel speeds ranged from stop conditions to 80 mph.

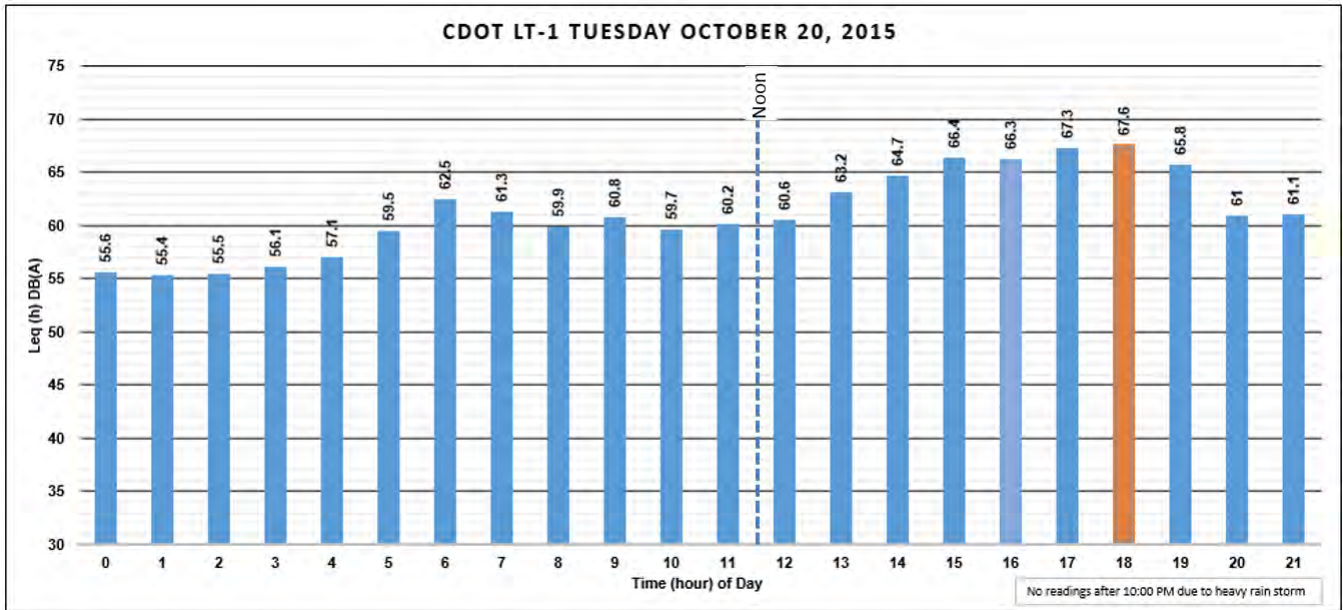
Meteorology – Temperature, wind speed and direction, humidity, and precipitation were collected using a Davies Vantage Pro 2 weather station. A three day storm event occurred October 21st through the 23rd. Data collection efforts were suspended during this period, as the data would not be considered valid.

