



PROPOSED JEFFCO PUBLIC SHOOTING RANGE COMMUNITY MEETING:  
JUNE 28, 2016



## PRESENTATION ROAD MAP

**2014 Working Group**

**2015 Arvada Blunn/Pioneer Master Plan**

**Recap of First Meeting**

**Sound Mitigation Techniques**

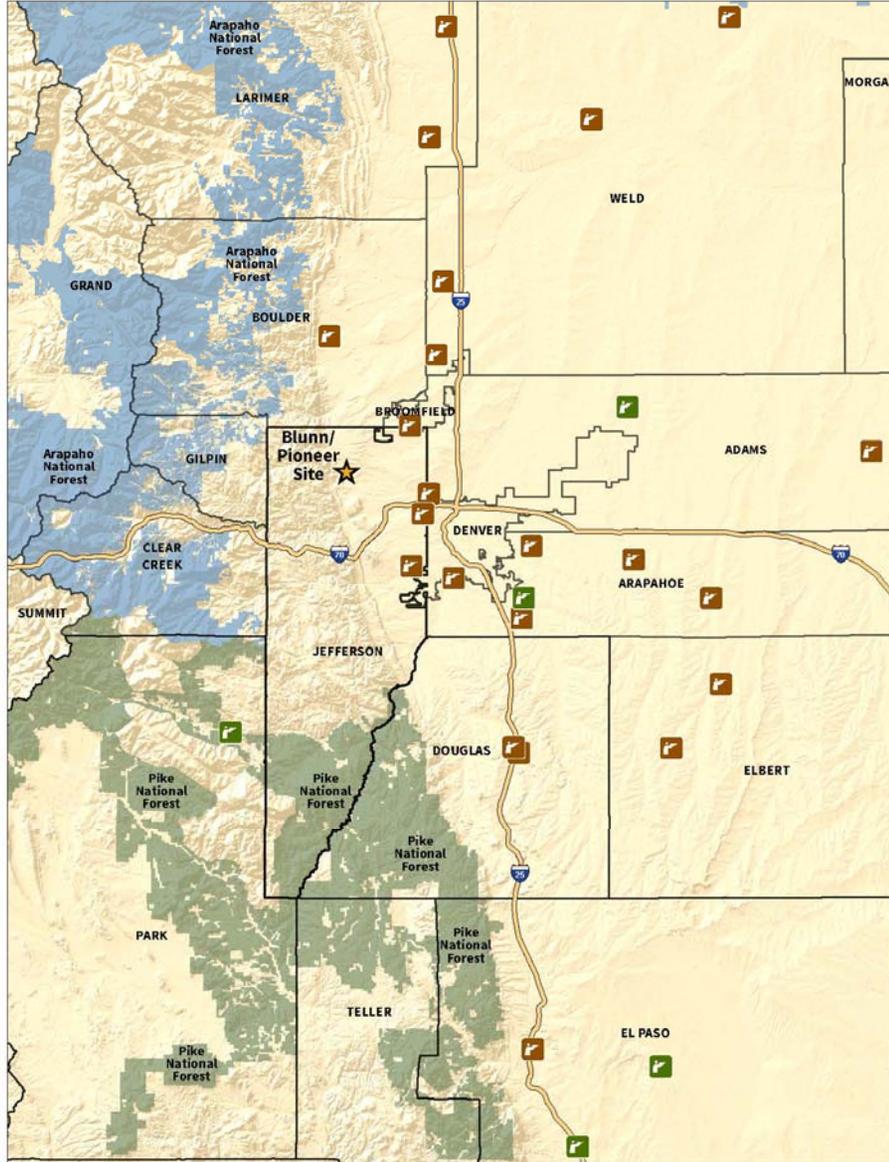
**Environmental Stewardship**

**Noise Study Results**



# Existing Shooting Ranges

Public and Private, Indoor and Outdoor



★ Proposed Blunn/Pioneer Shooting Range  
 ■ Private or Indoor Shooting Range  
 ■ Outdoor Shooting Range  
 — Interstate Highway  
 — County Boundaries  
 ■ Arapaho National Forest  
 ■ Pike National Forest

Scale: 0 5 10 Miles  
 Date: 1/10/2016 when printed as HTML  
 Last Revised: 5/27/2016  
 Information: Arapaho State, under the 1966 C.D.O.T. and Colorado Parks and Wildlife  
 Disclaimer: The information is the property of the Jefferson County Open Space Program. It is provided as a service to the public and is not intended to be used for any purpose other than that for which it was provided. No liability is assumed for any errors or omissions in this product. In case of any disputes, the parties shall refer to the original source of the information.

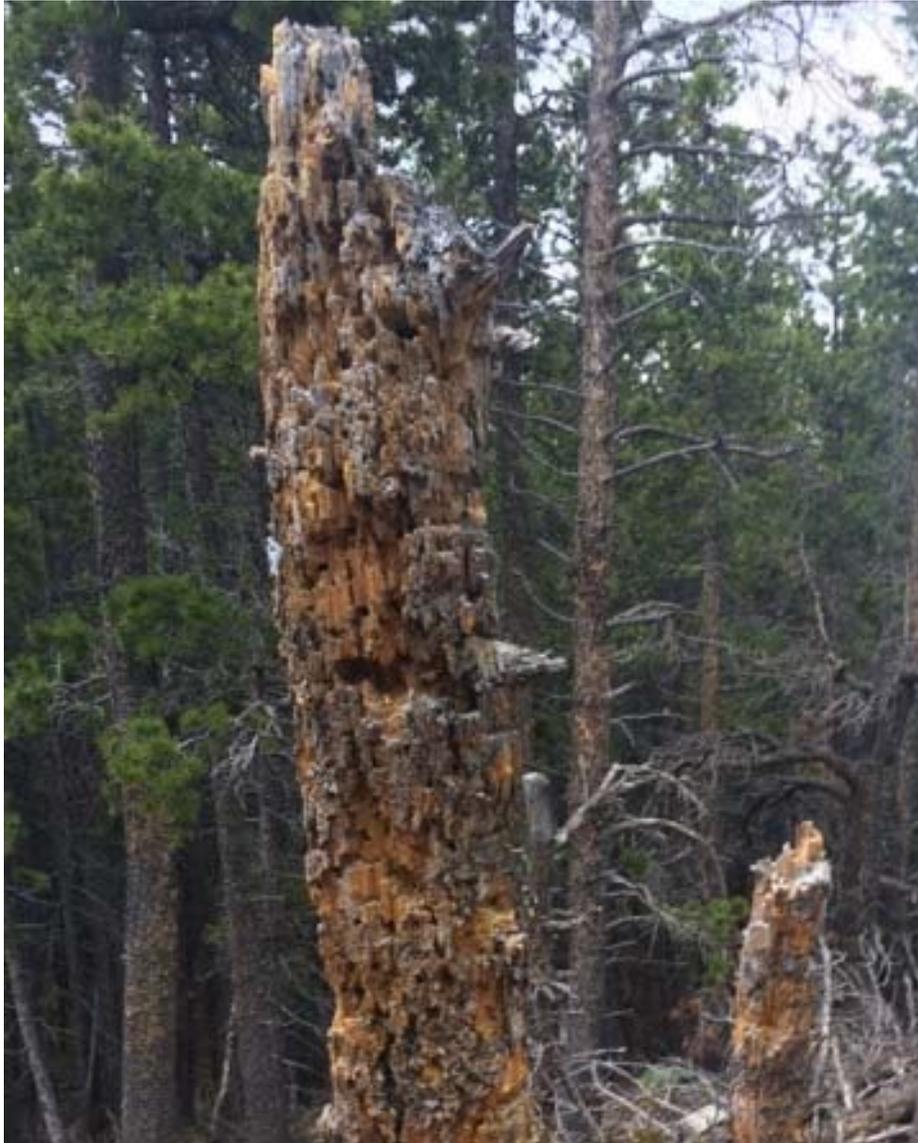
Golden  
 Denver

2014 JPSR WORKING GROUP

Source: Colorado Parks and Wildlife



## DISPERSED SHOOTING CHALLENGES



Taken on Squaw Pass on May 26, 2016



# DISPERSED SHOOTING CHALLENGES

2014 JPSR WORKING GROUP



Taken on Squaw Pass on May 26,  
2016



## PURPOSE

Evaluate possible locations

Define scope of facility

Develop operating criteria

Determine funding strategies



## Subgroups:

Site Exploration

Financial

Operations/Design



**JEFFCO PUBLIC SHOOTING RANGE MEMBERS**

**City of Arvada  
City of Lakewood  
Colorado Parks & Wildlife  
Interested Citizens  
Jefferson County  
PLAN Jeffco  
U.S. Forest Service (Rocky Mountain Region)**

**2014 JPSR WORKING GROUP**



# FINAL REPORT



## Jefferson County Public Shooting Range Working Group Report of Findings July, 2014



## FACILITY SCOPE

<b>Outdoor Pistol</b>	
Number of Lanes (Individual Stations)	10-15
Minimum Acreage	0.4 - 0.5 acres
Dimensions	50 yards long x 20 yards wide (plus room for "berming")
<b>Outdoor Rifle</b>	
Number of Lanes (Individual Stations)	10-15
Minimum Acreage	1.5 – 2.5 acres
Dimensions	200 yards long x 40 yards wide (plus room for "berming")
<b>Parking, Restrooms, Storage, etc.</b>	
Additional Acreage	2-3 acres
<b>"Nice to Have's" (If Possible)</b>	
Trap & Skeet	
Archery	

