

BLUE FOLDER ITEM

Blue folder items are additional back up material to administrative reports and/or public comments received after the printing and distribution of the agenda packet for receive and file.

CITY COUNCIL MEETING JULY 16, 2024

N.1 DISCUSSION AND POSSIBLE ACTION REGARDING PICKLEBALL PLAY AND COURT MANAGEMENT IN THE CITY

DISCUSSION AND POSSIBLE ACTION REGARDING THE INSTALLATION OF PICKLEBALL COURT LINES ON ONE OR TWO OF THE TENNIS COURTS LOCATED AT ALTA VISTA PARK

CONTACT: ELIZABETH HAUSE, INTERIM COMMUNITY SERVICES DIRECTOR

- **CHANGE TO CLOSING STATEMENT OF NOISE MEASUREMENT TEST- JUNE 26, 2024 (PAGE 19 OF TEST)**
- **PUBLIC COMMUNICATIONS**

CLOSING:

Our measurements indicate that the pickleball play related sources of noise that we were able to identify and measure at Alta Vista Park was no greater in residential zones than the background noise of regular traffic and normal citizen activities.

[REDACTED]

From: Ken Bernstein [REDACTED]
Sent: Friday, July 12, 2024 11:58 AM
To: James Light <james.light@redondo.org>; Scott Behrendt <Scott.Behrendt@redondo.org>; Nils Nehrenheim Council Member Redondo Beach <nils@voteformils.org>; Todd Loewenstein <Todd.Loewenstein@redondo.org>; Paige Kaluderovic <Paige.Kaluderovic@redondo.org>; Zein Obagi <Zein.Obagi@redondo.org>; Eleanor Manzano <Eleanor.Manzano@redondo.org>
Cc: Mike Witzansky <Mike.Witzansky@redondo.org>; Eleanor Manzano <Eleanor.Manzano@redondo.org>; Michael Webb <Michael.Webb@redondo.org>; Cameron Harding <Cameron.Harding@redondo.org>
Subject: Blue Folder 1 of 5 July 16 City Council Meeting Agenda # N1

CAUTION: Email is from an external source; Stop, Look, and Think before opening attachments or links.

Hi Ms. Manzano,

Can you please put in blue folder for July 16 City Council Meeting Agenda # N1 Alta Vista Pickleball.

If I did something incorrectly, please let me know.

Thanks.

Ken Bernstein



SHARED LOVE FOR ALTA VISTA PARK AND TENNIS CENTER

Preserving and protecting the neighborhood and park facilities

WE RECOGNIZE THE
APPEAL OF OTHER
RECREATIONAL
ACTIVITIES,
INCLUDING
PICKLEBALL.
HOWEVER,
INTRODUCING
PICKLEBALL SHOULD
NOT COME AT THE
EXPENSE OF THE
COMMUNITY.



SHARED SPACES

Alta Vista Park is a highly used park space - by athletes, kids, families and even dogs. It's beautiful, but we have to remember it's nestled in shared space with a peaceful, prosperous neighborhood.



Balcony on S. Juanita St. overlooking the park, about 130 ft away.

IMPACTS OF PICKLEBALL



NOISE



REVENUE



REDUCED TENNIS
TOURNAMENT
AVAILABILITY



RISKS TO THE CITY
OF REDONDO
BEACH

IMPACTS OF PICKLEBALL

ENVIRONMENTAL IMPACT

- City needs to conduct a noise impact study by a professional 3rd party to determine compliance with city noise ordinances.
- Pickleball courts create excessive noise (65 – 85+ dBA) for nearby homes, closer than recommended distance (500-977 ft), especially for S. Juanita Ave residents.
- Noise pollution is an environmental issue that negatively affects the community.
- Increased activity would worsen traffic and noise, impacting nearby residents, other sports (AYSO, Little League, Soccer, Baseball) and the Community Center.
- 2 tennis courts = 8 pickleball courts x 4 players per court = 32 additional cars.

REDUCED TENNIS AVAILABILITY

- Scheduling tennis courts 7 days ahead is already difficult – less court availability would make it worse.
- The conversion of nearby public courts to pickleball facilities has increased the demand for tennis courts at Alta Vista.
- Alta Vista is the **ONLY** city facility that qualifies for USTA & Marine Leagues or tennis pros.
- Dual use courts **NOT** permitted for match play by USTA & Marine leagues or tennis pros.
- Alta Vista has 1270 paid annual tennis memberships.
- 1200 USTA & 170 Marine league players from the South Bay play at Alta Vista.
- Need more tennis courts not less but there are no funds available.

IMPACTS OF PICKLEBALL

FINANCIAL IMPACT

- Current revenue data not available.
- ADA compliance cost due to change of use.
- Environmental impact study cost due to change of use.
- Sound mitigation cost.
- Potential litigation cost.
- Revised or new on-line reservation system cost to handle both tennis & pickleball.
- Increase staff cost to handle the increase of players from 32 to 56.

RISKS TO THE CITY

- Redondo Beach's serene neighborhoods desirability diminishes as noise pollution lowers home values and loss of parking, discouraging potential buyers, notably in the areas surrounding Alta Vista Park.
- Vulnerability to lawsuits, as seen in other cities that have violated their own noise ordinances.
- Would NOT be in compliance with city noise ordinance 4-24.301 that permits 50dBA. Pickleball exceeds 65dBA and can reach 85dBA, according to USA Pickleball.
- Sound mitigation methods would be needed.
- Change of use - ADA non-compliance, per 2022 pickleball feasibility report.
- Concern for child pedestrians, with increased traffic.



OPPOSING PICKLEBALL EXPANSION AT AV

- Petitions against pickleball expansion signed by more than 500 people:
 - Tennis players
 - Neighbors
 - Parents and coaches of other sports
 - Tennis coaching professionals
- Incompatible use as tournament play needs quiet especially from the excessive number of Pickleball players waiting for the next game.
- Cannot validate the pickleball ambassador's claim of 2.5-5% maximum impact on tennis court availability as presented to City Council on March 5th.

Alta Vista Parking Lot random Sunday at 10:00am March 2024



8 pickleball courts = 32 additional cars

ALTERNATIVE LOCATIONS FOR PICKLEBALL EXPANSION

- Beach City Health District
- Veterans Park
- Redondo Union H.S.
- Galleria Mall
- Alta Vista racquetball court with wall modifications
- St. Katherine's Greek Orthodox Church
- Aviation Park
- Dominguez Park
- Partner with Skechers, a national pickleball sponsor, to fund pickleball stadium at Aviation Park. Stadium could hold league and nationally televised regional/championship which would produce a revenue stream.
- Coordinate with Ted Lieu as this is a South Bay issue. Can he find funds to support Skechers Aviation Park suggestion that would serve the entire South Bay?



SOLUTIONS!

We can work together to find solutions that meet everyone's needs: the neighborhood's integrity, thriving youth sports and tennis and pickleball players – and without raising a racquet!

**APPENDIX
ALTA VISTA TENNIS AND
NEIGHBORHOOD COMMUNITY**

ENVIRONMENTAL IMPACT

- Noise to neighboring homes, 8 simultaneous pickleball games will generate up to 85 decibel noise, much higher than gas leaf blowers, which are banned in the city. Redondo Beach Noise Regulation Ordinance 4-24.301 around Alta Vista Park limits maximum permissible sound to 50 dBA. Alta Vista Park is shaped like an amphitheater and noise in the park will be amplified up to residents. Noise mitigation only works for communities on flat land.
- Only 130 ft. to South Juanita Street homes versus 400-to-600-foot best practice recommendation.
- Significantly increased cars in crowded parking lot, with other sports, e.g. AYSO, Little League. Lots of movement of young kids darting between parked cars – increased hazards for pedestrians and drivers.
- Parking lot currently at capacity, increased cars could impact neighborhood parking, especially during evenings and weekends. With 8 tennis courts, assuming 4 people per court = 32 cars plus cars coming in at change of the court on the hour. With 6 tennis courts, assuming 4 people per court = 24 cars plus 8 pickleball courts assuming 4 people per court = 32 cars for pickleball + 24 tennis cars = 56 cars, not including the extra pickleball players that queue up waiting to rotate in every 15 to 20 minutes. This likely will be substantially greater than 32 pickleball cars. Overflow of cars on South Juanita Street and Camino Real. Steep stairs from South Juanita Street may not be suitable for less mobile seniors. Too much noise to play tennis. Pickleball players queuing up in corridor waiting to rotate into the courts is tremendously distracting. Tennis has a long focus of the entire court length and beyond. People milling about just outside and adjacent to the court is a huge problem, especially for tournament matches. In professional matches, people talking in the stadium are quickly schussed and asked to leave if they don't stop talking.

REDUCED AVAILABILITY OF TENNIS COURTS

- Very difficult to schedule tennis courts currently that would worsen with fewer courts
 - Prime time 4 to 9 pm weekdays and weekends fully booked with many turned away. Online booking 7 days in advance at 7:00 am, completely sold out by 7:15 am.
 - 7 professional coaches, USTA and Marine League have scheduling priority, leaving few open court hours for the public
- Area public courts impacted by pickleball conversion drives players to Alta Vista
 - Wilson Park, Ernie Howlett, Walteria, Las Canchas and El Segundo have all lost tennis courts to pickleball
- Private clubs impacted by pickleball
 - PV Tennis Club flipped 2 tennis courts to 8 pickleball courts at substantially lower initiation fee and monthly fees. Parking lots completely overrun by pickleball players. Tennis and Golf Club members often forced to park far away and walk into the facility. The club is overwhelmed by pickleball players
- Dual courts – not permitted for match play by USTA, Marine League nor Tennis Pros - USTA Rule 1.04D(6)

RISKS TO THE CITY

- Noise/nuisance litigation from neighbors - thousands of homeowners have successfully sued communities and homeowners associations over the noise and parking nuisance from pickleball courts adjacent to homes. The homes on South Juanita street are with 130 feet from the proposed pickleball courts and the sound of 8 simultaneous games will be about 85 decibels. State of California Parks and Recreation guidelines on placement of pickleball courts recommends 400 to 600 feet from residential property lines, which is consistent with national recommendations to avoid noise litigation. Torrance city council adopted a 250-foot rule between residential property lines and the center of pickleball courts on March 12, 2024.
- Property value decline on S. Juanita Ave. Constant noise from pickleball courts adjacent to South Juanita Street and South Irena Street (other side of the block is 250 feet) will make it harder to sell the homes for market value. Of the 12 potentially most impacted homes on South Juanita Street, average value on Zillow March 16, 2024 is \$2,570,000 plus or minus \$900,000. On the other side of the block on South Irena Street, same calculations are \$2,600,000 plus or minus \$600,000. Further up and down the block home values are similar.
- ADA potential violations for new uses – 2022 City of Redondo Beach pickleball feasibility study states that the **“Concerns with this location include the need for additional site work for necessary ADA enhancements; the reduction of one tennis court; and potential noise concerns associated with pickleball play to those living nearby the park, specifically on S. Juanita Avenue.”**
- Injury lawsuit from pickleball players – pickleball players are distinctly older than the average tennis player, greater incidence of injury. “Over the past two years, the number of pickleball-related injuries has nearly doubled, from just under 9,000 in 2020, to just over 17,000 in 2022, according to the Consumer Product Safety Commission's National Electronic Injury Surveillance System. Since 2018, the popular paddles have been responsible for more than 60,000 emergency room visits, per CPSC data, and approximately 75% of those injured during that time were between the ages of 55 and 75.”
- Increased traffic in parking lot with kids – With an estimated increase in cars and traffic, a greater likelihood of injury with children exists.
- Liability claims against the city – Noise, injury, traffic incidents

Petition to Preserve Alta Vista Tennis Courts for Tennis

for

Petition summary and background

As members of the **Alta Vista Tennis Center**, we are concerned that conversion of Court 7 & 8 from 2 tennis courts to 8 pickleball courts would be extremely disruptive to the neighborhood environment based on noise and parking.