Figure 5 – CDOT LT-1 Monday October 19, 2015



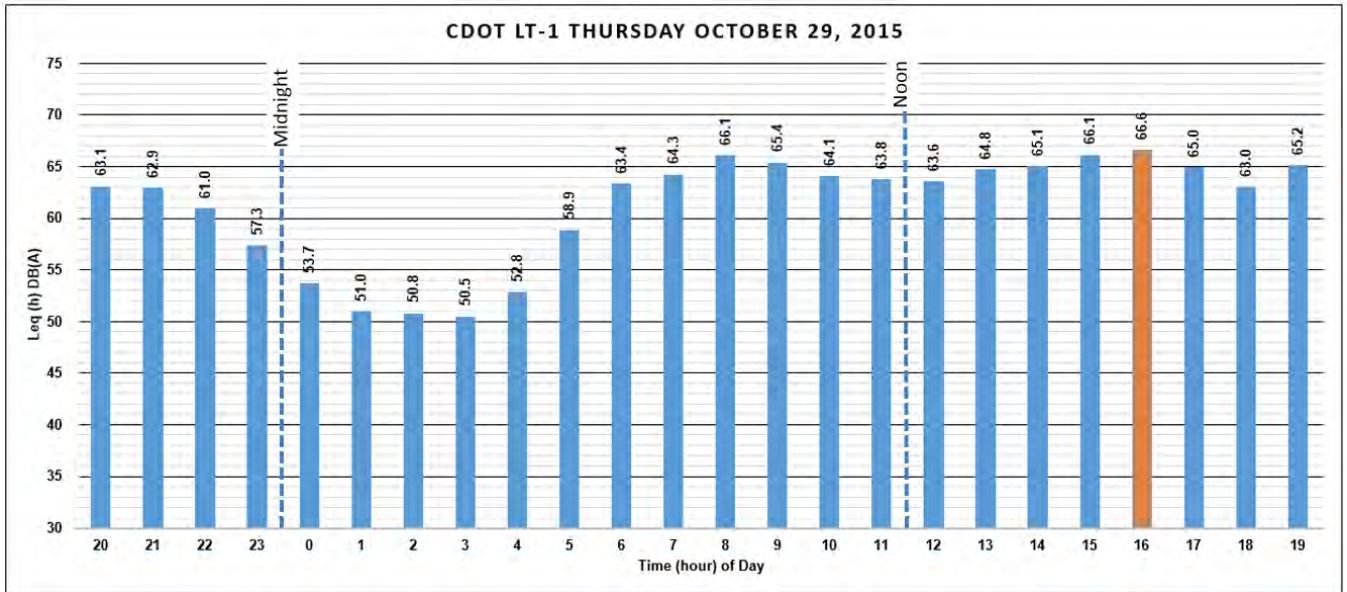
Note: Orange bar indicates the highest hourly Leq during this monitoring interval.

Figure 6 – CDOT LT-1 Tuesday October 20, 2015



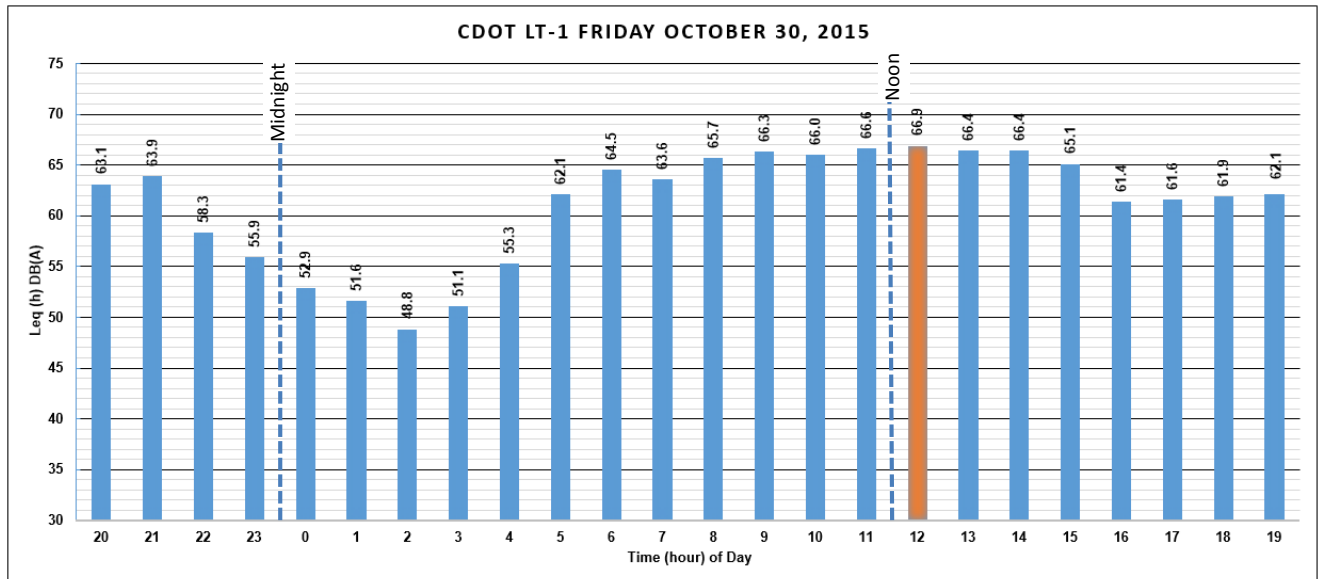
Note: Orange bar indicates the highest hourly Leq during this monitoring interval.