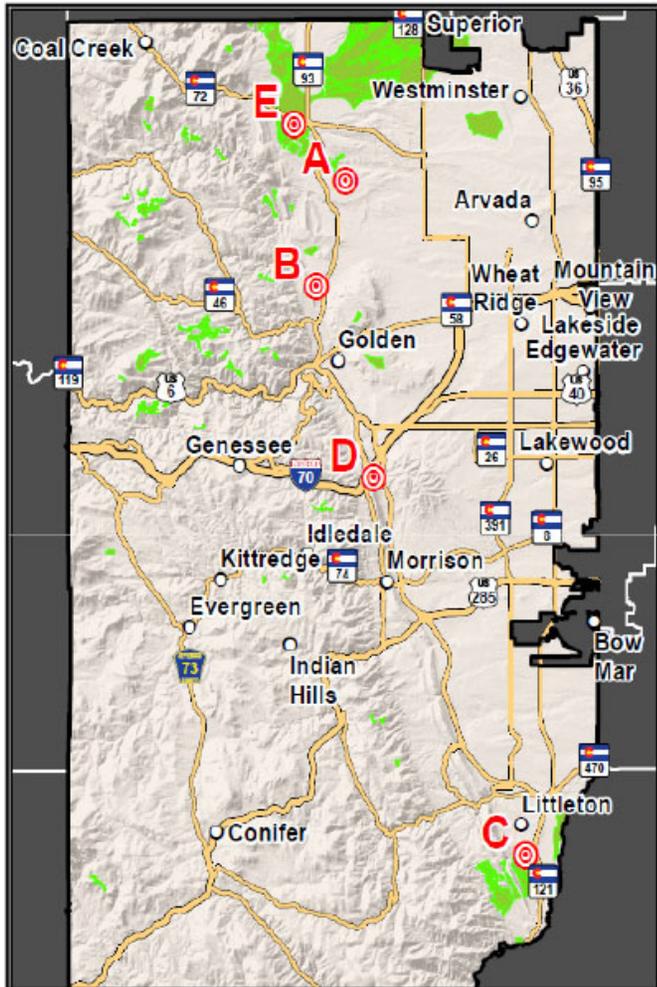
## SITE EVALUATION CRITERIA

<b>Minimum Acreage</b>	<b>6 acres</b>
<b>Minimum Dimensions</b>	<b>200 yards x 40 yards (rifle) – 15 lanes 50 yards x 20 yards (pistol) – 15 lanes</b>
<b>Distance from Residential &amp; Non-Residential</b>	<b>Minimum ½ mile (or 2,640 linear feet)</b>
<b>Distance from recreational development (<i>trails, campgrounds, etc.</i>)</b>	<b>Minimum ¼ mile (or 1,320 linear feet)</b>
<b>Distance from communication towers</b>	<b>Site specific</b>
<b>Slope</b>	<b>20% or less</b>
<b>Site Access</b>	<b>Adjacent to County or State maintained road</b>
<b>Estimated Maximum Drive Time to Facility</b>	<b>30 Minutes from C-470 &amp; I-70, I-70/Hwy 285 &amp; Hwy 6/93</b>

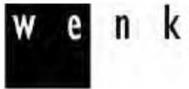
**ADDITIONAL SITE EVALUATION CRITERIA**

<b>Wildfire Hazard</b>
<b>Wildlife/Natural Resource Impact</b>
<b>Proximity to bodies of water and/or wetlands</b>
<b>Land Entitlement/Zoning</b>
<b>Jeffco Open Space Restrictions, if applicable</b>
<b>City of Boulder/Boulder County Open Space Restrictions, if applicable</b>
<b>Sound impacts</b>
<b>Visual/Aesthetic Impacts</b>
<b>Aspect (south-facing desired)</b>
<b>Natural Backdrops</b>
<b>Quarries</b>
<b>Proximity to County and/or State maintained roads</b>
<b>Forbidden Firearms Discharge Area (Jefferson County Sheriff)</b>

# POSSIBLE SITES



		Approximate Acreage (6 Acre Minimum)	Meets Minimum Dimensions (200 yards x 40 yards; rifle; 50 yards x 20 yards; pistol)	1/2 MILE BUFFER FROM DEVELOPMENT	1/4 MILE BUFFER FROM TRAILS	OUTSIDE SCENIC AREA DESIGNATION	LACK OF NATURAL RESOURCES IMPACT	LESS THAN 20% SLOPE	SOUND IMPACT
<b>A</b>	CITY OF ARVADA BLUNN/PIONEER SITE	126 acres		✓	✓	✓	✓	✓	?
<b>B</b>	STATE LAND BOARD/JEFFCO OPEN SPACE/JEFFCO GENERAL FUND SITE	203 acres		✗	✓	✓	✓	✓	?
<b>C</b>	JEFFCO OPEN SPACE/HILDEBRAND RANCH (SOUTH END)	34 acres		✓	✓	✓	✗	✓	?
<b>D</b>	ROONEY VALLEY LAW ENFORCEMENT FACILITY/HAYDEN PROPERTY	37 acres		✓	✗	✓	✓	✓	?
<b>E</b>	JEFFCO OPEN SPACE/COAL CREEK CANYON PARK (FORMERLY LACY)/DENVER WATER BOARD	617 acres		✓	✓	✗	✗	✓	?