- Allowing 8 pickleball courts on Tennis Courts 7 & 8 at Alta Vista would be very disruptive to the environment.
- California Commission of Parks and Recreation recommends 400 to 600 feet between the center of a pickleball court and the nearest residential property line. Torrance recently adopted 250 feet for new courts. Homes on South Juanita Street are 130 feet from the proposed pickleball courts.
- 24 additional people on the court would result in at least 24 additional cars in the lot and a total of at least 48 cars (pre and post court changeover to new players on the hour). The Alta Vista parking lots can not currently handle the cars from the tennis courts, baseball games, soccer games, school activities, community garden and the dog park. Parking overflow with results in additional parking on South Juanita, Camino Real, Prospect and other streets. Increased need for handicap parking spaces will further reduce the number of spaces
- We are requesting that the city consider other sites in Redondo Beach for pickleball.

We, the undersigned, are concerned citizens who urge our leaders to act now to [Enter action item(s) for which you are petitioning]

Printed Name	Signature	Address	Comment	Date
Fay Becker	<i>Fay Becker</i>	5711 Ravenspur Dr #329	RPV We need courts!	3-23-24
Anne Yamamoto	<i>Anne Yamamoto</i>	272 Amethyst Cr Gardena, CA	9/24/18	3/23/24
Reece Trethewey	<i>Reece Trethewey</i>	1907 Mathews Ave	RB 90218 Save the courts!	3/23/24
Karie Lanterman	<i>Karie Lanterman</i>	1900 Parkness St MB	existing tennis courts! Too much demand for courts!	3/23/24
John Lanterman	<i>John Lanterman</i>	1900 Parkness St MB	Tennis courts already built!	3/23/24
Romi Worst	<i>Romi Worst</i>	1815 Caddington Drive RPV, CA	We need tennis courts!	3/23/24

Printed Name	Signature	Address	Comment	Date
Jess Cox	<i>Jess Cox</i>	3841 Foxglove		3/22/24
John Cox	<i>John Cox</i>			3/23/24
CARLOS ROMERO	<i>Carlos Romero</i>	4205 W 129th St, Muko	NO PICKLEBALL	04/06/24
TEVIN JENKINS	<i>Tevin Jenkins</i>	8545 OXFORD AVE, LOS ANGELES 90065	NO PICKLEBALL	04/06/24
Rostus Baccanta	<i>Rostus Baccanta</i>	1122 W. 6th St, LA CA 9007	NO PICKLEBALL	4/4/24
John Thomas Long	<i>John Thomas Long</i>	560 23rd Ave, HB	NO P/B	4/6/24
Brenda Davidson	<i>Brenda Davidson</i>	19412 W. 12th St, Los Angeles, CA	NO P/B	4/6/24
Jeff Kahn	<i>Jeff Kahn</i>	9000 Heron Ave, #1B	NO PICKLEBALL	4/6/24
Karen Clon	<i>Karen Clon</i>	9088 Horn Ave, #B	NO PICKLEBALL	4/6/24
Amy Heard	<i>Amy Heard</i>	854 S Oxford Ave	NO PICKLEBALL	4/6/24
Sebastian Henrich	<i>Sebastian Henrich</i>	1319 Moorpark Dr, #125	NO PICKLEBALL	4/6/24
Steve Hiron	<i>Steve Hiron</i>	22929 Venice St	NO PICKLEBALL	4/6/24
Lin Tang	<i>Lin Tang</i>	4705 Diamond St, #133	NO PICKLEBALL	4/6/24
TONY CHUANG	<i>Tony Chuang</i>	2386 Greenwood Ave, Torrance, CA 90501	NO PICKLEBALL COMMISSION	04/06/24
DASON MASUDA	<i>Dason Masuda</i>	2414 APPLE AVE, TORRANCE, CA 90501	NO PICKLEBALL	4/6/24
Henry Harris	<i>Henry Harris</i>	4544 Duval St, CA	NO PICKLEBALL	4/6/24

Printed Name	Signature	Address	Comment	Date
ANN GARBY		1731 Firndmlydr, So Hills 90216	I play on AV Marine League Tennis Team	3.19.24
Michelle Barnes		Rancho Beach 531 Esplanade #515	none - 1 play ML tennis	3/22/24
Evelyn Schmitt		1148 The Strand Manhattan Beach	I play Marine League Tennis	3/22/24
Kenne Morihisa		1275 Oakhome Dr. Harbor City CA 90310	1 play m.l tennis	3/22/24
CAROL BOSTON		Santa Monica Marina	Volley Ball	3/22/24
Cynthia Chew		16 Seaplane Way Rite		3/22/24
Kathy Payoff		1150 W. Capitol Dr	begin marine league matches	3/22/24
Sue Moore		7901 Stewart Ave	used to in company 3-22-24	3-22-24
Teri Melnick		View Park CA 90043		3-22-24
Margaret Kishida		4078 Monteith Dr 2311 Via Lupa CA	marine league tennis player - no!	3-25-24
Betty Toroy		1204 Via Zumaya Palo Alto	Noisy	3/25/24
Mei Leckenby		2941 W. Normand Pl Alhambra	Noisy	3/25/24
Karin Rossini		3027 P.V.O.R.E. R.V.A	Noisy, ML	3/25/24
Sue Tozaki		29226 Beachside Dr. Rancho Palos Verdes, CA	noise, parking congestion	3/25/24
Mila Huh		R.V.U.		3/25/24
Wendy Ginnery		28641 Untrickle R.V.U.		3/25/24

Printed Name	Signature	Address	Comment	Date
Judy MacLeod		121 C. de Arboles R. B.		3/22/24
Michiyoshi Hiradate		21605 Palos Verdes Bl Terrance, CA 90505		3/22/24
Sanghe Kr		2963 Mariposa H Turman CA 90505		3/22/24
Amy Hampton		1221 10th St. 90054 Hermosa Beach		3/22/24
John Leo		2914 W. 236th Pl. Torrance, CA 90501		3/24/24
Kristin Almeida		1701 S PULP RD CA 90277		3/22/24
Janet Stearns		PO Box 2386 Palos Verdes CA 90274		3/22/24
Julie Moore		115 Via Los Miradores RB 90274		3/22/24
Jimmy Reyes		2 country Ln etc.		3/22/24
Suzanne Dunn		1052 Bayview Dr, HB 90277		3/22/24
Nadine Trotter		1213 Beryl St. Apt. D Redondo Beach		3/22/24
STELLA SPENCER		704 Blossom Ln 90278 Redondo Beach		3/22/24
RACHAEL STONE		4508 ATLANTIC AVE 219 CA LONG BEACH 90807		3.22.24
Jamie Fugate		2212 TA STANFORD 90246		3.22.24
Jammy Bays		2524 Arbor Lark CA 90277		3/22/24
VINYLIGHT		679 Paseo de la Playa RB 90277		3/22/24

Petition to Preserve Alta Vista Tennis Courts for Tennis

adding lines for

Petition summary and background

As members of the **Alta Vista Tennis Center**, we are concerned that conversion of Court 7 & 8 from 2 tennis courts to 8 pickleball courts would be extremely disruptive to the neighborhood environment based on noise and parking.

- Allowing 8 pickleball courts on Tennis Courts 7 & 8 at Alta Vista would be very disruptive to the environment.
- California Commission of Parks and Recreation recommends 400 to 600 feet between the center of a pickleball court and the nearest residential property line. Torrance recently adopted 250 feet for new courts. Homes on South Juanita Street are 130 feet from the proposed pickleball courts.
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Action petitioned for

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[Enter action item(s) for which you are petitioning]

Printed Name	Signature	Address	Comment	Date
OKSIL MOON		3811 E Martin Luther King Jr LYNWOOD, CA 90262	Keep the tennis courts	3/22/24
THANH PHO		240 S Broadway R.B. CA 90277	We need those tennis courts.	3/22/24
SUSAN McMAHON		2613 Ripley Ave R.B. CA 90278	Tennis yes!	3/22/24
SARAH NODDINGS		1322 W. 182nd St. Torrance CA 90504	We need more tennis courts	3/22/24
SONG BOON HAN		10404 Balboa Pl Gardena CA 90249		3/22/24
DENISE VEGA		5519 White Ct Torrance		3/22/24

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Printed Name	Signature	Address	Comment	Date
LINDA STONE		1821 VIA ESTADILLO AVE Torrance, CA 90503	90214	3/23/24
Michael Mcbride		212 (signing at) Colinas, Redondo Beach, CA 90277		03/24/24
MICHAEL WELCH		2589 VIA CAMPESINO AVE Torrance, CA 90503		3-24-24
Jane York		2527 225th Pl Torrance, CA 90503		3/25/2024
Kenny Lee		2527 225th Pl Torrance, CA 90503		3.25.24
Julie Crow		25921 Oak St Torrance, CA 90503		3/26/24

Petition to Preserve Alta Vista Tennis Courts for Tennis

adding lines

Feb

<p>Petition summary and background</p>	<p>As members of the <u>Alta Vista Tennis Center</u>, we are concerned that conversion of Court 7 & 8 from 2 tennis courts to 8 pickleball courts would be extremely disruptive to the neighborhood environment based on noise and parking.</p> <ul style="list-style-type: none"> • Allowing 8 pickleball courts on Tennis Courts 7 & 8 at Alta Vista would be very disruptive to the environment. • California Commission of Parks and Recreation recommends 400 to 600 feet between the center of a pickleball court and the nearest residential property line. Torrance recently adopted 250 feet for new courts. Homes on South Juanita Street are 130 feet from the proposed pickleball courts. • 24 additional people on the court would result in at least 24 additional cars in the lot and a total of at least 48 cars (pre and post court changeover to new players on the hour). The Alta Vista parking lots can not currently handle the cars from the tennis courts, baseball games, soccer games, school activities, community garden and the dog park. Parking overflow with results in additional parking on South Juanita, Camino Real, Prospect and other streets. Increased need for handicap parking spaces will further reduce the number of spaces • We are requesting that the city consider other sites in Redondo Beach for pickleball.
<p>Action petitioned for:</p>	<p>We, the undersigned, are concerned citizens who urge our leaders to act now to [Enter action item(s) for which you are petitioning]</p>

Printed Name	Signature	Address	Comment	Date
Swaby MacCarato	<i>Swaby MacCarato</i>	10241 E Vista Crest LORAIN, CA 90805	Pickleball needs to build their own facilities	3/20/2024
Aileen Kullinski	<i>Aileen Kullinski</i>	1922 Cambrian Ave #1A Riverside CA 92518	Need to keep our tennis courts	3/16/24
Yukiko Hawley	<i>Yukiko Hawley</i>	4434 Encinal St. Torrance, CA 90503	Pickleball needs their own park or club	3/20/24
Teri Handlen	<i>Teri Handlen</i>	26722 Springbrook Rd Riverside, CA 92527	Separate facility	3/12/24
Charmaine Nelson	<i>Charmaine Nelson</i>	1901 Alhambra MIRANDA 90546	exp to separate	3/16/24
Alba Pajolas	<i>Alba Pajolas</i>	570 35th St MIRANDA	no more PB	3/16/24

Petition to Preserve Alta Vista Tennis Courts for Tennis

adding lines

601

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Maurice Kogon	Maurice Kogon	4216 Newton St Torrance, CA 90505	Courts already fully utilized for tennis	3/23/24
Mark Gross	Mark Gross	23 Cambridge Irvine		3/23/24
Tim Graham	Tim Lee	4024 Via Nivea PUE, CA 90274	Courts are already packed with tennis pickleball food	3/23/24
Kay Cottler	Kay Cottler	19341 Flavian Ave Torrance		3/23/24
Adrian Weigen		2607 Toluca Ave Torrance CA 90503		3/23/24
Keith French	Keith French	19341 Flavian Ave Torrance		3/23/24

Printed Name	Signature	Address	Comment	Date
OGO MBA	[Signature]	W 62nd St LA 90302		3/28/24
Meredith Crook	[Signature]	231 W. Hillsdale St		3/26/24
USAGRENER	[Signature]	7 Kenton Rd		3/29/24
Yuriko Takehara	[Signature]	300ft Via Borica, R.I.V		3/29/24
Shizu Takayasu	[Signature]	11372 Waterford St LA CA 90046		3/29/24
Linda heyer	[Signature]	3105 Belm Ave MB		3/29/24
Pamela Higgins	[Signature]	4049 Olympial Dr, LA 90043	KEEP THEM TENNIS COURTS !!	3/29/24
Sheila KARANZ	[Signature]	1789 PINE AVE, MB		3/29/24
Leah Cole	[Signature]	2400 [unclear] Rd		4/8/24
Karen Simpson	[Signature]	2509 Coltrane Rd		4/8/24
Wyn Weber	[Signature]	1724 Pacific MB		4/8/24
Brenden Ottoboni	[Signature]	6140 Beckford St CA		4-8-24
Judy Facekas	[Signature]	14016 Boy Ave Way MARK CA 90292		4/8/24
Judy FRANCIS	[Signature]	528 N. 124th St MI		4/5/24
Holly Calhoun	[Signature]	30427 Markingwood Dr. Melbrie CA 90065		4/8/24