Figure 7 – CDOT LT-1 Thursday October 29, 2015



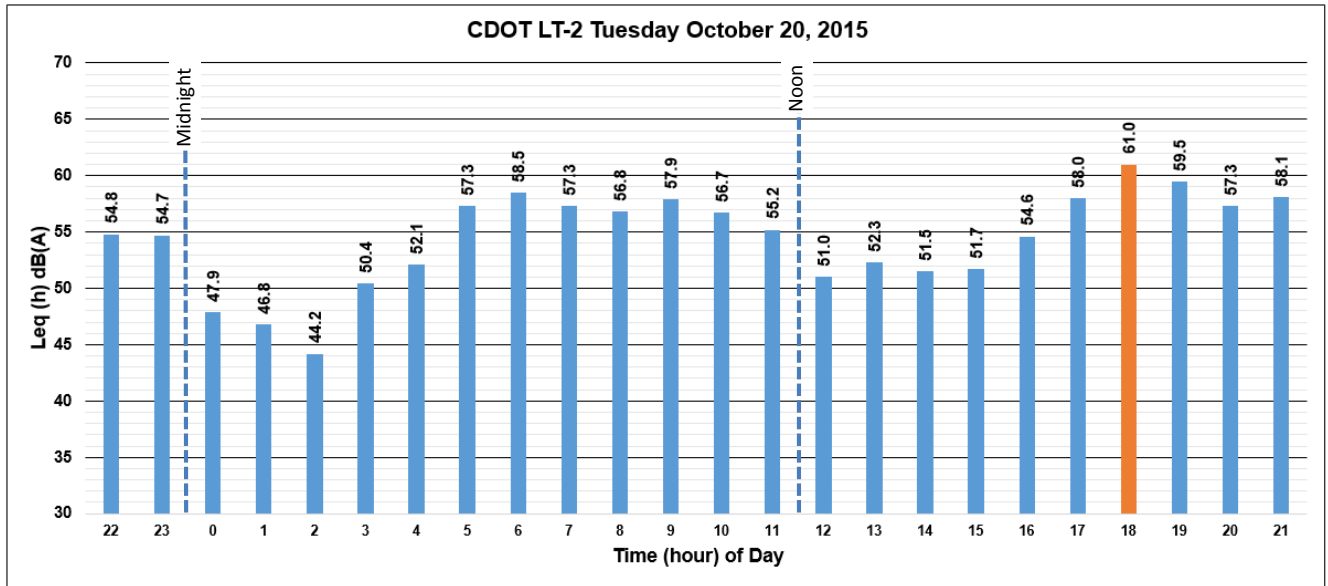
Note: Orange bar indicates the highest hourly Leq during this monitoring interval.

Figure 8 – CDOT LT-1 Friday October 30, 2015



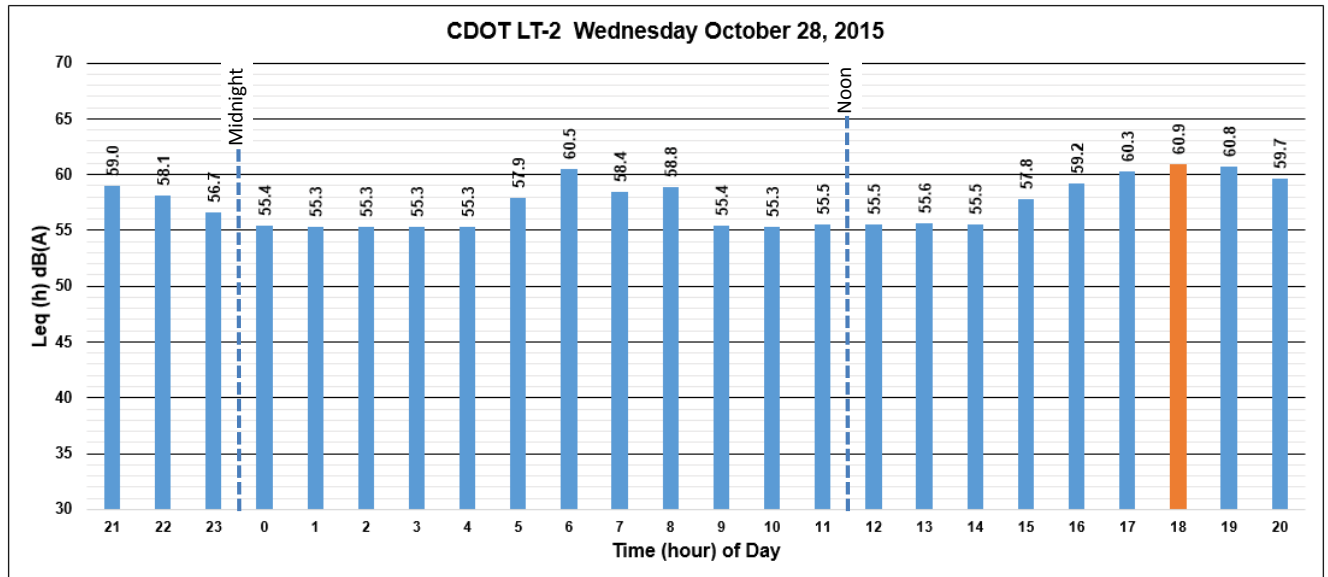
Note: Orange bar indicates the highest hourly Leq during this monitoring interval.