# *ARVADA BLUNN / PIONEER MASTER PLAN*

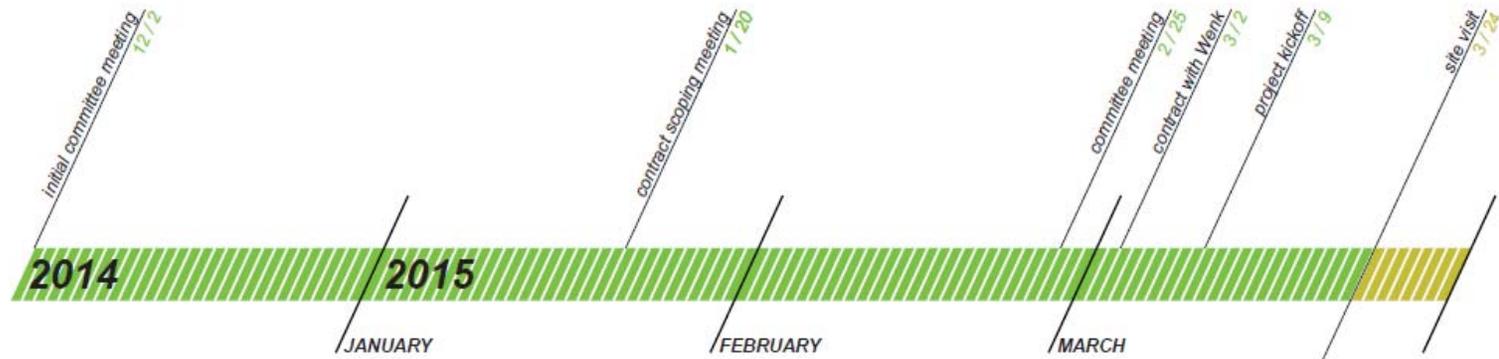
ARVADA BLUNN/PIONEER MASTER PLAN

PREPARED FOR THE CITY OF ARVADA, COLORADO

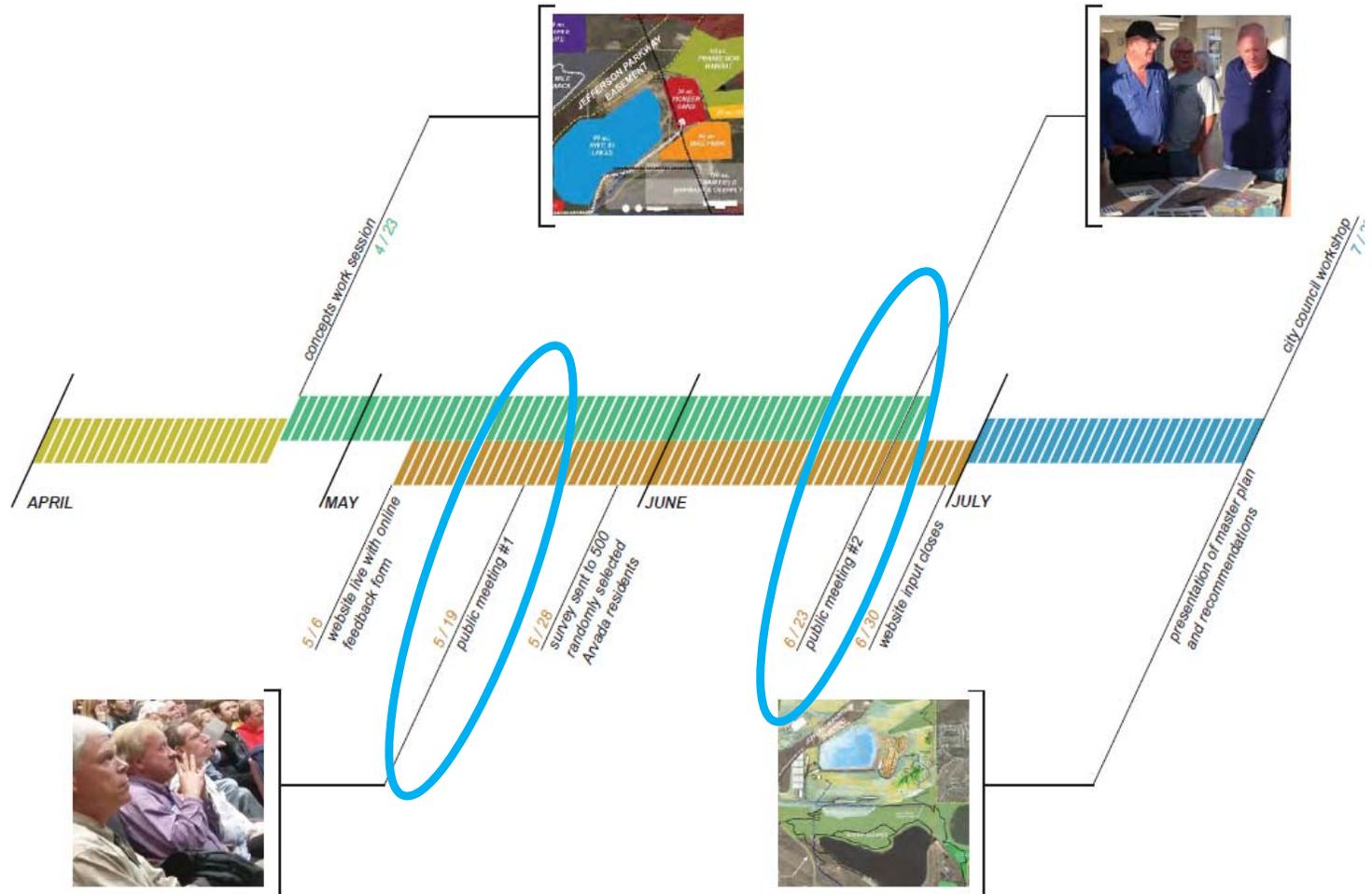
SEPTEMBER 2015



# TIMELINE



# TIMELINE



# ARVADA BLUNN/PIONEER MASTER PLAN

project introduction // 9

August 20, 2015



# PRELIMINARY CONCEPT



[HTTP://ARVADA.ORG/PAGES/BLUNN-PIONEER-MASTER-PLAN](http://arvada.org/pages/blunn-pioneer-master-plan)



# PRELIMINARY CONCEPT



# NEXT STEPS

## Next Steps

The master plan committee arrived at four different recommendations for next steps for each of the programs included in the master plan.

### 1. Pioneer Reclamation Project

During reclamation of the Pioneer Sand mining property, planned site grading can be done to set the stage for future development of these programs.

### 2. Arvada Parks Master Plan

Although funding may not be currently available for development of these programs, they can be planned for and incorporated into the Arvada Parks Master Plan.

### 3. In-Progress Projects

These programs can be funded and developed to prepare for or independently from future changes resulting from constructing Jefferson Parkway.

### 4. Further Study Needed

Aspects of the design require further investigation and input from the community.

<p><i>Pioneer Reclamation Project</i></p> <p><i>Proceed with reclamation plan that is consistent with following proposed uses:</i></p>	<p><i>Water Storage</i>  <i>Relocation of the Arvada Modelers</i>  <i>Bike Park</i>  <i>Buffer Zone Area</i>  <i>Trails</i></p>
<p><i>Arvada Parks Master Plan</i></p> <p><i>Include as elements in the 'In-Progress' Arvada Parks Master Plan update:</i></p>	<p><i>Bike Park</i>  <i>Expansion of Dog Park</i>  <i>Disc Golf Course Operational Changes</i>  <i>New Trails</i>  <i>Leyden-Brookes Stone Circles - Teepee Rings</i></p> <p><i>*Conditional land approval would be included in the Parks Master Plan authorization</i></p>
<p><i>In - Progress Projects</i></p>	<p><i>West Woods Golf Course Improvements -</i>  <i>Include in West Woods Clubhouse Master Plan development.</i>  <i>Fencing the Prairie Dog Site -</i>  <i>Proceed with budget for fencing prairie dogs.</i>  <i>Solar Generation Center -</i>  <i>Proceed with application/budget for grant funding.</i>  <i>Composting Transfer Station -</i>  <i>Proceed with budget and refined plan.</i></p>
<p><i>Further Study needed before Conditional Land Approval</i></p>	<p><i>Police Training Facility</i>  <i>Public Outdoor Shooting Range</i></p> <p><i>*Require site specific concept plan and noise study; enter into interagency discussions and explore funding options for both programs.</i></p>

Pictured on the following page is an aerial perspective drawing that envisions the master plan looking southwest across the site from the western edge of the Spring Mesa neighborhood.



# NEXT STEPS

*These programs can be funded and developed to prepare for or independently from future changes resulting from constructing Jefferson Parkway*

**4. Further Study Needed**  
*Aspects of the design require further investigation and input from the community.*

	<i>Proceed with budget and refined plan.</i>
<p><i>Further Study needed before Conditional Land Approval</i></p>	<p><i>Police Training Facility                  Public Outdoor Shooting Range</i></p> <p><i>*Require site specific concept plan and noise study; enter into interagency discussions and explore funding options for both programs.</i></p>

*Pictured on the following page is an aerial perspective drawing that envisions the master plan looking southwest across the site from the western edge of the Spring Mesa neighborhood.*



# NOISE STUDY METHODOLOGY

RECAP OF FIRST MEETING

(ANSI) S1.4-1983 Type 1 sound level meters

Calibrated before each test



# NOISE STUDY METHODOLOGY

## 3 Firearm types

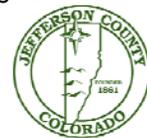
0.45 caliber handgun (SPA Operator 45ACP)

5.56 mm rifle (Colt M4 556 NATO)

0.308 caliber rifle (SPA SOCOM 308)

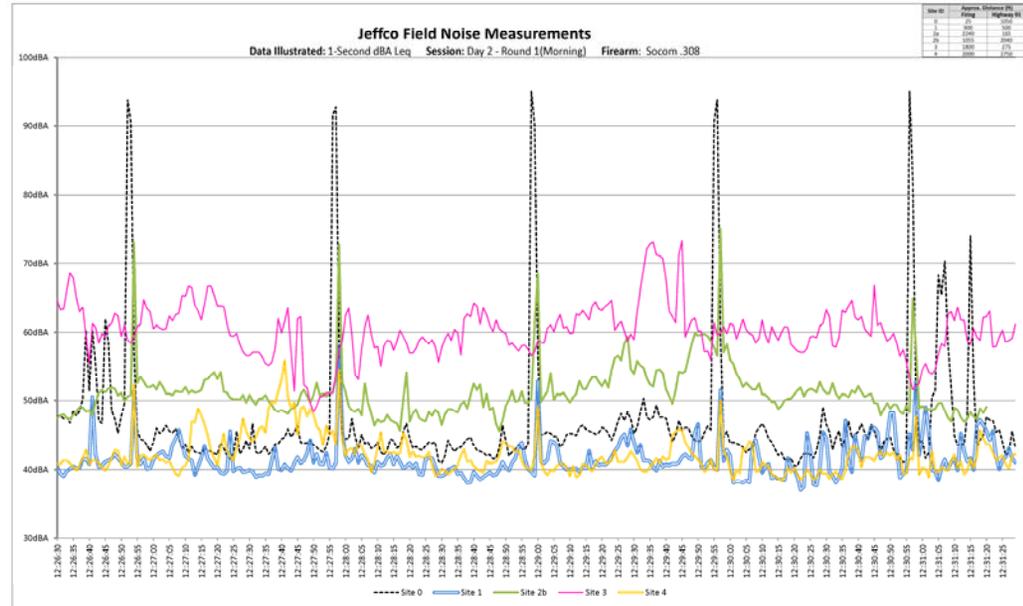


ammunition in green used in test  
ammunition in red will not be used at this  
facility



# NOISE STUDY METHODOLOGY

1 second measurement periods collected continuously with octave band at control location