Printed Name	Signature	Address	Comment	Date
Coal Schwin		4 Debbie Ln 2HE	Absolutely Love Tennis	3/27
Kathleen Callahan		2609 Silver Spur Rd, RAV	NOTE Tennis! Tennis Cts are in demand. There are other pks open for us	3/27/24
YOLANDA SMITH		503 S. CLYMAR AVE		3/27/24
Kathy Fitzgerald		1203 10th St HB		3/27/24
Rachel King		26620 Neenah Pl NW		3/23/24
Celeste Torres		2915 190th Ave	Keep the courts	3/23/24
Maureen Soback		1532 Francis Blinn Ave		3/25/2024
Mildred Stewart		1342 Roycroft LB RPV.	tennis !!	3/25/24
AUSTIN		2012 Beechwood Dr. CA		4/8/24
JANIE CARREZA DE VACA		23503 SUSANA TORRANCE Euler for	TENNIS COURTS ARE IN DEMAND IN REDWOODS/TORRANCE	4/8/24
Reemishinomy		604 W Valley View RPV	Keep tennis going	4/17/24
KENNA BYNUM		6560 EODDINGHILL DR		4-7-24
Karen Ulmer		1722 The Strand HB CC	Keep Tennis	4-8-24
Adrienne Karina		540 via media PLE	Keep tennis	7-8-24
Rebecca Sommerstein		20 Hadden Valley R+H	Keep tennis	4-8-24

Printed Name	Signature	Address	Comment	Date
Samantha Kadava	[Signature]	1144 The Strand MB	NO PICKLE!	3/22/24
Kyresse Pasin	[Signature]	33 Moorland Dr. R.H.E	NO Pickleball!	3/22
Linda Bond	[Signature]	22 Harbor Sight Dr. RHE	No pickleball!	3/22
Diana De Cardena	[Signature]	228 N. Glenway Av. LA	No Pickle/LOW	3/22
Aja S. MUA	[Signature]	101 Ocean Ave #101 CANA CA	NO PICKLE	3/22/24
Melnie Meekin	[Signature]	23425 W. Moon Shadows Dr. 9072	NO PICKLE	3/22
Michele Quan	[Signature]	21510 Scannel Ave. Torrance	NO Pickle	3/22
Sherry Chaffin	[Signature]	118 N Hillcrest BL 90301 APT A	NO Pickleball	3/22
Elaine Chan	[Signature]	4556 W. 163rd Str Lawndale, CA	Need to keep tennis courts. No pickle!	3/22/24
Sue Bingham	[Signature]	3631 W. 226th Torrance CA	No Pickle	4/24/24
Chireka Azami	[Signature]	4 Hilltop Circle R.P.V.	No Pickle	3/29/24
Sandeel Daff	[Signature]	22402 Redbeam Tos, CA	" "	3/24/24
Maggie Vandi	[Signature]	2117 Ruklon AVIS	NO PICKLE	3/24/24
Mavin	[Signature]	2444 W. Willow Ave S	NO PICKLE	3/24/24
Bianca Penedel	[Signature]	2427 4th St SM	NO PICKLE	3/24/24
Lorna Kim	[Signature]	1009 Nile Per Dr LA CA	NO PICKLEBALL	3/24/24

Petition to Preserve Alta Vista Tennis Courts for Tennis

adding tennis for

<p>Petition summary and background</p>	<p>As members of the Alta Vista Tennis Center, we are concerned that conversion of Court 7 & 8 from 2 tennis courts to 8 pickleball courts would be extremely disruptive to the neighborhood environment based on noise and parking.</p> <ul style="list-style-type: none"> • Allowing 8 pickleball courts on Tennis Courts 7 & 8 at Alta Vista would be very disruptive to the environment. • California Commission of Parks and Recreation recommends 400 to 600 feet between the center of a pickleball court and the nearest residential property line. Torrance recently adopted 250 feet for new courts. Homes on South Juanita Street are 130 feet from the proposed pickleball courts. • 24 additional people on the court would result in at least 24 additional cars in the lot and a total of at least 48 cars (pre and post court changeover to new players on the hour). The Alta Vista parking lots can not currently handle the cars from the tennis courts, baseball games, soccer games, school activities, community garden and the dog park. Parking overflow with results in additional parking on South Juanita, Camino Real, Prospect and other streets. Increased need for handicap parking spaces will further reduce the number of spaces • We are requesting that the city consider other sites in Redondo Beach for pickleball.
<p>Action petitioned for</p>	<p>We, the undersigned, are concerned citizens who urge our leaders to act now to [Enter action item(s) for which you are petitioning]</p>

Printed Name	Signature	Address	Comment	Date
LARRY TOWNSE		22402 BEDDINGTON AVE TORRANCE CA 90505	No PICKLEBALL AT A.V.	3/24/24
ALAN FORTNER		38 ENCINO BLVD RHS CA 90274	No Pickleball	3/20/24
KATHRYN SCANDALATO		38 JANTZ CIRCLE RHS CA 90274	No Pickleball	3/29/2024
MELISSA VILLANAR		718 SHEPARD ST. SPANISH	No PICKLEBALL!	3/21/24
MIKI HEINONEN		3020 MITCHELLE DR. TORRANCE CA 90505	NO FB	4/10/24

Petition to Preserve Alta Vista Tennis Courts for Tennis

adding lines for

Petition summary and background

As members of the **Alta Vista Tennis Center**, we are concerned that ~~expansion~~ of Court 7 & 8 from 2 tennis courts to 8 pickleball courts would be extremely disruptive to the neighborhood environment based on noise and parking.

- Allowing 8 pickleball courts on Tennis Courts 7 & 8 at Alta Vista would be very disruptive to the environment.
- California Commission of Parks and Recreation recommends 400 to 600 feet between the center of a pickleball court and the nearest residential property line. Torrance recently adopted 250 feet for new courts. Homes on South Juanita Street are 130 feet from the proposed pickleball courts.
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Action petitioned for

We, the undersigned, are concerned citizens who urge our leaders to act now to
[Enter action item(s) for which you are petitioning]

Printed Name	Signature	Address	Comment	Date
Teresa Campbell		264 Vista del Parque, RB CA 90277	USTA would be impacted tremendously	3/22/24
David Chun		2214 N SCAMMEL BLVD Torrance 90503	talking tennis court spare	3/24/24
Kate Hendon		6001 Redondo Ave	fuck pickleball!	3/22/24
Benny St John		704 Woodlark RD	less tennis is better	3/24/24
Van Pham		5328 Weybridge Rd	Would impact USTA tennis first	3/24/24
R. D. W. W. W.		1735 Lincoln Ave #33 90501	Inhibit access to tennis / USTA.	3-24-24

Petition to Preserve Alta Vista Tennis Courts for Tennis

lining for

<p>Petition summary and background</p>	<p>As members of the Alta Vista Tennis Center, we are concerned that conversion of Court 7 & 8 from 2 tennis courts to 8 pickleball courts would be extremely disruptive to the neighborhood environment based on noise and parking.</p> <ul style="list-style-type: none"> • Allowing 8 pickleball courts on Tennis Courts 7 & 8 at Alta Vista would be very disruptive to the environment. • California Commission of Parks and Recreation recommends 400 to 600 feet between the center of a pickleball court and the nearest residential property line. Torrance recently adopted 250 feet for new courts. Homes on South Juanita Street are 130 feet from the proposed pickleball courts. • 24 additional people on the court would result in at least 24 additional cars in the lot and a total of at least 48 cars (pre and post court changeover to new players on the hour). The Alta Vista parking lots can not currently handle the cars from the tennis courts, baseball games, soccer games, school activities, community garden and the dog park. Parking overflow with results in additional parking on South Juanita, Camino Real, Prospect and other streets. Increased need for handicap parking spaces will further reduce the number of spaces • We are requesting that the city consider other sites in Redondo Beach for pickleball.
<p>Action petitioned for</p>	<p>We, the undersigned, are concerned citizens who urge our leaders to act now to [Enter action item(s) for which you are petitioning]</p>

Printed Name	Signature	Address	Comment	Date
Michael Zarnitza		3448 Frawood Ave Los Angeles CA 90064		4/3/24
David Lee		2208 Sublim Ave RB		4/3/24
Dennis Fernandez		1515 Sublim Ave RB 12 RB		4/3/24
Josh Greenbaum		201 Via Buena Ventura RB 90277		4/3/24
Ethan Waldman		8107 Delgony Ave Plunge del CA 90243		4/5/24
Jonathan Labatt		9377 N 51th Santa Monica CA 90405		4/5/24

Petition to Preserve Alta Vista Tennis Courts for Tennis

lining for

<p>Petition summary and background</p>	<p>As members of the Alta Vista Tennis Center, we are concerned that conversion of Court 7 & 8 from 2 tennis courts to 8 pickleball courts would be extremely disruptive to the neighborhood environment based on noise and parking.</p> <ul style="list-style-type: none"> • Allowing 8 pickleball courts on Tennis Courts 7 & 8 at Alta Vista would be very disruptive to the environment. • California Commission of Parks and Recreation recommends 400 to 600 feet between the center of a pickleball court and the nearest residential property line. Torrance recently adopted 250 feet for new courts. Homes on South Juanita Street are 130 feet from the proposed pickleball courts. • 24 additional people on the court would result in at least 24 additional cars in the lot and a total of at least 48 cars (pre and post court changeover to new players on the hour). The Alta Vista parking lots can not currently handle the cars from the tennis courts, baseball games, soccer games, school activities, community garden and the dog park. Parking overflow with results in additional parking on South Juanita, Camino Real, Prospect and other streets. Increased need for handicap parking spaces will further reduce the number of spaces • We are requesting that the city consider other sites in Redondo Beach for pickleball.
<p>Action petitioned for</p>	<p>We, the undersigned, are concerned citizens who urge our leaders to act now to [Enter action item(s) for which you are petitioning]</p>

Printed Name	Signature	Address	Comment	Date
JOHN LOO		4826 BLACKHORSE RD RPY 90226		3/27/24
Takuto Shamoto		15465 Gravellea Ave Redondo Beach, 90278		3/27/24
Open Long		8204 Buckhead Ave RB 90279		3/27/24
teacher/patron		8148 Redlands St Palmdale, CA 93550		3/27/24
Jimmy Barwick		12957 Bonaventure Ave, 90669		3/27/24
Johanna		3915 W 235 St		3/27/24

Petition to Preserve Alta Vista Tennis Courts for Tennis

lining for

Petition summary and background

As members of the **Alta Vista Tennis Center**, we are concerned that conversion of Court 7 & 8 from 2 tennis courts to 8 pickleball courts would be extremely disruptive to the neighborhood environment based on noise and parking.

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Action petitioned for:

We, the undersigned, are concerned citizens who urge our leaders to act now to [Enter action item(s) for which you are petitioning]

Printed Name	Signature	Address	Comment	Date
Savio Tran		21004 Washburn Blvd CA 90278		3/24/24
Hiroko Chao		688 Alta Vista Dr		3/24/24
Ed Varantip		4118 C. 187th St Torrance		3/24/24
Jie Gong		7101 Playa Vista Dr		3/24/24
Reiko Sasagawa		2511 Gates Ave RB		3/24/24
Randy Frasier		710 N. Lucia Ave RB		4/2/24

Petition to Preserve Alta Vista Tennis Courts for Tennis

adding lines for

Petition summary and background:

As members of the Alta Vista Tennis Center, we are concerned that conversion of Court 7 & 8 from 2 tennis courts to 8 pickleball courts would be extremely disruptive to the neighborhood environment based on noise and parking.