Figure 9 – CDOT LT-2 Tuesday October 20, 2015



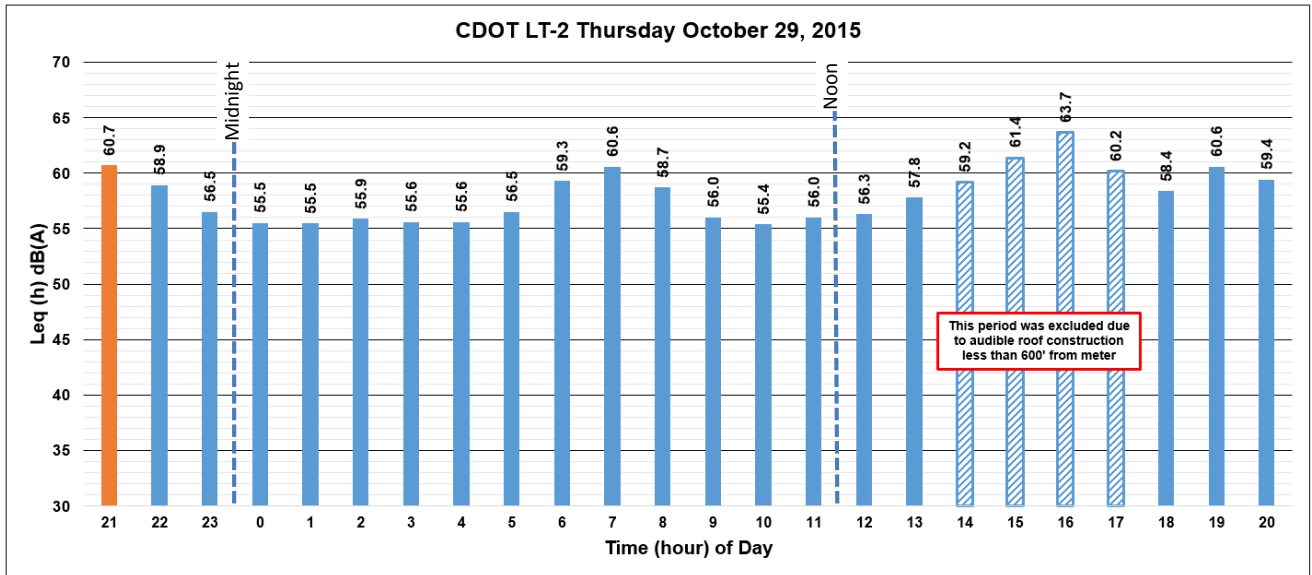
Note: Orange bar indicates the highest hourly Leq during this monitoring interval.