RECAP OF FIRST MEETING



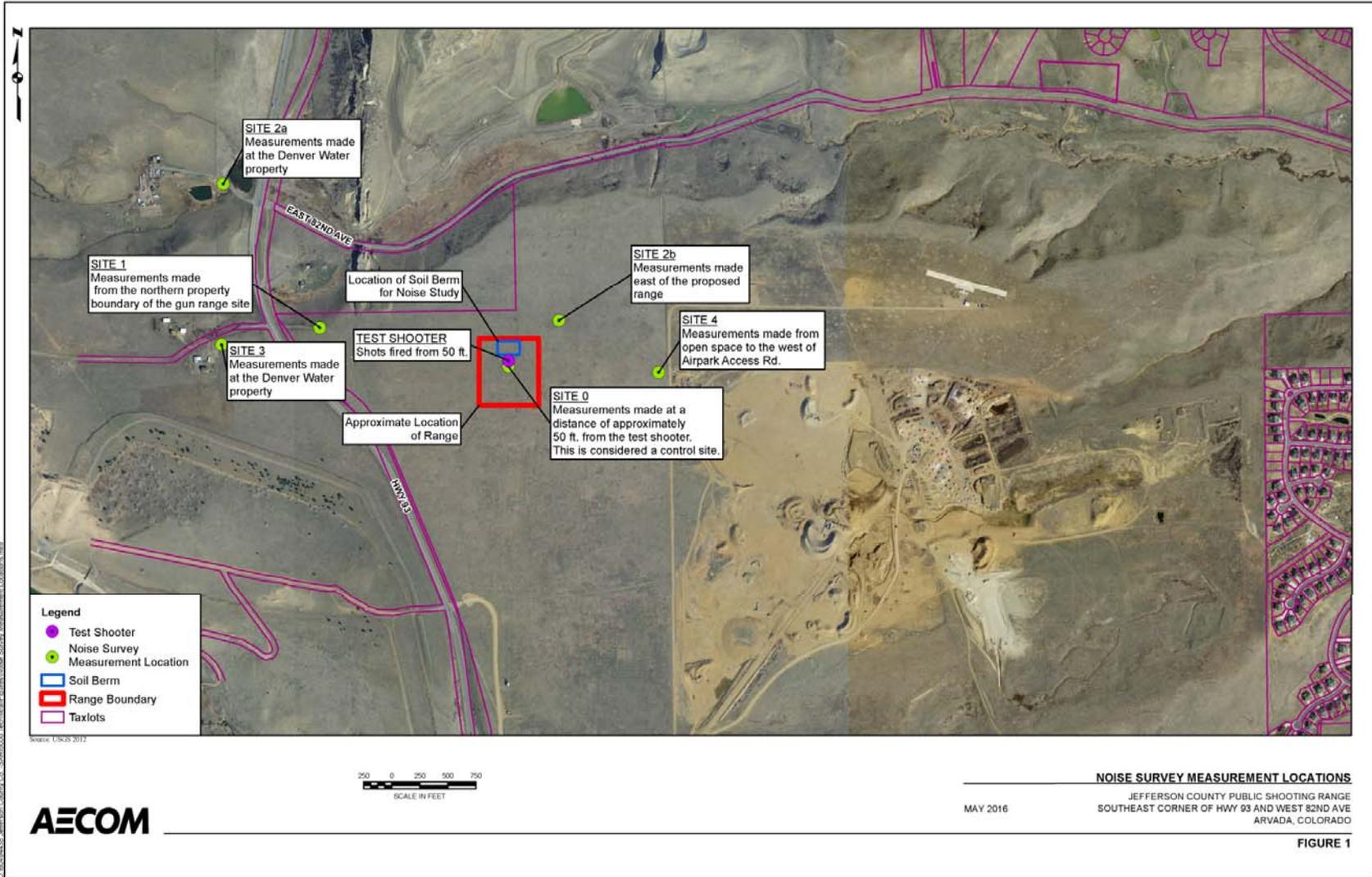
## NOISE STUDY METHODOLOGY

**Meteorological  
measurements collected  
continuously  
3 meter tower (Ws, Wd, T)**

**Vertical atmospheric  
structure from BAO Tower  
and Stapleton**

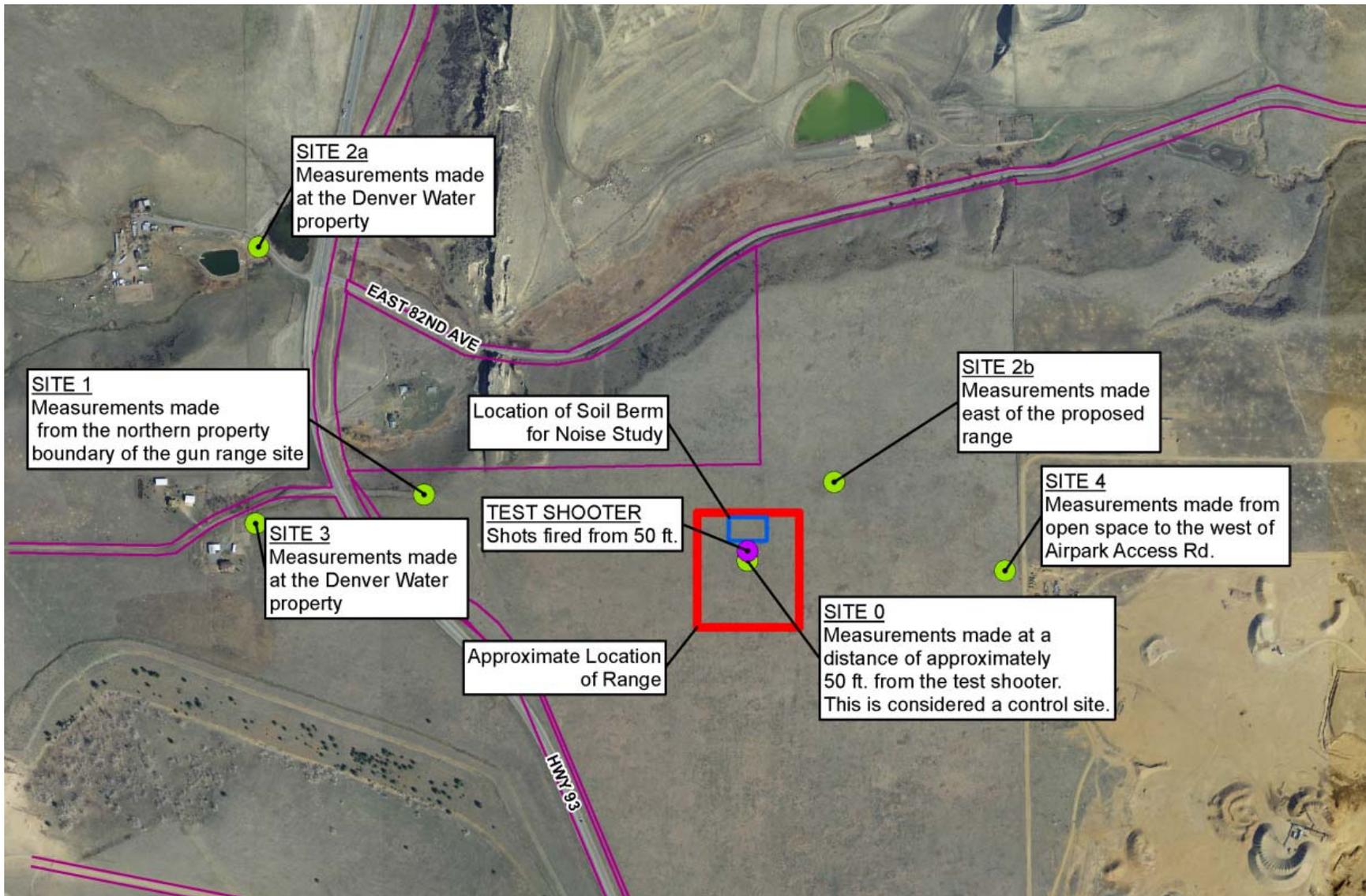


# NOISE STUDY LOCATIONS



MAY 2016

# NOISE STUDY LOCATIONS



## NOISE STUDY PRELIMINARY RESULTS

### Rule of Thumb

**6 dB(A) attenuation for each doubling of distance**

**Example:**

**50 feet = 60 decibels**

**100 feet = 54 decibels**

**200 feet = 48 decibels**



# NOISE STUDY PRELIMINARY RESULTS

RECAP OF FIRST MEETING

## Maximum 1 Second Leq During Shooting - dB(A)

Site	Distance	11-May			13-May	
		am	Noon	pm	Noon	pm
0	25	94	96	96	96	96
1	900	66	65	83	58	57
2a	2240	ND	-	-	-	-
2b	1055	-	-	-	81	78
3	1800	ND	-	-	ND	ND
4	2000	47	48	48	54	50