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Action petitioned for:

We, the undersigned, are concerned citizens who urge our leaders to act now to
[Enter action item(s) for which you are petitioning]

Printed Name	Signature	Address	Comment	Date
Jennifer Kim		6419 Rio Linda Dr. RPV	NOT HERE, PICKLE	3/24/24
TRAVIS LAM		16207 Van Ness Ave Tor	No Pickleball	
DENNIS FITZGERALD		1208 10TH AVE 11B	No Pickleball	
WIL CIRAC		407 S. JUANITA AVE RD 90277	NOT @ ALTA VISTA	↓
HOWARD JAMESON		2793 S. JUANITA AVE	No Pickleball	
DEFEK BELL		14502 Mildred Ave	DONT DESTROY TENNIS PICKLEBALL ANOTHER PARK!	4/16/24

Petition to Preserve Alta Vista Tennis Courts for Tennis

for
the lining

As members of the **Alta Vista Tennis Center**, we are concerned that conversion of Court 7 & 8 from 2 tennis courts to 8 pickleball courts would be extremely disruptive to the neighborhood environment based on noise and parking.

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We, the undersigned, are concerned citizens who urge our leaders to act now to
[Enter action item(s) for which you are petitioning]

Petition summary and background
Action petitioned for

Printed Name	Signature	Address	Comment	Date
Bonnie McMillon	<i>Bonnie McMillon</i>	14241 Spadra Ave, Redondo Beach, CA 90249	Need to preserve tennis courts	3/22/24
STEVEN EPERON	<i>Steven Eperon</i>	500 E 2nd St, Torrance, CA 90249	Tennis	3/23/24
Rebecca Chavez	<i>Rebecca Chavez</i>	306 Laurel Ave N.E. Torrance, CA 90249	TENNIS RULES	3/25/24
ALDIANUSKAS	<i>Aldianuskas</i>	32 WYMAN COURT Torrance, CA 90249	Tennis	3/25/24
NIKI NANCE	<i>Niki Nance</i>	500 2nd St Torrance, CA 90249	Tennis	3/27/24
KATHY BARBER	<i>Kathy Barber</i>	1902 Oceanfront Torrance, CA 90249	Tennis	3/27/24

Petition to Preserve Alta Vista Tennis Courts for Tennis

for adding lines

Petition summary and background

As members of the **Alta Vista Tennis Center**, we are concerned that **conversion** of Court 7 & 8 from 2 tennis courts to 8 pickleball courts would be extremely disruptive to the neighborhood environment based on noise and parking.

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Action petitioned for

We, the undersigned, are concerned citizens who urge our leaders to act now to [Enter action item(s) for which you are petitioning]

Printed Name	Signature	Address	Comment	Date
Tess Pugliese		317 Via Anita, RB 90277		3/22/24
Jeanette Lee		3101 Plaza del Arce Tor		3/22/24
Abigail Fectue		5850 Condon Ave 90056		3/22/24
Laura Del Beccaro		4409 Via Azulea PVE		3/22/24
Marianne Feld		1619 Golden Ave HB 90254		3/22/24
Chris Perez		3320 The Strand HO		3/22/24

Petition to Preserve Alta Vista Tennis Courts for Tennis

adding lines for

Petition summary and background

As members of the **Alta Vista Tennis Center**, we are concerned that conversion of Court 7 & 8 from 2 tennis courts to 8 pickleball courts would be extremely disruptive to the neighborhood environment based on noise and parking.

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Action petitioned for

We, the undersigned, are concerned citizens who urge our leaders to act now to [Enter action item(s) for which you are petitioning]

Printed Name	Signature	Address	Comment	Date
Sherry Davidowitz		977 Pasadenalucresita Ave	Love Tennis	3/22/24
Kathy Emerzian		512 21st St Huntington Blk	Love Tennis	3/22/24
Kim Young		5227 56th St Torrance	Tennis Center	3/22/24
Mauro Chavarin		1849 Ltaufeld Ave LB	Love tennis	3/22/24
Yumiko Tokiva		5318 E. 2nd St. #514 LB	Love Tennis	3/22/24
Yumi Yamamoto		6419 Seabryn Dr. RmV	Love Tennis	3/22/24

Printed Name	Signature	Address	Comment	Date
Mary Kay Myers Dyer		724 (97) Leola Redondo Beach, CA	Enough Pickle Ball courts around town	3/22/24
Kelly Evans		933 Galle Miramar Redondo Beach	AN is too small to take courts away	3/22/24
Debbie Hurvica		1844 266th St. Lynwood		3/25/2024
Michelle Lagidopoulos		1824 Valley Rose Ave LB CA 90254		3/25/24
Franz Hebert		610 Ave D AB, CA 90277		3/27/24
Beth Lager		1446 19th St AB, CA 90246		3/25/24
Roxanne Morrison		5700 Konyak St Torrance CA 90503	Courts are too impacted already to allow pickleball	3/27/24
Becky Amzimo		1603 Haywood Lane Redondo Beach, CA 90278		3/27/24
Glenn Ziperovich		857 Wynn CA 90278		3/27/24
Misty Law		517 Emerald St LB 90277	So limited on tennis courts already.	3/27/2024
Pam Mikoy		8675 Falmonth Ave Playa del Rey 90293		3/27/24
Becky Garber		4 Rowhide Ln. RHE CA 90274	We need tennis courts PB will take over	3/27/24
Gail Scott		326 Lane Point Long Beach, CA 90803	F for USTA and Non Member here	3/27/24

Printed Name	Signature	Address	Comment	Date
Ariana Marsaglia		374 Camino De US Redlands, CA 91241		3/26/2024
Erin Kulbe	Erin Kulbe	35 Palos Verdes Blvd # R.D. CA. 90717		3/24/2024
JANE WILSON		1716 CAMINO DE LA COSTA REDONDO BEACH, CA 90277		3/26/2024
Rosemary Stockside	Rosemary Stockside	2141 Via Pacheco Palos Verdes, CA 90274		3/26/2024
JERRY STOCKSIDE	Jerry Stockside	2141 Via Pacheco Palos Verdes, CA 90274		" " "
Robert McLean		217 Camino de las Colinas Redondo Beach, CA 90277		03/23/24
Wheaton Mills	JM Miller	1224 W. 27th St San Pedro, CA		3/27/24
Jane Mills	Jane Mills	1224 W. 27th St, San Pedro, CA 90731		3/27/24
Tanya Nies	Tanya Nies	814 N HANNA ST MB CA 90266		4/1/24
JAMES MAGUER	James Wagner	PO Box 41267 MB CA 90267		4/2/24
John Richard Fournier	John Richard Fournier	2341 Via Acalones P.V.E. CA. 90274		4/3/24
Barbara Hicks		2114 Via Pacheco Palos Verdes, CA 90274		4/13/24
Eiko Teraoka	Eiko Teraoka	2057 W. 23rd St. Torrance CA 90501		4/17/24
Eiko Teraoka	Eiko Teraoka			

Petition to Preserve Alta Vista Tennis Courts for Tennis

Petition summary and background

As members of the **Alta Vista Tennis Center**, we are concerned that conversion of Court 7 & 8 from 2 tennis courts to 8 pickleball courts would be extremely disruptive to the neighborhood environment based on noise and parking.

- Allowing 8 pickleball courts on Tennis Courts 7 & 8 at Alta Vista would be very disruptive to the environment.
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Action petitioned for

We, the undersigned, are concerned citizens who urge our leaders to act now to
[Enter action item(s) for which you are petitioning]

Printed Name	Signature	Address	Comment	Date
Stanley Unica	Stanley J. Unica	2411 257 st Street Comita		4/17/24
John Kaganovsk	[Signature]	16714 W 22nd St San Pedro		4/14/24
Gia Le	[Signature]	16691 Redondo St.		4/14/24
Kimberly Buchan	[Signature]	1151 N Linda Vista St Orange CA 92669		4/14/24
Jennifer La	[Signature]	1144 Bluff St Torrance		4/14/24
Vicky Trion	[Signature]	1506 6th St Santa Monica CA		4/14/24

Petition to Preserve Alta Vista Tennis Courts for Tennis

for
address listing

Petition summary and background

As members of the **Alta Vista Tennis Center**, we are concerned that ~~conversion~~ of Court 7 & 8 from 2 tennis courts to 8 pickleball courts would be extremely disruptive to the neighborhood environment based on noise and parking.

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Action petitioned for

We, the undersigned, are concerned citizens who urge our leaders to act now to
[Enter action item(s) for which you are petitioning]

Printed Name	Signature	Address	Comment	Date
Deborah Taylor	<i>Deborah Taylor</i>	647 So. Prospect Ave #24R	Pickleball is too loud.	3/26/2024
Jeanette Peter	<i>Jeanette Peter</i>	2917 Via Risum, PUE	not enough tennis courts available for league play	4/4/24
Rebecca Escandon	<i>Rebecca Escandon</i>	833 Windsor Dr. Altamira		4/7/24
Suzanne Ruffin	<i>Suzanne Ruffin</i>	12059 Cynst		4/7/24
Stephanie Engstrom	<i>Stephanie Engstrom</i>	2524 Via Anacapa Ave		4/7/24
Cheryl Warren	<i>Cheryl Warren</i>	2411 257th Street Lomita		4/7/24

Petition to Preserve Alta Vista Tennis Courts for Tennis

Petition summary and background

As members of the **Alta Vista Tennis Center**, we are concerned that conversion of Court 5 from a tennis court to 4 pickleball courts would be extremely disruptive to the playing environment.

- Allowing 4 pickleball courts on Tennis Court 5 at Alta Vista would be very disruptive to the playing environment
- 12 additional people on the court would result in 12 additional cars in the lot and a total of 24 cars (pre and post court changeover to new players on the hour)
- The current 8 tennis courts are fully booked during most hours of the day with a waiting list in the evening and weekends for reservations
- USTA and Marine League play would be impacted due to noise from 4 simultaneous matches on court 5
- The Alta Vista Tennis courts are the best surface in the South Bay, doesn't make sense to convert to pickleball
- We are requesting that the city consider other sites in Redondo Beach for pickleball

Action petitioned for

We, the undersigned, are concerned citizens who urge our leaders to act now to **[Enter action item(s) for which you are petitioning]** Do not convert Alta Vista Court to pickleball

Printed Name	Signature	Address	Comment	Date
Jonathan Frey	<i>Jonathan P. Frey</i>	Redondo Beach, CA 90277		2/2/2022
Heather Clare	<i>Heather Clare</i>	Redondo Beach	Don't take our courts	2/2/22
Jack Freese	<i>Jack Freese</i>	700 AVENUE B REDONDO BEACH CA 90277	ADD PICKLEBALL COURT DO NOT CONVERT ANY COURTS	2-2-22
Pedro Alipio	<i>Pedro Alipio</i>	902 CAMINO REAL #103 1512 FOX AVE Redondo Beach 90278		2/2/22
Yvette Ralph	<i>Yvette Ralph</i>	Redondo Beach, Ca 90279	There are not enough courts, we can't lose one	2/2/22
MARILYN HUGHES	<i>Marilyn Hughes</i>	TORRANCE, CA 90502		
YASU SHIMIZU	<i>Yasu Shimizu</i>			2/2/22

Alice Henderson
 No pickleball please 3/28/24
 alicehenderson@yahoo.com

Printed Name	Signature	Address	Comment	Date
Junpei Tomonaga	<i>[Signature]</i>	TORRANCE, CA 90504		2/2/22
Thomas Nelson	<i>[Signature]</i>	Manhattan Beach		2/2/22
HARWIN KAHN	<i>[Signature]</i>	Manhattan Beach		2/2/22
DEREK BEER	<i>[Signature]</i>	TORRANCE, CA 90503		2/2/22
MITSURU TASAZO	<i>[Signature]</i>	Harbor City		2/2/22
JAMES HART	<i>[Signature]</i>	1800 OAK ST TORRANCE CA 90501		2-2-22
JOHN LAMARCA	<i>[Signature]</i>	20910 NW 2A 90505		2-3-22
Chuck Hammer	<i>[Signature]</i>	221 Paseo De Suenos ^{BB} 90277	Please don't do this	2-3-22
DON SCARLETT	<i>[Signature]</i>	98524 10185 WILSONA LN TORRANCE	NO	2/3/22
SCOTT WEBB	<i>[Signature]</i>	24985 CROSSMAN, CA	No.	2/3/22
SARAH WOLKMAN	<i>[Signature]</i>	2410 Wilnut Ave		2/3/22
Jeanette Chun	<i>[Signature]</i>	1501 Pacific MB		2/3/22
Kathy Inouye	<i>[Signature]</i>	Manhattan Beach	No!	2/3/22
K. TRAZER	<i>[Signature]</i>	1120 Starling	No!	
ATMANSON	<i>[Signature]</i>	Manhattan	NO	2/3/22
F. Hevey	<i>[Signature]</i>	Manhattan beach	No	2/3/22