Figure 10 – CDOT LT-2 Wednesday October 28, 2015



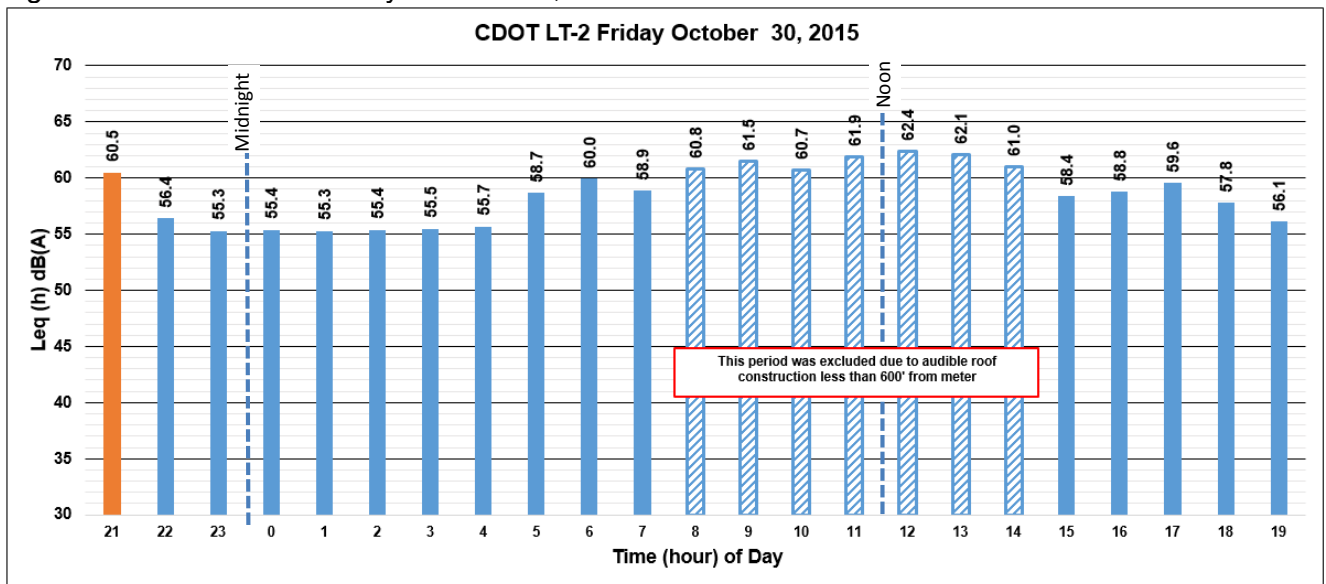
Note: Orange bar indicates the highest hourly Leq during this monitoring interval.

Figure 11 – CDOT LT-2 Thursday October 29, 2015



Note: Orange bar indicates the highest hourly Leq during this monitoring interval.

Figure 12 – CDOT LT-2 Friday October 30, 2015



Note: Orange bar indicates the highest hourly Leq during this monitoring interval.

1.3 Results

CDOT LT-1 - The loudest hours for LT-1, as shown in Figures 5 through 8, occurred between 6:00 PM and 7:00 PM daily except for Friday, October 30th, when traffic volumes peaked earlier in the day. Free flowing travel speeds during these loudest-hours ranged from 70 to 75 mph. The loudest hourly Leq of 67.6 dB(A) for CDOT LT-1 occurred on Tuesday October 20th from 6:00 PM to 7:00 PM. Traffic data for this period is shown in Table 1.

Table 1 – CDOT LT-1 Loudest-hour Traffic

6-7:00 PM Oct 20th	Auto	Medium Trucks	Heavy Trucks	Buses	Motorcycles	Total	Speed (mph)
WB	3,752	21	10	1	4	3,788	70-75
EB	3,152	48	6	2	8	3,216	
Total	6904	69	16	3	12	7,014	

To verify the TNM model’s ability to replicate this existing loudest-hour sound level, a receptor was placed in the Existing 2013/2015 TNM model at the LT-1 location and the traffic data collected in the field, shown in Table 1, was used for C-470 travel lanes. No other changes were made to the Existing 2013/2015 TNM model. The results are shown in Table 2.

Table 2 – Comparison of Field Measurements and Model Results at Varying Speeds

Loudest Long-Term Field Measurement dB(A)	TNM Model Results at 70 mph dB(A)	Difference
67.6	65.8	-1.8
Loudest Long-Term Field Measurement dB(A)	TNM Model Results at 75 mph dB(A)	Difference
67.6	66.7	-0.9

CDOT LT-2 - The loudest hours for LT-2, as shown in Figures 9 through 12, also occurred between 6:00 PM and 7:00 PM daily. The loudest hourly Leq of 61.0 dB(A) occurring on Tuesday, October 20th, from 6:00 PM to 7:00 PM. Free flowing travel speeds during this loudest-hour ranged from 70 to 75 mph. The traffic data for this period, which is the same period as the loudest-hour for LT-1, is shown in Table 1. As discussed previously, both LT-1 and LT-2 are located south of C-470 between Quebec Street and University Boulevard. There are no on or off-ramps in this stretch of C-470. Thus, hourly traffic volumes are the same for these locations.