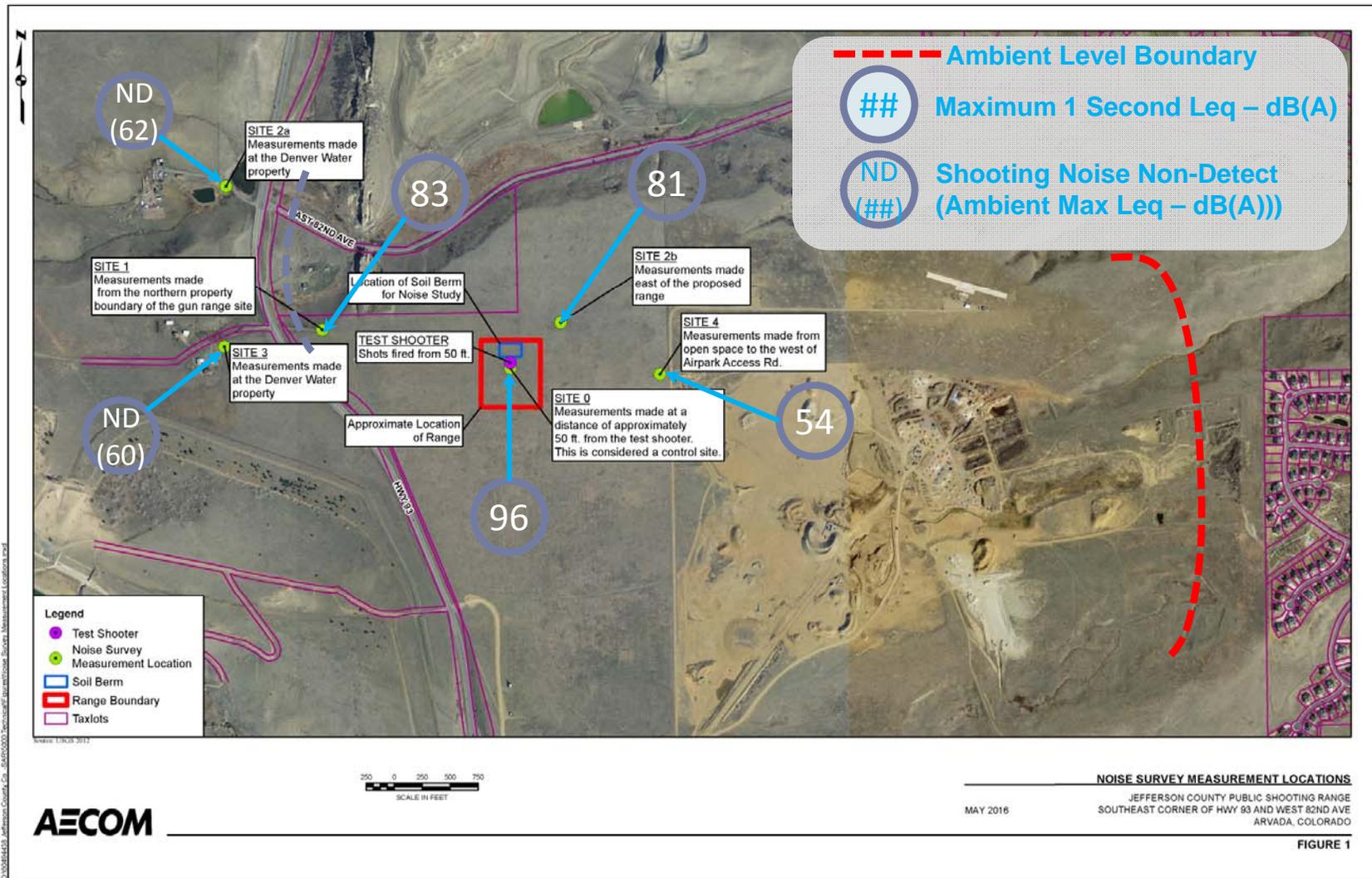
# NOISE STUDY PRELIMINARY RESULTS

RECAP OF FIRST MEETING

Average Background - dB(A)						
Site	Distance	11-May			13-May	
		am	Noon	pm	Noon	pm
0	25	48	46	54	47	45
1	900	52	50	55	42	43
2a	2240	62	-	-	-	-
2b	1055	-	-	-	51	49
3	1800	55	-	-	60	60
4	2000	44	40	40	42	42

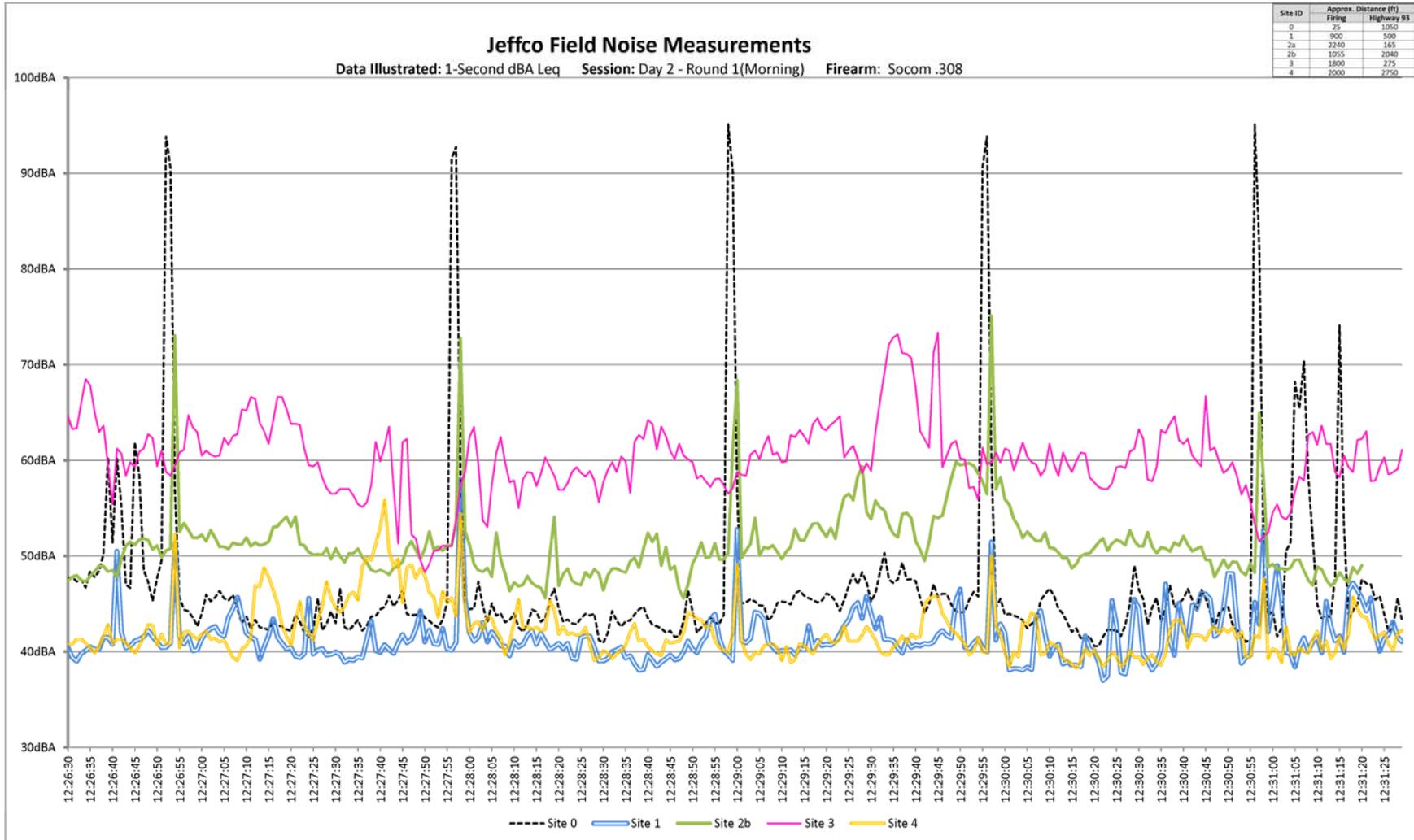


# MAXIMUM FIREARM-PRODUCED NOISE MEASUREMENTS



Remove the doubling

# NOISE STUDY PRELIMINARY RESULTS



# SITE SPECIFIC CONCEPT PLAN



## SOUND MITIGATION: Three Sided Enclosed Firing Line Sheds



# SOUND MITIGATION: Overhead Baffle System



## SOUND MITIGATION: Earthen Berms



# ENVIRONMENTAL MITIGATION: Environmental Stewardship Plan

**Focus on prevention of lead migration off of range**

**Document range materials disposal**  
**Bullet recycling**

**Conduct Environmental Range Inspections**

**Document maintenance activities**



EPA-902-B-01-001  
Revised June 2005  
Region 2

## Best Management Practices for Lead at Outdoor Shooting Ranges



## ENVIRONMENTAL MITIGATION: Maintain Vegetative Ground Cover

**Prevents erosion  
and transport of  
lead**

**Prevents erosion  
and lead transport**

**Captures dissolved  
lead**



## ENVIRONMENTAL MITIGATION: Soil pH Monitoring and Amendment

Measure soil pH to prevent leaching

Optimal range between 6.5 to 8.5

Lead is relatively insoluble when soil within optimal range

Apply Lime when pH is below 6.5



## ENVIRONMENTAL MITIGATION: Ballistic Sand Bullet Impact Berms

**Storm water drains  
freely through  
sand**

**Reduced contact time  
between bullet  
and water**

**Improves bullet capture**

**Absorbs bullet energy**



# ENVIRONMENTAL MITIGATION: Lead Recovery and Recycling

## Lead Recovery Methods

Hand Raking and

Sifting

Screening

Vacuum Truck

Gravity Separation

## Lead Recycling

Beneficial reuse of  
material

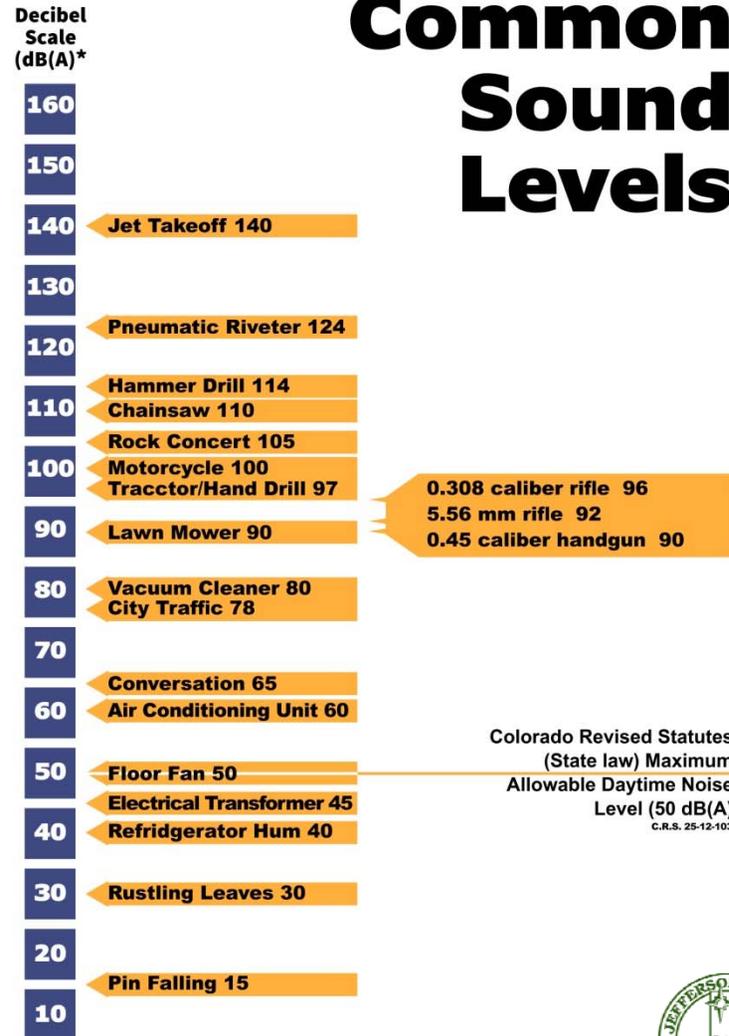
Licensed recycler



# COLORADO REVISED STATUTE (C.R.S.) 25-12-103

## Common Sound Levels

Sound Type	7:00 am to next 7:00 pm	7:00 pm to next 7:00 am
Impulsive	50	45
Continuous	55	50
C.R.S. 25-12-103		