Printed Name	Signature	Address	Comment	Date
YASUKO NAKANO TO		622 FAYE LANE R.B		02/43/22
BRIAN CARROLL		4219 W 177th Street Torrance		02/03/22
Leroy Endo		1112 157th St HB		2/3/22
GERARD VALENTI		3734W 227 ST TORR		2/3/22
Eli Carr		2909 W. 166th Torrance RB		2/3/22
HEDI GRIMM		625 Camino Real RB		2/3/22
Patricia Jee		210 S Juarez RB		2/3/22
STEVE LUNDSEY		1902 GRANT AVE RB		2-3-22
Pete Soto		1639 Standish Ave RB		2/3/22
JOHN GREGORIAN		408 So. Lucia R.B		2/3/22
JULIAN LEE		551 AVE A, R.B, 90277		2/3/22
Kevin Goto		26935 Shorewood Rd R.P. 90275		2/3/22
John Chan		27029 Pickering Rd Torrance RB		2/3/22
BARRY JUNGQUIST		4161 VISTAMOUNTAIN RD TORRANCE 90505		2-3-22
Maurice Kogan		4216 Newton St. Torrance 90275		2-3-22
Gretchen Albano		2555 Manhattan Ave HB		2-3-22

Printed Name	Signature	Address	Comment	Date
gusto Virginia		1622 Arista Pl Pool Costa Mesa 92701		7/3, 2002
Ken Mann		870 Park Ave NE	Hell ND	4/3
Sally Lou		1207 Cypress Ave, HB 90254		12/3
Mindy Minkus		2056 Monterey HB 90254		2/3
Nadhe Trotter		1213 Beryl St. RD RB 90277		2/13/22
Tan Ulrich		527 Prospect HB		7/3
LAURE MAJOURINO		20615 CHARSHINE AV		7/3
Teruko Miyoshi		409 Lindero Avenue Pl.		2/3
Kenneth Lee		20843 Normanda Ave Torrey 90501		2/3/22
Kangik Lee		2300 Maple Ave. #35, Torrance, CA. 90503		2/5/22
Ricardo Soria		1717 DEED ST. REDONDO		2/3/22
Yung Yung Yung		835 Napuka	NOT on County 5	2/4/22
Yal Holman		470 Admiralty Way #18 M.O. 1.		
E DIXON		1711 HUNTINGTON LN		
E. ELIAS		2227 BILMORLY RD		2/4/22
LYNNE CARUS		24716 MARSHN STREET TORRANCE		2/4/22

Printed Name	Signature	Address	Comment	Date
CAROL KATZ		21345 HAWTHORNE BLVD #416, TORRANCE	DO NOT COMMENT TURNS COMMENTS-NOT!	2/4/22
WAGNER Turner		12617 Costa Dr. Hawthorne	Very Not this Park	2/4/22
Peggy Simon		5545 Kony Dr Torrance	very poor flwr	2/4/22
Ellen Morkesjohn		1708 Esplanada Dr Redondo Beach	at a great measure	
DIANE DAVIS		22309 SHADY CLEFT AVE TORRANCE, 90505	PLEASE NO	2/4/22
JOINT FAIR		131 PASO DE LAS DELICIAS	NO	2/4/22
Patty Erbo		1112 191 ST Hermosa		2/4/22
IMDIE YOUNG		3650 EURENARD DR	No Way	2/4/22
ROBERT GILL		2550 KCH #257 TOR	PLEASE DON'T	2/5/22
TIM HAUSER		1225 Guadalupe #1	u u	2/5/22
Ed Manning		3620 Spauld Torrance, CA	11 11	2/5/22
Lia Serpico		4802 M. M. PAV TORRANCE, CA		2/8/22
MATTHEW FARRAR		4025 P. D. C. TORRANCE, CA	NO PICKLE	2/9/22
Jackie Kern		5012 Willow Wood Rd RIFE, CA	There are not enough parks counts as 15!	2/10/22
Madison James		19307 VAN NESS AVE, TORRANCE, CA 90504		2/10/22
Fred James		18507 VAN NESS AVE TORRANCE CA 90504	No Pickle	2/10/22

Sent in

Printed Name	Signature	Address	Comment	Date
Robert Siuwan		1637 STANFORD AV R.B. CA		2/10/22
Ken Tang		1641 Stanford Av RB CA		2/10/22
LINDA COHN		1117 Forbes St RB		2/11/22
KIKKI SAMBANI		1205 HAVENWOOD ST MBS CA		2/11/22
Nichol Tortugas		4725 Teo Tortugas		2/12/22
MYRIAM GARDENAS M. Cameros		833 AVENUE A, RB		2/12/22
Jin Wen		720 S. Guadalupe Ave #1 RBS		2/12/22
Rex Claridge		2019 Pullman Ln, RB 90278	Considered pickleball courts outside busy tennis courts	2/12/22
Daniel Rodriguez		1211 Phelan Ln RB 90278	NO Pickle ball!	2/13/22
ANTHONY CHAVEZ		803 Meyer Ln 90278	NO	2/13/22
KEVIN NEDICE		1646 Cambridge Pk, Hayward CA 94510	NO	2/14/22
J Marc Gamblin		25421 Oak St #105	NO	2/17/22
BRIAN AGE		22726 SUSANA AVE TORRANCE CA 90505		2/17/22
Chip Weber		525 S. Cecilia Ave APT A RDN 90277	NO Pickleball	2/17/22
ERIN KATHY KEAR		417 Pico Miramar Redondo Beach 90277	NO	2/17/22
TANJAKAMPE		2080 Island Ave #1 Redondo Beach, CA 90277		02-17-22

Printed Name	Signature	Address	Comment	Date
KAREN CHAN	<i>Karen Chan</i>	1541 VANDERBILT AVE Manhattan Beach CA	No Pickle Ball	2/11/22
MASAO KATO	<i>Masao Kato</i>	1128 W 158TH GARDENA CA 90249	N/O	2/19/22
SHOTO SAHAI	<i>Shoto Sahai</i>	2184 EL DORADO ST Torrance 90501		2/19/22
Yoshihiro Akiwa	<i>Yoshihiro Akiwa</i>	220 the Village Redondo Redondo, CA 90577		2/19/22
Linda Jaklich garr	<i>Linda Jaklich</i>	1316 Stamford RB, CA 90278	No Pickle Ball	2/19/22
Igai Obaaka Reese	<i>Igai Obaaka Reese</i>	P.O. Box 159RB.		2/19/22
Adam David Silverman	<i>Adam David Silverman</i>	2401 Palms Vistas Blvd Torrance CA 90503	No pickleball	2/19/22
Karen Baur	<i>Karen Baur</i>	6901 S Sepulveda Westchester	Not on CT 5	2/28/22
Magye Vaughn	<i>Magye Vaughn</i>	2117 Euhione RB 90278	NO Pickle Ball	2/29/22
Virginia Massey	<i>Virginia Massey</i>	117 W 14th REVEREND GEMINI CA 90277	No Pickle Ball Please	2/28/22
Heidi Zieder	<i>Heidi Zieder</i>	312 Ave F Redondo Beach CA 90277		3/8/22
Chona Luna	<i>Chona Luna</i>	1776 Ingraham Ave Torrance CA 90501	NO PICKLEBALL	3/8/22
Jane C. Fox	<i>Jane C. Fox</i>	2166 (dory) ST Torrance, CA 90505	NO pickleball	3/10/22
BRIAN MASON	<i>Brian Mason</i>	22416 Burlington Torrance, CA	" "	3/15/22
Neriko Hongo	<i>Neriko Hongo</i>	2580 W 235th ST Torrance, CA 90505	" "	3/22/22

Printed Name	Signature	Address	Comment	Date
Chirki Maeda		3428 Manicopa st	No pickle ball	3/22/22
Franz Hichert		Redondo Beach	No pickle ball	3-22-22
JOR HEYMAN		TORRANCE	NO PICKLE BALL	3-25-22
Ken Bernstein		2115 USURRES AVE RB	'	3-29-22
Debra Lott		350 Pstos Vidas BLVD	No Pickle Pallever	3/30/22
James Lee		1519 W 27th St, ^{SAN} Pedro	No Pickleball (Ever)	3/7/24
Virginia King		721A Elvira Av RB	No Pickleball	3/7/24
Gwendolyn Brown		29033 Firstbridge	RPV No pickleball	3/13/24
Janette Kogon		4216 Newton, Tor	No Pickleball	"
Elizabeth Elotwitz		7806 Emerson Ave. ^{LA} 90045	No Pickleball	3/13/24
Tracy Burton		704 N.P.C.Hwy 1116 ^{RB} 90277	NO Pickelball	3/13/24
Gail Greenbaum		1031 23 rd St. MB. 90244	No Pickelball	3/13/24
SUSAN FRANCES		1010 SAKTOL AVE - DE	NO Pickleball	3/13/24
Mike Sartmes		1010 SAKTOL AVE - TOR	NO Pickleball	3/13/24
Sandy Nervi		2446 Glencoe Ave Venice ^{P.V}	No Pickleball	3/13/24
Jeanette Peter		2917 V.I.A River	NO Pickleball	3/13/24

Printed Name	Signature	Address	Comment	Date
Angela Landach		225 Via Reginal RB 90277		3/15/24
Jolanda Conley		28403 PLAINFIELD DR 90275		
Thomas Nielsen		1905 Clark Ln Apt. 2 90278		3/15/24
Curtis Reimer		424 Camino Real 90277	MORE TENNIS!	3/19/24
Vlad Sempik		5602 ROCKVIEW DR 90275	Not enough courts fight new	3/19/24
Yitue Kun		2000 PLAZA DEL AMO #121	Torn table	3/19/24
David Bloom		14527 Birmin Ave Torrance	Courts full every Day	3/19/24
Daniela Telio		4015 W 42 STREET 90277	Courts are full	3/19/24
Christa Pennington		4712 Jacques St Torrance	Noise!	3/20/24
GEORGE PENNINGTON		4712 JACQUES ST.	tennis is priority	3/20/24
ALEXANDRA BEZORAGA		Reelonde Beach	not enough courts	3/20/24
Math Scharns		404 Avenue C # 28	Too Loud not enough courts	3/20/24
Richard John		637 Via los Miradores RB	Invest for P.B. Courts Don't contribute Tennis	3/20/24
Michael Harold		857 1472 St, S M CA 90273	Build Pickle courts elsewhere	3/20/24
Sulham Patricia		2125 Lucerne Rb 90277	No Pickle ball	3/20/24
Eugeny Tsay		2700 W. 235 St # D Terrace, CA 90505	No Pickle ball!	3/20/24

Printed Name	Signature	Address	Comment	Date
Eitan Harel		525 Ave F HB	Don't take over courts	3/20/24
Alex Moon		2243 S Vermont Apt. 263	KEEP tennis courts	3/20/24
J. Katzman		"		3/29/24
Nirmal D. S.		RPV	Keep tennis courts	3/20/24
TANJA KAMPE		208 S. IRVING AVE RB		03-21-24
Lourdes Nuno		1200 Opal St.	Redondo Beach	03/21/24
Ricardo Sousa		1717 REED ST. REARDO	WE DON'T HAVE ENOUGH COURTS	03/21/24
ANGIE BRUNBEN		3650 Embarco	"	3/21/24
MICHAEL		500 GRIFFIN AVE	RB	3/21/24
Ed Manning		3620 Sperry St	LOS ONLY	3/22/24
Steve DeFofesi		408 Hopkins Ave HB	Only Tennis	3/22/24
Hadi Gymn		625 Camino Real RB	we need for Leagues	3-23-24
Michael Clark		618 Jura Ave RB	no pickle	3-25-24
Katjaauer		1242 11TH ST HB	BUILD SEPARATE	3/27/24
Kyoko Karakida		17014 Airswarth Ave To		3/24/24
PRAS CHAS		4219 W 17th Street for	WE ALREADY WOULD THIS!	3/26/24