The data collection sites were visited multiple times each day by a noise professional. On Thursday, October 29th and Friday, October 30th a 5 dB(A) increase in peak and Leq sound levels were observed on the sound meter. These increases were related to roof construction observed at a home on Whimbrel Drive, approximately 600 feet from the site. The construction work was visible, with a direct line-of-sight, from the sound meter and clearly audible at the sound meter. These non-traffic related noise events occurred from 2 PM to 5 PM on Thursday, October 29th and from 8 PM to 2 PM on Friday, October 30th. The effects of these events is evident by comparing the sound levels in Figures 9 through 12. As a result of these non-traffic related noise events, those periods were excluded from the analysis.

To verify the TNM model’s ability to replicate the existing loudest-hour sound levels, a receptor was placed in the Existing 2013/2015 TNM model at the LT-2 location and the traffic data collected in the field, shown in Table 1, was used for C-470 travel lanes. No other changes were made to the Existing 2013/2015 TNM model. The results are shown in Table 3.

Table 3 – Comparison of Field Measurements and Model Results at Varying Speeds

Loudest Long-Term Field Measurement dB(A)	TNM Model Results with C-470 at 70 mph dB(A)	Difference
61.0	60.6	-0.4
Loudest Long-Term Field Measurement dB(A)	TNM Model Results with C-470 at 75 mph dB(A)	Difference
61.0	61.5	+0.5

1.4 Conclusions

- The four days of 24-hour sound level measurements along with associated traffic data satisfies the recommendations of the 2006 TNM Users Guide for determining loudest hour to be used in validation of the noise model.
- The TNM model results presented in Tables 2 and 3 are within the acceptable range per guidance [3 dB(A)] of the LT field readings and thus the TNM model is considered to be validated. The validated TNM model can be used to accurately predict existing and future worst-noise levels for these areas.
- CDOT guidance requires that **actual** traffic volumes, travel speeds, and sound levels from field monitoring be used in the validation process. However, it should be noted that for all impacts and mitigation analyses, guidance requires that the existing and future models used to predict noise levels must use the **posted** travel speeds, expecting that traffic laws will be followed. The difference between actual travel speed for validating the model (70-75 mph) and posted travel speed (65 mph) explains why the loudest hour field measurements at the two collection locations are higher than the model-predicted existing noise levels presented in the July 2015 Traffic Noise Technical Report.
- A comparison of the LT loudest-hour traffic volumes collected in the field with the model volumes, presented in Table 4, demonstrates that CDOT used a conservative loudest hour traffic volumes for the Revised EA impact and mitigation analysis. The October 2015 loudest-hour traffic volumes of 7,014 vehicles equates to an average of 1,754 vehicles per lane for the two eastbound and westbound lanes. For CDOT’s existing and 2035 traffic models, a total of 1,800 vehicles per lane, eastbound and westbound, were used based on suggested maximum traffic volumes for worst noise hour presented in Exhibit 4 of the Noise Analysis and Abatement Guidelines. Additionally, the fleet composition assumed in CDOT’s modeling uses higher percentages of louder vehicle classes (e.g., heavy trucks and buses) than were observed in the October 2015 loudest-hour. Thus, fleet composition is another aspect where CDOT’s modeling is conservative.

- The LT traffic noise monitoring efforts presented in this memorandum have confirmed the methodologies used and validation of the TNM model for the C-470 Revised EA. No changes to the C-470 Traffic Noise Technical Report are warranted at this time.

Table 4 – Comparison of Traffic Volumes

	Total	Auto	Medium Trucks	Heavy Trucks	Buses	Motorcycles
Long-term Measurement Field Data 6-7:00 PM Oct 20th	7,014	6,904	69	16	3	12
TNM Model Volumes used for existing impact	7,200*	6,964**	144**	72**	8**	8**
Percentage of Model vs Field Volumes	102.7%	100.9%	208.7%	450%	266.7%	66.7%

* Reflects 1,800 per lane for all 4 lanes, which represents the most traffic possible travelling at posted speed for this type of highway facility per *Exhibit 4. Suggested Maximum Traffic Volumes for Worst Noise Hour* of the January 2015 CDOT Noise Analysis and Abatement Guidelines

** Vehicle classification percentages were based on actual traffic counts collected in the corridor in July 2014.