Colorado Revised Statutes  
(State law) Maximum  
Allowable Daytime Noise  
Level (50 dB(A))  
C.R.S. 25-12-103

\*SOURCE  
[www.cdc.gov/niosh/topics/noises/noisemeter.html](http://www.cdc.gov/niosh/topics/noises/noisemeter.html)  
[http://e-a-r.com/hearingconservation/faq\\_main.cfm](http://e-a-r.com/hearingconservation/faq_main.cfm)

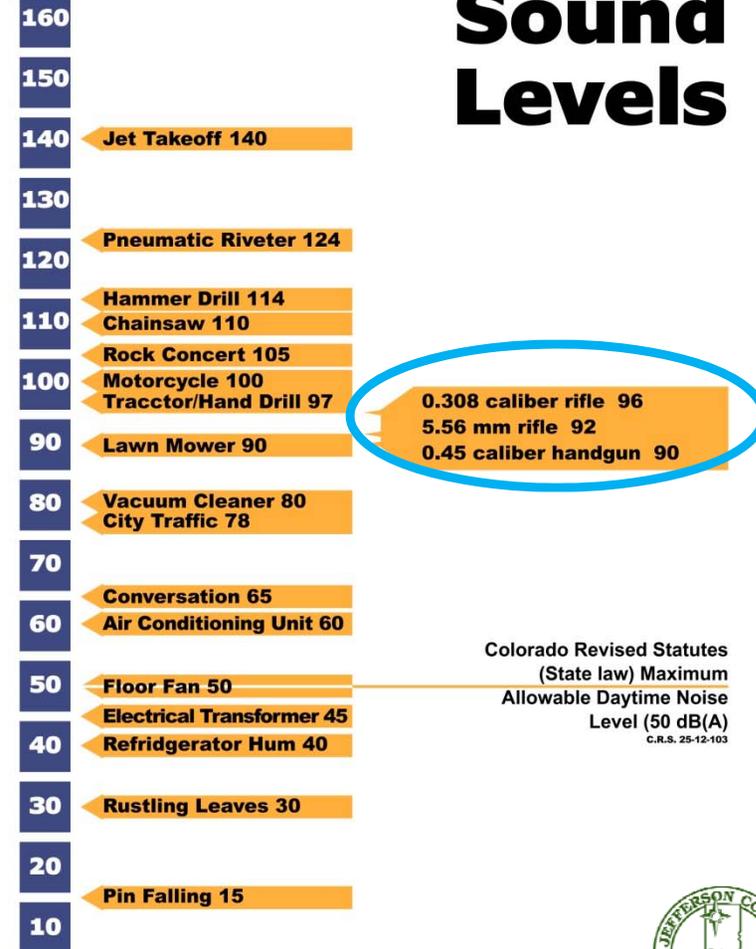


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Decibel Scale (dB(A))\*



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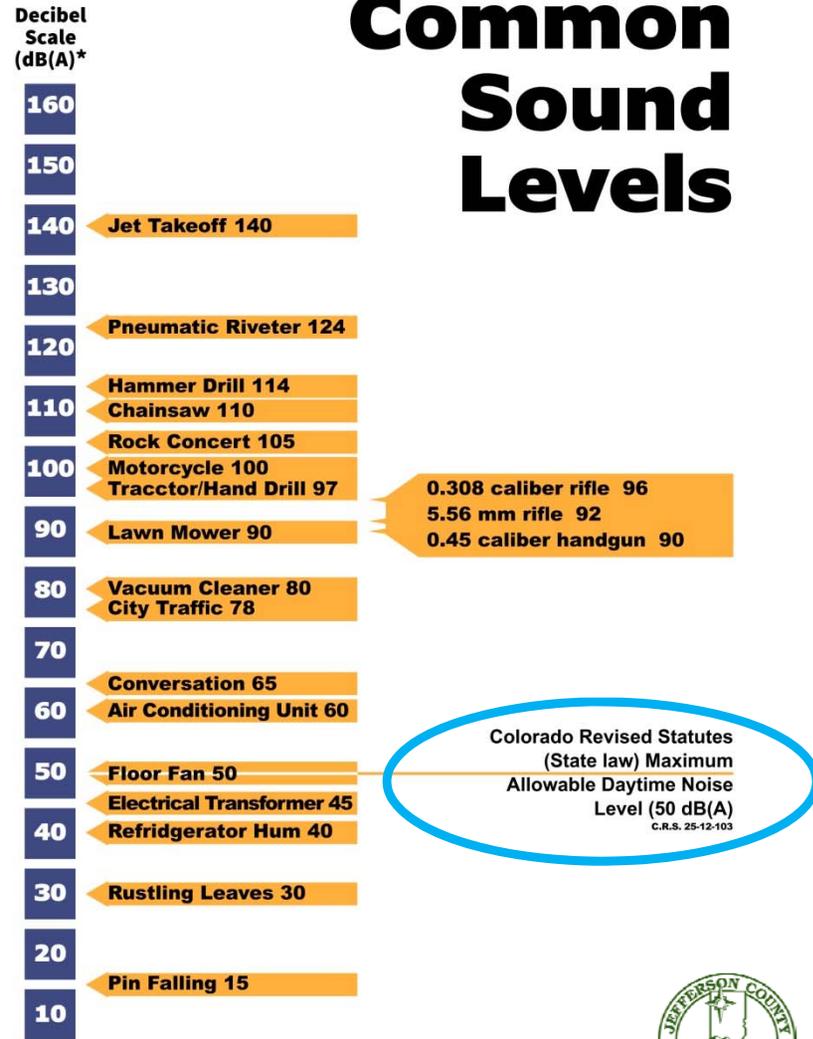
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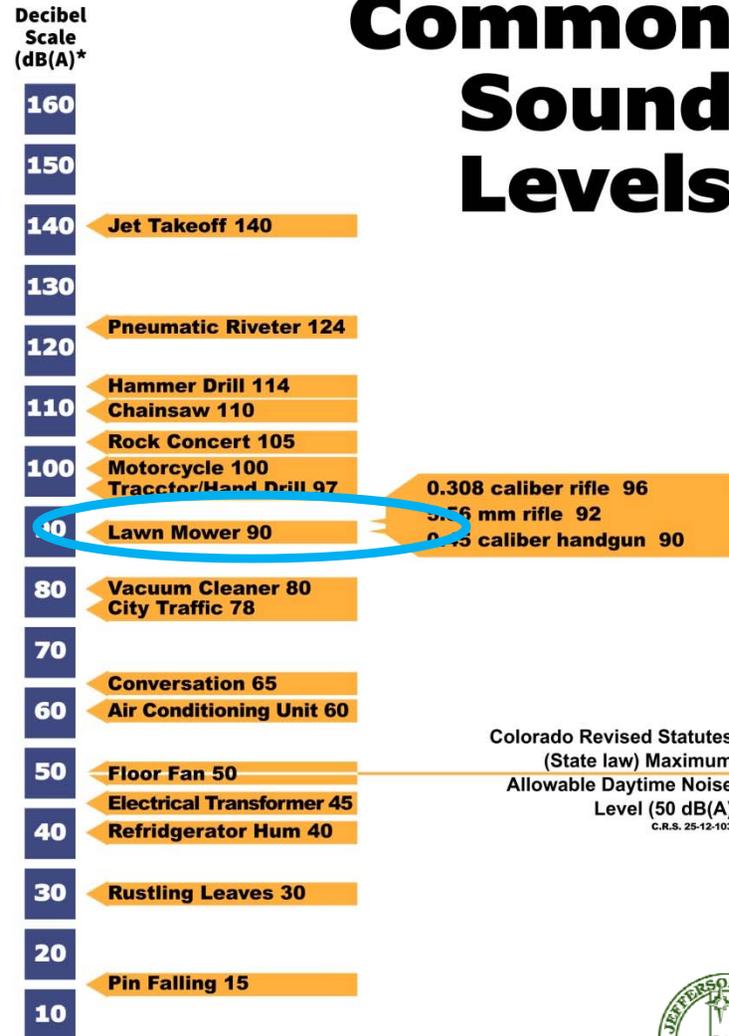
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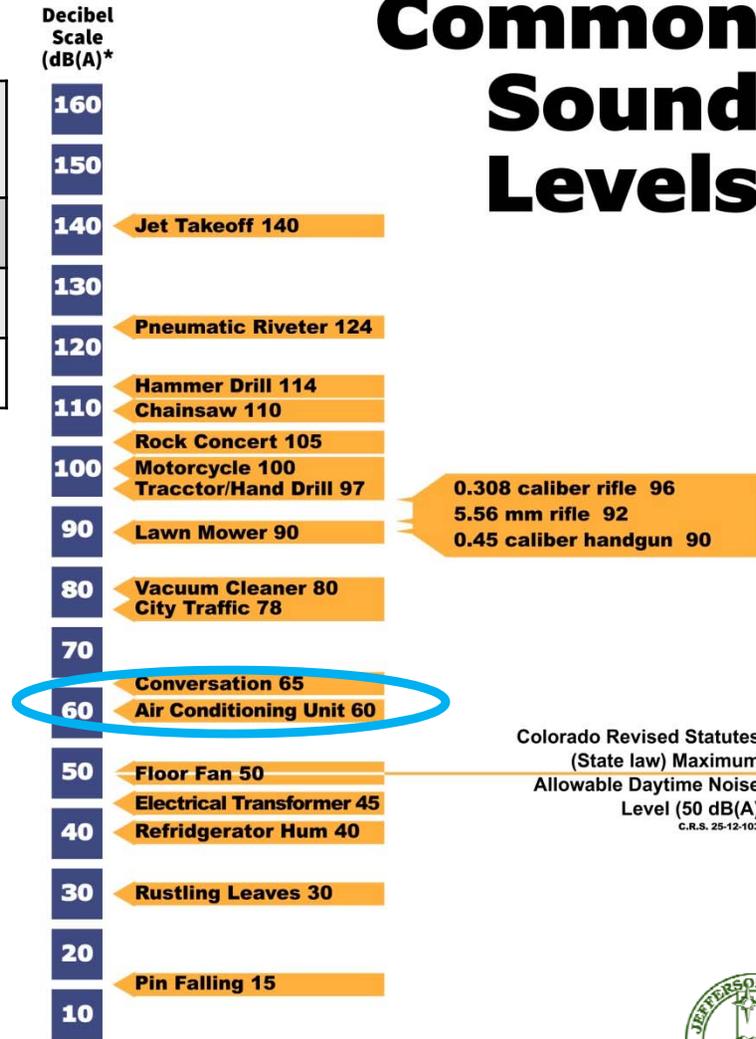
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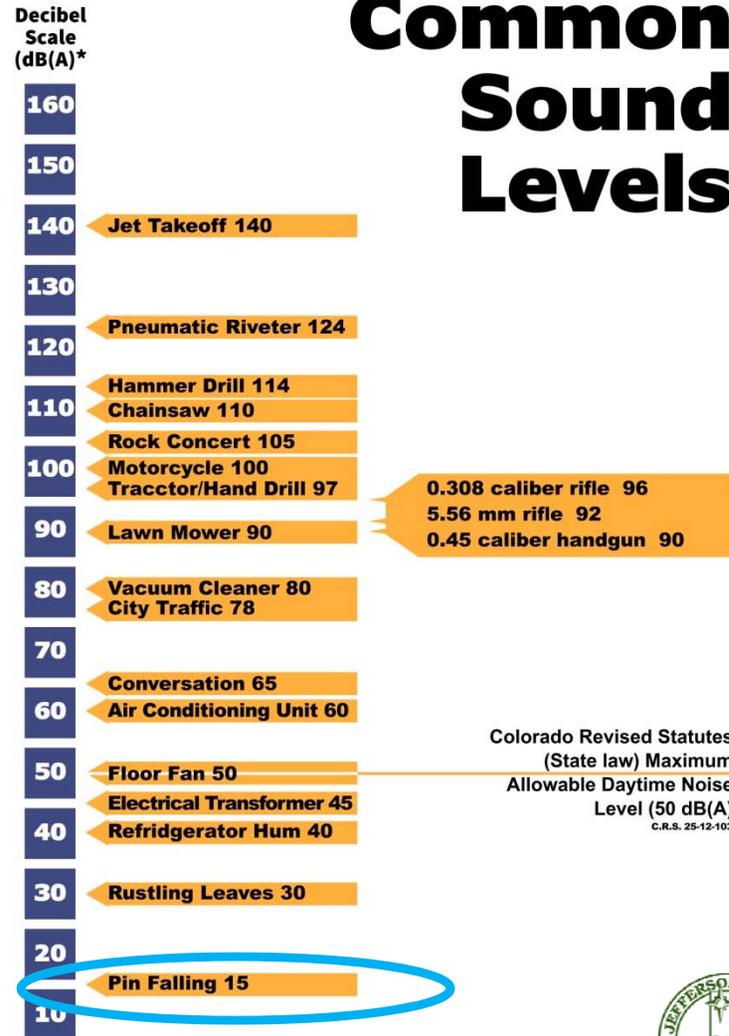
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## MODELING METHODOLOGY