Printed Name	Signature	Address	Comment	Date
Peter Seo		1639 Stanford Ave 30057 Avenida de la Vanguardia D.P.V.	NO PB "	3/26/24
Donald Buis		210 S Janta Ave		3/26/24
Fernando				3/26/24
Steve Linsey		1902 GRANT AVE		3-26-24
DAN XXXXXXXXXX		10380 WILSON AVE #1454	"	3/26/24
Daniel Rodriguez		1211 Phelan Ln 90278 ABCA	NO PB	3-26-24
Jaime Brey		1601 Linda Dr Torrance	NO PB	3-26-24
Philip Lau		1116 W. 216 St. Torrance	NO PB	3/26/24
Bob McKinney		24413 Neece Ave Torrance	NO PB	3/26/24
JON HEYMAN		82320 VILLAGESIDE PL TORRANCE	NO PB	3-26-24
Phil Hong		22002 Redburn Ave Torrance	NO PB	3/26/24
Tiffany Tran		6810 KORNBLUM AVE	NO PB	3/28/24
GERMAN VALDES		3734 W 227 St TORRANCE 90505	NO PB	3/28/24
BLIAS BLIAS		2207 BELMONT LN REVEREND, 90278	NO SB	3/28/24
Debbie Graves		7510 STEWART AVE	NO SB	3/28/24
Libby Carline		2718 W. 199TH ST Lawrence, CA 94600	NO PB	3/28/24

Petition to Preserve Alta Vista Tennis Courts for Tennis

<p>Petition summary and background</p>	<p>As members of the Alta Vista Tennis Center, we are concerned that conversion of Court 7 & 8 from 2 tennis courts to 8 pickleball courts would be extremely disruptive to the neighborhood environment based on noise and parking.</p> <ul style="list-style-type: none"> • Allowing 8 pickleball courts on Tennis Courts 7 & 8 at Alta Vista would be very disruptive to the environment. • California Commission of Parks and Recreation recommends 400 to 600 feet between the center of a pickleball court and the nearest residential property line. Torrance recently adopted 250 feet for new courts. Homes on South Juanita Street are 130 feet from the proposed pickleball courts. • 24 additional people on the court would result in at least 24 additional cars in the lot and a total of at least 48 cars (pre and post court changeover to new players on the hour). The Alta Vista parking lots can not currently handle the cars from the tennis courts, baseball games, soccer games, school activities, community garden and the dog park. Parking overflow with results in additional parking on South Juanita, Camino Real, Prospect and other streets. Increased need for handicap parking spaces will further reduce the number of spaces • We are requesting that the city consider other sites in Redondo Beach for pickleball.
<p>Action petitioned for</p>	<p>We, the undersigned, are concerned citizens who urge our leaders to act now to [Enter action item(s) for which you are petitioning]</p>

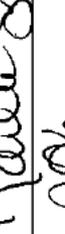
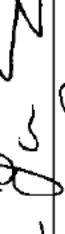
Printed Name	Signature	Address	Comment	Date
Jim Dares		426 N. Gate Street	NO!! PICKLE BALL	3/24/24
Robert Dias		227 S JUANITA		3/24/24
Ryan Long		525 Hermosa Ave	Pickle ball sucks	3/24/24
Ray Salomon		1000 N. California Ave	NO P.B.	3/24/24
Bailey Fox		805 Industrial Ave	NO PICKLEBALL	3/24/24
Steve Mires		104 N. Helberna #1	NO PICKLEBALL	3/24/24

Printed Name	Signature	Address	Comment	Date
Dante Ardite		#340 1736 Avonboro Blvd #340	No Pickleball	3/24/24
Kevin R Andrade		4452 W. 165th Rd, CA	—	3/24/24
Kiersten HARRISON		415 Heron St, Helena, CA 90254	NO Pickle Ball	3/24/24
Barbara Dreyer		3212 W 187th Pl Torrance 91961	—	3/24/24
Danny Astrais		134 9th Street	—	3/24/24
SEFF MOIR		230 Manhattan Ave	—	3/24/24
Mark Rigger		409 N. P.C. Hwy 1115	No Pickle Ball	3/24/24
Michele Trayer		5003 W. 118th St.	"	3/24/24
Stephanie Tuttle		1215 Potomac Ave Potomac	"	3/24/24
Kerstyn Tompkins		15223 S. Normandy Lane	"	3/24/24
Kwan Keshing		18216 Kynsde Ave	"	3/24/24
Zeb Coore		610 The Village	"	3/24/24
Anthony Allosano		2421 HARRIMAN LN	"	3/24/24
Dustin m Bohm		707 N. UNIT B	"	3/24/24
VICKI DUNN		210 Via Anata #377	No Pickleball	3/24/24
WESSADE		611 EL REDONDO.	No Pickle ball	3/24/24

Printed Name	Signature	Address	Comment	Date
Krista Clifton		575 74th St Ft. B. Ca	NO Pickleball	3/24/24
Matt Rees		449 30th St H.B.	NO Pickleball	3-24-24
MELANNA KINGHAM		941 3rd St Hermosa Beach	NO Pickleball	3-24-24
CHRIS HANDSAKER		120 S. Helbert Ave Redondo Beach	NO Pickleball	3-24-24
Eustimio Gomez		1000 N. Catalina Redondo Beach	NO Pickleball	3-24-24
Ricardo Torres		1000 N. Catalina RB	NO Pickleball	3-24-24
Jessica Hal		20001 Avenue toynance CA 90503	NO Pickleball	3/24/24
Kat Schwandt		15318 S FRANKLIN AVE. CAMPBELL, CA 95008	NO Pickleball	3/24/24
HENRY KUNZ		1118 S TRUENO AVE. INGLENWOOD CA 90304	NO Pickleball	3/24/24
Christine Klauer		1904 Clark Ln #3 Redondo Beach CA 90278	NO Pickleball	3/24/24
TIM KLAEER		1904 CLARK LANE #3 REDONDO BEACH CA 90278	NO Pickleball	3/24/24
MASON DUNN		5714 W. 145th ST HAVERTHORNE, CA 90250	NO PICKLEBALL	3/24/24
CJ HARRINGTON		1000 N CATALINA	NO PICKLEBALL	3/24/24
KRISTINA ANTHONY R. CH		2018 Perry Ave RB 90278	NO Pickleball	3/24/24
Glynis Bayle		346 Palms Vista Blvd	NO	3/24/24
Michael Larsen		346 Palms Vista Blvd #2	NO Pickleball	3/24/24
WAYNE QUINLEY		638 8th St. Hermosa	NO PICKLEBALL	3/24/24

Petition to Preserve Alta Vista Tennis Courts for Tennis

<p>Petition summary and background</p>	<p>As members of the Alta Vista Tennis Center, we are concerned that conversion of Court 5 from a tennis court to 4 pickleball courts would be extremely disruptive to the playing environment.</p> <ul style="list-style-type: none"> • Allowing 4 pickleball courts on Tennis Court 5 at Alta Vista would be very disruptive to the playing environment • 12 additional people on the court would result in 12 additional cars in the lot and a total of 24 cars (pre and post court changeover to new players on the hour) • The current 8 tennis courts are fully booked during most hours of the day with a waiting list in the evening and weekends for reservations • USTA and Marine League play would be impacted due to noise from 4 simultaneous matches on court 5 • The Alta Vista Tennis courts are the best surface in the South Bay, doesn't make sense to convert to pickleball • We are requesting that the city consider other sites in Redondo Beach for pickleball
<p>Action petitioned for</p>	<p>We, the undersigned, are concerned citizens who urge our leaders to act now to [Enter action item(s) for which you are petitioning]</p>

Printed Name	Signature	Address	Comment	Date
Katie Ranne		1147 3rd St., MB		3/18/24
Sandy Oeyh		428 Main Ave. MB		3/18/24
Judy Ch...		4826 Blackhawk Rd	Hard to get tennis court reservations already, even when getting on 9:30 am	3/18/24
Karelle Fredrick		223 13th St		3/18/24
Jenn Olson		1156 6th St. MB, CA		3/18/24
Laurie Estabrook		927 N Dianthus MB, CA		3/18/24
Brodie Zupperman		1829 Palmarke, MB		3/18/24

promise at 9:30 am and 8 in online so from 12 am after

Printed Name	Signature	Address	Comment	Date
Lindsay Ashcraft		400946 St MB		3/18/24
Jean Ruff		201 17th St MB 90278 R.B		3/18/24
Cindi Aiken		2908 Blossom Ln 32022 Estherville, IA Cindy Ruff		3/18/24
Jennifer Cross		166 38th St, MB 90266		3/18/24
Elizabeth Kiddell		544 2nd St, WBCA 90264		3/18/24
Sarah Arnold		1601 N. SEPULVEDA #1507 CA 90266 1601 N. SEPULVEDA #1507 CA 90266		3/18/24
Dandan (Vivian) Zhang		2929 190th St, Apt 126, Redondo Beach, CA 90278		3/18/24
Bernadette Stracimere		730 Esplanade CA 90271		3/18/24
Lanana Goldstein		1610 Marine ave MB- 90266		3/18/24
Barbara Bonesteele		28405 Ridgeblanca Ct RA, CA 90275		3/18/24
MARLO WESSTON		1145 6th St Normasby		3/18/24
Beth Rogers		4511 Sugarhill Dr. RHECA 90274		3/18/24
Louen Smith		2800 Van Ave. MB, CA 90274		3/18/24

Petition to Preserve Alta Vista Tennis Courts for Tennis

Petition summary and background

As members of the **Alta Vista Tennis Center**, we are concerned that conversion of Court 7 & 8 from 2 tennis courts to 8 pickleball courts would be extremely disruptive to the neighborhood environment based on noise and parking.

- Allowing 8 pickleball courts on Tennis Courts 7 & 8 at Alta Vista would be very disruptive to the environment.
- California Commission of Parks and Recreation recommends 400 to 600 feet between the center of a pickleball court and the nearest residential property line. Torrance recently adopted 250 feet for new courts. Homes on South Juanita Street are 130 feet from the proposed pickleball courts.
- 24 additional people on the court would result in at least 24 additional cars in the lot and a total of at least 48 cars (pre and post court changeover to new players on the hour). The Alta Vista parking lots can not currently handle the cars from the tennis courts, baseball games, soccer games, school activities, community garden and the dog park. Parking overflow with results in additional parking on South Juanita, Camino Real, Prospect and other streets. Increased need for handicap parking spaces will further reduce the number of spaces
- We are requesting that the city consider other sites in Redondo Beach for pickleball.

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[Enter action item(s) for which you are petitioning]

Printed Name	Signature	Address	Comment	Date
LAWRENCE TOKONAK	<i>Lawrence Tokonak</i>	1347 S. GREENWAY	ALTA VISTA TENNIS CENTER KEEP THEM 500' AWAY	3/18/24
Deb Ford	<i>Deb Ford</i>	138 E 139th St. L.A.	These courts are one haven for seniors	"
DIANE DAVIS	<i>Diane Davis</i>	22307 Shelycroft-Terrace	PLEASE TRIAL	"

Printed Name	Signature	Address	Comment	Date
LARK STAUDER	[Signature]	79 REYNOLDS LN. R.B. CA 90278		3/18/24
Juan D. Graeme	[Signature]	953 Stanford Santa Monica 90403		3/18/24
Takako Kato	[Signature]	22704 N. Main Cir. Unit B Torrance CA 90575		3/18/24
Karen Barry	KAREN BARRY	6701 S Sepulveda St Westchester CA 90078		3/18/24
Ruedemann, Gabriela	[Signature]	P.O. Box 1595 RB. CA 90078		3/18/24
Ewa Gajewska	[Signature]	2216 Via Fernandez PkE		3/18/24
Scotty Turner	[Signature]	3143 W 43rd Pl. LA 90008		3/18/24
Maggie [unclear]	[Signature]	5865 Kende Dr. Torrance 90503		3/18/24
BETH ROBERTSON	[Signature]	2319 Vista Dr, 1018 Torrance CA 90506		3/18/24
Evelyn Gossett	[Signature]	1020 E 10th St Riverside CA		3/18/24
Anita Cole	[Signature]	44 Sankelation Dr Riverside CA		3/18/24
Ingrid Flores	[Signature]	6373 W. 89th St. LA 90047		3/18/24
Flora [unclear]	[Signature]	3125 Brentwood Rd Brentwood CA		3/18/24
the day	[Signature]	Peter [unclear]		3/18/24
Mina Jorgensen	[Signature]	5750 Summit Dr. R.P.V. CA		3/18/24
Deborah Morris	[Signature]	22130 Alhambra Ave # 90278 B, RB		3/18/24

Petition to Preserve Alta Vista Tennis Courts for Tennis

Petition summary and background

As members of the **Alta Vista Tennis Center**, we are concerned that conversion of Court 5 from a tennis court to 4 pickleball courts would be extremely disruptive to the playing environment.

- Allowing 4 pickleball courts on Tennis Court 5 at Alta Vista would be very disruptive to the playing environment
- 12 additional people on the court would result in 12 additional cars in the lot and a total of 24 cars (pre and post court changeover to new players on the hour)
- The current 8 tennis courts are fully booked during most hours of the day with a waiting list in the evening and weekends for reservations
- USTA and Marine League play would be impacted due to noise from 4 simultaneous matches on court 5
- The Alta Vista Tennis courts are the best surface in the South Bay, doesn't make sense to convert to pickleball
- We are requesting that the city consider other sites in Redondo Beach for pickleball

Action petitioned for

We, the undersigned, are concerned citizens who urge our leaders to act now to
[Enter action item(s) for which you are petitioning]

Printed Name	Signature	Address	Comment	Date
Mary Jane Crofton	<i>Mary Jane Crofton</i>	618 W May 16 Ave 90245 El Segundo, CA		3/15/24
Fred J Crofton	<i>Fred J Crofton</i>	6018 W May 16 Ave El Segundo, CA 90245		3/16/24
KARIN PROELL	<i>Karin Proell</i>	400 ILLINOIS ST EL SEGUNDO 90245		3/14/24
Sharon Kiernan	<i>Sharon Kiernan</i>	208 36TH ST MB 90266		3/16/24
Carol Bender-Gilman	<i>Carol Bender-Gilman</i>	584 36th St, MB 90266		3-16-24
Shane Bell	<i>Shane Bell</i>	9117 National Blvd #7		3-16-24
Vivien Flittan	<i>Vivien Flittan</i>	1649 Weddeley Dr. San Mateo CA 94405		3-16-24

Coaches + Parents

Petition to Preserve Alta Vista Tennis Courts for Tennis

Petition summary and background

As members of the **Alta Vista Tennis Center**, we are concerned that conversion of Court 7 & 8 from 2 tennis courts to 8 pickleball courts would be extremely disruptive to the neighborhood environment based on noise and parking.

- Allowing 8 pickleball courts on Tennis Courts 7 & 8 at Alta Vista would be very disruptive to the environment.
- 24 additional people on the court would result in at least 24 additional cars in the lot and a total of at least 48 cars (pre and post court changeover to new players on the hour). The Alta Vista parking lots can not currently handle the cars from the tennis courts, baseball games, soccer games, school activities, community garden and the dog park. Parking overflow with results in additional parking on South Juanita, Camino Real, Prospect and other streets. Increased need for handicap parking spaces will further reduce the number of spaces.
- We are requesting that the city consider other sites in Redondo Beach for pickleball.
- California Commission of Parks and Recreation recommends 400 to 600 feet between the center of a pickleball court and the nearest residential property line. Torrance recently adopted 250 feet for new courts. Homes on South Juanita Street are 130 feet from the proposed pickleball courts.

Action petitioned for

We, the undersigned, are concerned citizens who urge our leaders to act now to
[Enter action item(s) for which you are petitioning]

Printed Name	Signature	Address	Email address	Date
Jeff Rene			jeff.ren.K007xxx@gmail.com	3/25/24
Renee Dandah			dandahrene@gmail.com	3/25/24
Diane Rayos		23370 Western Ave. Unit D Haw. City, CA 90710	DRayos6@Outlook.com	3/25/24
Melanie Reynolds		2501 Ernest Ave Redondo City 90710	MReynolds@deckingpros.com	3/25/24
Hanna Abdelsayed		280 Via Linda Vista Redondo Beach 90277	hanna.abdelsayed@gmail.com	3/25/24
Emerald Mandelbaum		1705 Haynes RB 90278	emeraldmandelbaum@hotmail.com	3/20/24
Elda Lugo		910 Espanade Redondo Beach CA 90277	elda.lugoci@cloud.com	3/20/24
Sue Armstrong		616 S. Treant Ave	S.A.Armstrong@verizon.net	4/5/24

Parents + Coaches

Petition to Preserve Alta Vista Tennis Courts for Tennis

Petition summary and background

As members of the Alta Vista Tennis Center, we are concerned that conversion of Court 7 & 8 from 2 tennis courts to 8 pickleball courts would be extremely disruptive to the neighborhood environment based on noise and parking.

- Allowing 8 pickleball courts on Tennis Courts 7 & 8 at Alta Vista would be very disruptive to the environment.
- 24 additional people on the court would result in at least 24 additional cars in the lot and a total of at least 48 cars (pre and post court changeover to new players on the hour). The Alta Vista parking lots can not currently handle the cars from the tennis courts, baseball games, soccer games, school activities, community garden and the dog park. Parking overflow with results in additional parking on South Juanita, Camino Real, Prospect and other streets. Increased need for handicap parking spaces will further reduce the number of spaces.
- Dual striping courts prohibits league play for USTA and Marine League
- We are requesting that the city consider other sites in Redondo Beach for pickleball.
- California Commission of Parks and Recreation recommends 400 to 600 feet between the center of a pickleball court and the nearest residential property line. Torrance recently adopted 250 feet for new courts. Homes on South Juanita Street are 130 feet from the proposed pickleball courts.

Action petitioned for

We, the undersigned, are concerned citizens who urge our leaders to act now to
[Enter action item(s) for which you are petitioning]

Printed Name	Signature	Address	Comment (Email)	Date
SCOTT KAESTNER		2407 Carnegie LA		3/24/24
Mart Mawnder		104 S Prospect Ave		3/24/24
Julienne Mawnder		104 S Prospect Ave		3/24/24
Katie Frank		1304 Portola Ave.		3/24/24
Bennie Marnier		2415 Harriman vr		3/24/24
Tiffani Pnier		519 Prospect Ave		03/24/24
DON MARTINEZ		205 AVE H		3/24/24

[REDACTED]

From: Ken Bernstein [REDACTED]
Sent: Friday, July 12, 2024 12:00 PM
To: James Light <james.light@redondo.org>; Scott Behrendt <Scott.Behrendt@redondo.org>; Nils Nehrenheim Council Member Redondo Beach <nils@voteformils.org>; Todd Loewenstein <Todd.Loewenstein@redondo.org>; Paige Kaluderovic <Paige.Kaluderovic@redondo.org>; Zein Obagi <Zein.Obagi@redondo.org>; Eleanor Manzano <Eleanor.Manzano@redondo.org>
Cc: Mike Witzansky <Mike.Witzansky@redondo.org>; Eleanor Manzano <Eleanor.Manzano@redondo.org>; Michael Webb <Michael.Webb@redondo.org>; Cameron Harding <Cameron.Harding@redondo.org>
Subject: Blue Folder 2 July 16 City Council Meeting Agenda # N1

CAUTION: Email is from an external source; Stop, Look, and Think before opening attachments or links.

Hi Ms. Manzano,

Can you please put in blue folder for July 16 City Council Meeting Agenda # N1 Alta Vista Pickleball.

Thanks.

Ken Bernstein

NEXT WITH KYLE CLARK

Raising a racket: Pickleball noise divides neighbors and players

Pickleball is rising in popularity and courts are packed in cities across Colorado, but neighbors' noise complaints could limit the sport's growth.

Author: Steve Staeger

Published: 8:07 PM MDT March 30, 2023

Updated: 10:22 PM MDT April 2, 2023

DENVER — Denver Parks and Recreation will remove pickleball from Congress Park starting next week and is abandoning plans to build a pickleball court at Sloan's Lake Park over concerns about the game's noise.

It's the latest move to deal with noise problems related to the burgeoning sport since the city council in Centennial passed a six-month moratorium on new builds of outdoor courts in that city.

The move comes after neighbors near the Congress Park court complained to the city about violations of the city's noise ordinance. An inspector found sound levels relating to pickleball at over **70 decibels** in some residential locations near the court, according to records obtained by 9NEWS. City ordinance only **allows for 55 decibels**.

"Clearly at these homes along this site....it is violating the noise ordinance," Denver Parks and Recreation Deputy Director Scott Gilmore said.

The court planned for Sloan's Lake Park is only about 100 feet away from homes, Gilmore said. **He said the current guidance he's gotten from researching sound abatement found pickleball courts need to be 500 feet or further away from homes.**

The Congress Park court and surrounding tennis courts were already slated to close for a maintenance project on April 3, which includes abatement of

asbestos in the concrete. Denver Parks and Recreation originally planned to move the pickleball courts away from homes along Detroit Street and further into the park but abandoned that plan after researching the noise issue.

9NEWS obtained some of the complaints about the park. Neighbors complained about parking, trash, players having door dash and alcohol delivered to adjacent homes and noise as well.

“It has taken my true joy of living on the park away as now the noise and continuous congestion has become a true nuisance to my family and me,” one neighbor wrote in a complaint to 311.

“I am saddened to write you today that the noise emanating from pickleball played in this beloved park has become illegally loud, unhealthy — and simply untenable,” another neighbor wrote.

Betsy Rumely, who lives further down the block, told 9NEWS the sound has made it unpleasant to sit in her backyard. **The sound inspector found the pickleball noise near her home violated the ordinance.**

“I really love the idea of pickleball and people getting together and having fun and creating community, but it’s very hard to live near it,” Rumely said. “I wish there were more things where people would get together and have fun and create community. It’s just this is the wrong place for it.”

The complaints reached Gilmore.

“It would be irresponsible for me to bring back pickleball to this park, but let’s find the right park to put pickleball so pickleballers would have their own space,” he said.

More than 1,400 people belong to the Congress Park Pickleball Club on Facebook. The group’s chairman, Marc Nelson, said people come from all over the metro area to play on the small court.

“This is a new thing that’s kind of sprouted out since the pandemic and these courts were here,” Nelson said.

Nelson said the large group tries to police itself, once banning someone who consistently parked illegally in the alley next to the court.

“We have some boisterous pickleball players... we try [to tell them] ‘Hey, remember our neighbors.’”

He said the small court has created a community of people who love the sport and bond over it.

“Pickleball is legitimately the fastest growing sport,” Nelson said. “If the continual rate of growth continues...by 2040 there will be 40 million people playing pickleball which will surpass any sport in the US.”

Nelson acknowledges the game is loud and said his club has even offered to crowdfund for sound barriers to ease the noise to the nearby neighbors.

“The paddles that we use are carbon fiber and the ball it just has a 71-decibel sound, where the minimum level’s like 61,” he said. “So, it is a little bit of a pop to it.”

“I get constant updates from my watch that I’m in a loud environment,” he said.

Nelson said the issues at Congress Park show the demand for a bigger pickleball facility.

I would love a facility somewhere where there’s parking and what not,” he said.

At the time 9NEWS spoke to Nelson, the announcement about the permanent closure hadn’t been made. He argued the noise level, while above the city ordinance, is not unlike an ambulance or other noise that’s part of city life.

“There’s good and bad for everything,” he said. “There’s 80 people getting exercise and building the community and getting to know each other and living in the world we want to live in instead of 80 strangers not doing anything.”

Nelson said the group will still play and continue to push the city to create more options.

Gilmore said he isn’t shutting the door on pickleball altogether. He said Burns Park near the intersection of Colorado Boulevard and Alameda Avenue would be one option. The city is also looking at another park in the Central Park neighborhood. He said these parks would solely be for pickleball facilities.