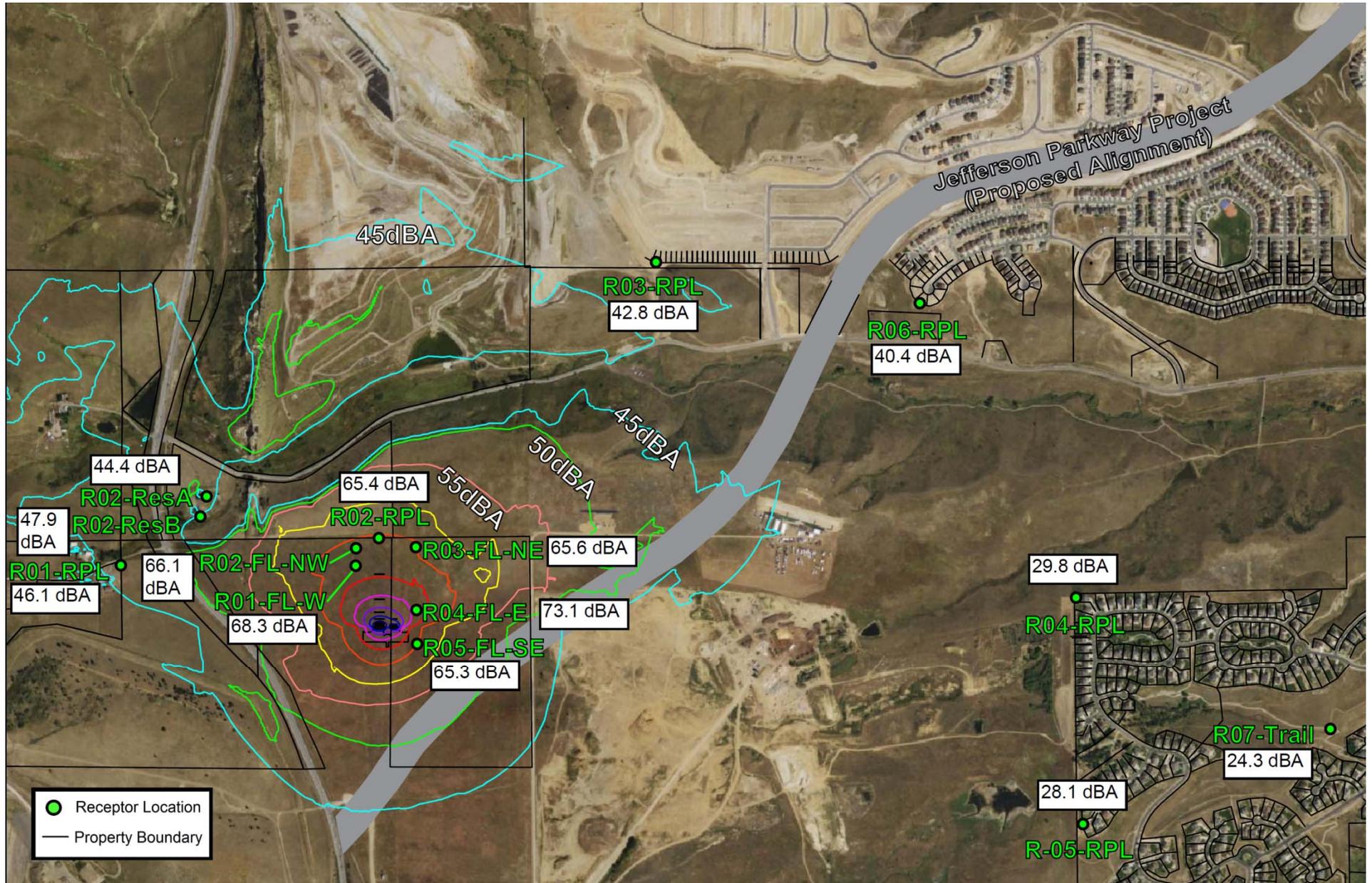
**15 Lanes of 45ACP (0.45 caliber handgun)**

**15 Lanes of 308 (0.308 caliber rifle)**

**Operating simultaneously at 50 rounds  
per hour**



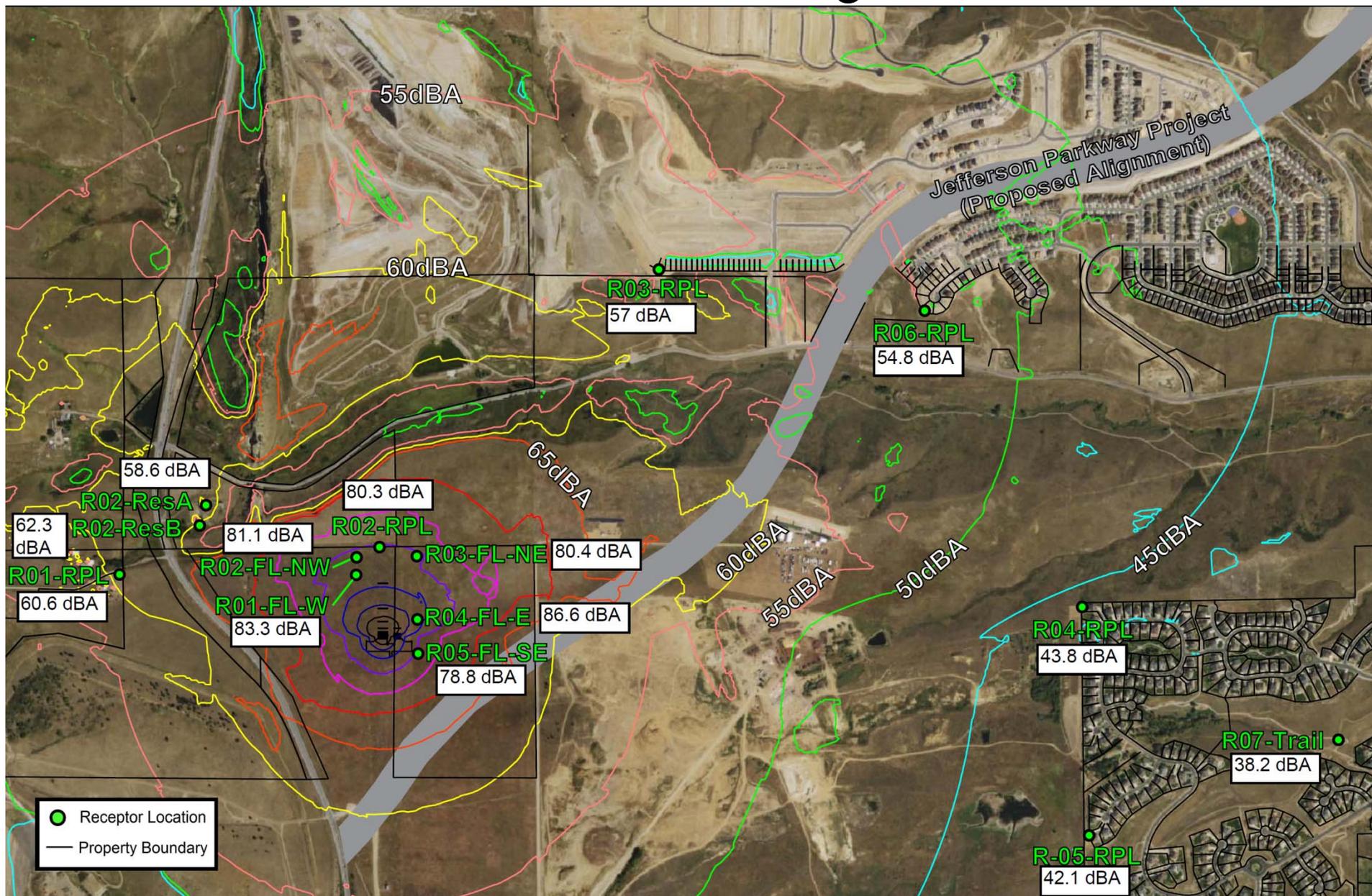
# Modeled Hourly Average (dBA Leq) Without Noise Mitigation



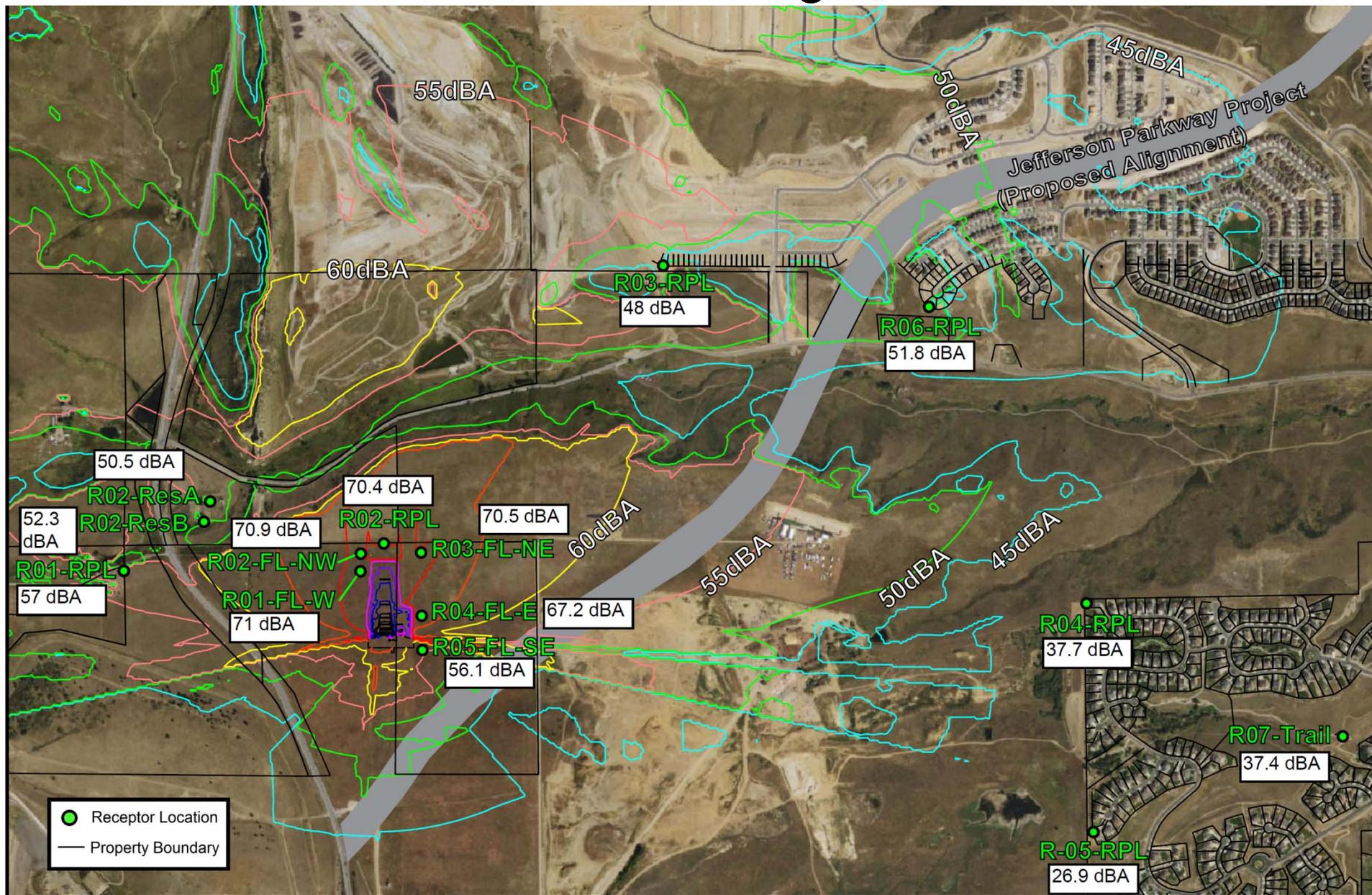
# Modeled Hourly Average (dBA Leq) With Noise Mitigation



# Modeled Peak Level (dBA Lmax) Without Noise Mitigation



# Modeled Peak Level (dBA Lmax) With Noise Mitigation



Receiver ID	Approx. Distance from Center of Range (ft)	Hourly Average (dBA L <sub>eq</sub> ) Based on 1-Sec L <sub>eq</sub> 1500 Rounds/Hour		Peak Level dBA (L <sub>max</sub> ) Single 308 Discharge		Delta (L <sub>max</sub> - L <sub>eq</sub> )	
		Without Mitigation	With Mitigation	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
R01-FL-W	682	<b>68.3</b>	<b>55.8</b>	<b>83.3</b>	<b>71</b>	<b>15</b>	<b>15.2</b>
R02-FL-NW	840	<b>66.1</b>	<b>55.6</b>	<b>81.1</b>	<b>70.9</b>	<b>15</b>	<b>15.3</b>
R03-FL-NE	833	<b>65.6</b>	<b>56</b>	<b>80.4</b>	<b>70.5</b>	<b>14.8</b>	<b>14.5</b>
R04-FL-E	328	<b>73.1</b>	<b>56.2</b>	<b>86.6</b>	<b>67.2</b>	<b>13.5</b>	<b>11</b>
R05-FL-SE	318	<b>65.3</b>	<b>49.9</b>	<b>78.8</b>	<b>56.1</b>	<b>13.5</b>	<b>6.2</b>
R01-RPL	2,674	<b>46.1</b>	<b>42.2</b>	<b>60.6</b>	<b>57</b>	<b>14.5</b>	<b>14.8</b>
R02-RPL	879	<b>65.4</b>	<b>55.2</b>	<b>80.3</b>	<b>70.4</b>	<b>14.9</b>	<b>15.2</b>
R02-ResidenceA	2,139	<b>44.4</b>	<b>36.2</b>	<b>58.6</b>	<b>50.5</b>	<b>14.2</b>	<b>14.3</b>
R02-ResidenceB	2,192	<b>47.9</b>	<b>38.1</b>	<b>62.3</b>	<b>52.3</b>	<b>14.4</b>	<b>14.2</b>
R03-RPL	4,423	<b>42.8</b>	<b>34.4</b>	<b>57</b>	<b>48</b>	<b>14.2</b>	<b>13.6</b>
R04-RPL	6,716	<b>29.8</b>	<b>22.7</b>	<b>43.8</b>	<b>37.7</b>	<b>14</b>	<b>15</b>
R05-RPL	7,051	<b>28.1</b>	<b>25.7</b>	<b>42.1</b>	<b>26.9</b>	<b>14</b>	<b>1.2</b>
R06-RPL	6,168	<b>40.4</b>	<b>37.3</b>	<b>54.8</b>	<b>51.8</b>	<b>14.4</b>	<b>14.5</b>
R07-Trail	9,234	<b>24.3</b>	<b>21.7</b>	<b>38.2</b>	<b>37.4</b>	<b>13.9</b>	<b>15.7</b>

# CLARIFYING QUESTIONS



# PUBLIC COMMENT