Gilmore is also forming a Pickleball Advisory Committee made up of players and neighbors near courts to work through potential problems.

A blow to our local economy': Americans say the 'POP-POP' of pickleball is vexing enough to drive down property values. Here are the hidden costs of America's fastest-growing sport

From "see you on the court" to "see you in court."



By Bethan Moorcraft Nov. 03, 2023

POP-POP-POP! Anyone who has played or been near a pickleball court will be oh so familiar with that repetitive (and for some, extremely irritating) sound.

Pickleball has enjoyed a meteoric rise in popularity in recent years. According to the [Association of Pickleball Professionals \(APP\)](#), 48.3 million adult Americans — nearly 19% of the total adult population — played pickleball at least once between March 2022 and 2023.

The paddle sport — which combines elements of tennis, badminton and ping-pong — has worked wonders for Americans looking for an inexpensive, low-impact way to exercise and be social. But for some, the hype around the nation's fastest growing sport is turning sour.

Pickleball has sparked a string of ugly legal disputes, mostly revolving around noise complaints over the jarring noise of the sport.

"The noise isn't just grating — it's altering our way of life," wrote San Francisco socialite Holly Peterson in a petition on Change.org (which has since been removed) to shut down the pickleball courts in her upscale Presidio Heights neighborhood. "This isn't just a hit to homeowners; it's a blow to our local economy."

Like anything that explodes in popularity, it's likely pickleball is experiencing some growing pains. Whether you're a die-hard "pickler" or not, there are some hidden costs of the sport you may want to consider.

Property values in a pickle

When Peterson slammed the sport in a petition obtained by the [New York Post](#), she wrote: “The endless racket threatens the fragile ecosystem and our community’s prestige.”

The venture capitalist’s wife allegedly claimed the sport — with its constant “pop-pop” — is damaging home values within a 500-foot radius of pickleball courts, with prospective buyers “deterred by the unyielding noise.”

It turns out Peterson has since been called out online for hypocrisy after it was revealed she was trying to sell her \$36 million mansion in the area — which allegedly features its own outdoor pickleball court.

There’s no hard evidence pickleball is damaging property values although there have been plenty of lawsuits against [homeowners associations](#), cities and counties complaining about the noise.

Jaye Gleyzal took her HOA in Sea Cliff, Carlsbad to court — attempting to ban pickleball from the community tennis courts and get \$300,000 in damages for the distress she has experienced from the noise, according to a [KBPS report](#).

“I would get these splitting headaches,” Gleyzal told KBPS. “And then, my blood pressure started going up, and this was the only consistent irritation in my life.”

Her lawyer Nicholas Caplin said his firm has handled multiple disputes through the state of California and “obtained outright bans on pickleball” as well as “money damages.”

With legal disputes and your property value potentially at stake, homeowners may want to think twice before installing a pickleball court in the backyard.

As pickleball grows in popularity, noise complaints are also on the rise

A group of neighbors have sued their town over noise complaints.

By [Anneke Ball](#), [Ashley Riegle](#), [Siobhan O'Driscoll](#), [Elizabeth Mendez](#), and [Ivan Pereira](#)

August 23, 2023, 12:32 PM

[Pickleball](#) has become one of the biggest sport trends in the last few years, but for some people, it has not been fun and games.

Some have gone to court in an attempt to end the racket that they say has been keeping them up at night, and causing other inconveniences.

"It's like a machine gun with a never-ending barrel of ammunition tied to its gun," Ernie Barrows, a mechanic from Mashpee, Massachusetts, who has complained about pickleball courts to his town council, told "Nightline."

he sport, which can be played indoors or outdoors, is similar to tennis. However, it has a smaller court size, and uses ping-pong paddles instead of rackets and a plastic ball.

Pickleball has been around for decades, but it has gotten more popular in recent years with almost 10 million players, a 6 million jump from a year ago, according to USA Pickleball, the sport's national governing body.

It has spawned professional leagues, with teams owned by big celebrities, tournaments that award millions in prizes, and more.

Thomas Wilson, a major league pickleball player, told "Nightline" the pick up and play aspects are a major draw for people.

"Anyone can play together. I mean, I'm a top pickleball player in the world and I train with my parents, they are in their sixties," he said.

But with that fun has come some complaints, particularly from the sound made by the ball vibrating against the hard paddle in a small space, making constant "pops."

Barrows said he moved to Mashpee for its quiet environment but after eight paddleball courts went up near his home in 2018, he claims he's been bombarded with noise all of the time.

He took his complaints to a recent town hall select board meeting and got into a back-and-forth with the pickleball players over his request to shut down the courts.

"I have Parkinson's disease. It's hard for me to express how important Mashpee pickleball has been to my physical and mental health," a resident said at the meeting.

"I'm not fighting you. I'm not denying the fact that pickleball is a great sport and has affected you...but there are other avenues to play pickleball around here this is not it," Barrows responded.

The Mashpee pickleball courts were briefly closed on Sundays in July while the town assessed the situation, but pickleballers argued the game was following local rules.

On Aug. 7, the town's select board then voted to reopen the courts on Sundays.

In the nearby town of Falmouth, residents who said they were inconvenienced by pickleball went even further.

Rob Mastroianni, his wife Stephanie and four of their neighbors ultimately decided to file a lawsuit against the town's zoning board of appeals in January of 2022. They allege the "injurious and obnoxious noise levels" violated local rules... forced them "to wear noise canceling headphones".... and caused anxiety that contributed to "sleepless nights."

"We decided we had enough," Mastroianni told "Nightline." "And we were all very reluctant participants in this."

The town manager declined to comment about the pending litigation.

Mastroianni told "Nightline" he bought his own equipment to test the "pop" noises after the courts were erected in 2020, while other plaintiffs have recorded the noise from their bedroom windows.

He has started a Facebook group and been in conversation with others who have been inconvenienced by pickleball to raise their voices.

The Falmouth courts were closed after a judge granted Mastroianni and the plaintiffs a preliminary , but he said he and his family had enough and moved out of their home of 20 years.

"I would like to see pickleball thrive and grow responsibly [but] I can't drive down my street without my blood pressure going up with my heart rate racing," he said.

BUSINESS INSIDER

November 21, 2023

Marianne Guenot

The noise from pickleball courts is driving everyone crazy. Scientists are trying to come up with a solution.

Plink! Plink! Plink!"

At first, the noise of pickleball seems fairly inoffensive. But as the sport continues to rise in popularity, bolstered by tech elites and one-percenters, it has left a slew of noise complaints in its wake.

Local residents have called the police and filed lawsuits.

Some councils and park officials have banned the sport locally.

One couple in British Columbia even went on a hunger strike, claiming they had suffered from insomnia, auditory hallucinations, and heart flutters since pickleball games had intensified in their neighborhood, per the Washington Post.

Now, scientists are looking into everything from acoustic fabrics to court spacing in a bid to come up with a solution.

Why is pickleball noise so annoying?

Pickleball had 8.9 million players in the US 2022, 158.6% growth over three years, per a Sports & Fitness Industry Association (SFIA) report.

The US has more than 50,000 courts, but the SFIA estimates about another 25,700 will be needed to meet player's demands.

That means more courts are being built near residential areas — something which has become a source of tension.

People have compared the sound of pickleball to a pistol range, torture, and even hell, The New York Times reported. Sue-Ellen Welfonder, a best-selling romance novelist told The Times she'd made pickleball-loving characters "really nasty people" in her new book after the game ruined her visit to her local park.

Pickleball whacks are loud — they have been registered to reach 85 decibels, though games usually peak at about 70 decibels or about as noisy as a vacuum cleaner or a freeway. But that's not loud enough to damage the ears, professor Nicole Laffan told Northeastern Global News.

"Real pain" happens at around 120 to 140 decibels, Laffan said.

"Pickleball is nowhere near that."

The sound's irksome nature likely comes down more to its pitch than its volume, scientists said.

Kausik Sarkar, a professor at George Washington University, studied pickleball strikes for network WUSA9. He found the plastic ball makes

a mid-frequency noise when it hits the paddle. A tennis ball, by comparison, will make a lower-frequency thud.

Mid-frequency sounds are easier for humans to pick up, American University audio technology professor Braxton Boren told WUSA9, so they will "actually sound louder than the same amount of sound pressure at a very low frequency or at a very high frequency."

Another issue is that the soundscape associated with pickleball is very unpredictable. The sport is played on smaller courts than tennis, which means that players are quickly exchanging balls. Sports complexes can also pack more players into their facilities, which means more celebratory cries.

"Things like pickleball, things that are more impulsive with unpredictable spikes where there will be some noise and then some silence and then some noise, that almost continues jarring your attention," said Boren, per WUSA9.

The industry is scrambling to find solutions

One way to solve the problem is with careful city planning, said pickleball aficionado and Carnegie Mellon University professor Bob Unetich.

The engineer founded Pickleball Sound Mitigation LLC, a firm that specializes exclusively in the sport, per The Hustle.

For Unetich, courts more than 977 feet away shouldn't pose much of a problem to residents. He estimates that only a few hundred courts in the US are below that barrier.

"Towns are often doing this without any regard to sound because they haven't thought about it," Unetich said, per The Hustle.

But with demand for the sport increasing, finding spots that are far enough away may become trickier, he said.

Sound barriers can reduce the sound of the game by 10 to 15 decibels, but they are costly, at about \$50,000 each, per The Hustle.

Another way to dampen the sport is by changing the gear.

The national governing body for the sport, USA Pickleball, has been "making considerable investments" over the past 15 months to find high-tech solutions to pickleball's noise problem.

The organization has been working with acoustic experts to identify acoustic fabrics and panels that could help reduce the noise made by the kit.

Last Tuesday, it announced the certification of the first product in its newly launched "quiet category," which aims to reduce the game's acoustic footprint by "50% or less."

The OWL paddle delivers a lower frequency whack, USA Pickleball said in a press release, peaking at 600 hertz, and a decibel level below 80.

"For comparison, industry-standard pickleball paddles register 1,100-1,200 hertz and a near-harmful decibel range of 85+ when striking a ball," per the statement.

The organization hopes the "quiet category" could soon "encompass a wide range of products, including paddles, balls, paddle covers, and noise mitigation screens for pickleball courts," the statement.

USA Pickleball is also compiling a list of acoustic experts trained to help dampen the noise of the game, per Axios.

Carl Schmits, managing director of equipment standards and facilities development for USA Pickleball, told Axios news that experts were at first "concerned that the technology required to reduce the acoustic signature [of pickleball] would significantly change the nature of the sport."

At the moment products like the OWL paddle are only approved for recreational use. Whether or not they will be embraced at an elite level will be the ultimate test of their success.

Glendale City Council unanimously votes to ban pickleball on tennis courts

The ordinance prohibits people from bringing pickleball nets to tennis courts, marking up courts or shoveling snow off courts.

[Rob Harris](#)

Posted at 8:24 PM, Sep 05, 2023

and last updated 8:58 PM, Sep 05, 2023

GLENDALE, Colo. — Glendale City Council unanimously voted Tuesday to ban people from playing pickleball on tennis courts.

The vote follows the closure of the tennis courts at Infinity Park this summer. According to the city, pickleball players caused \$100,000-worth of damage to the surface of the court.

The ordinance prohibits people from bringing pickleball nets to tennis courts, marking up courts or shoveling snow off courts.

Dan Schlager, who plays both pickleball and tennis and played often at Infinity Park, said he never saw his fellow players mistreating the court and is disappointed the city is taking these steps.

"You know, you're not ticketing soccer players who are playing on the field that was designed for rugby originally," Schlager said, adding that the courts were often "empty" before pickleball players started using them.

As the city restricts pickleball players from using designated tennis courts, it is constructing dedicated pickleball courts at Glendale Park,

formerly Mir Park. Four courts will be installed in the project, which is slated to be completed this fall.

People won't have to bring their nets. They won't have to place any lines. They'll just have to bring their paddles and their balls," said City Manager Chuck Line of the new courts. "And because of that, we want to be able to preserve the tennis players in our community."

Schlager said he is glad the city is investing in new courts, but wonders why Glendale Park was selected for pickleball and Infinity Park for tennis. The courts at Glendale Park will be surrounded by housing, he pointed out, and could be disturbed by the noise of the sport.

Several other communities in the Denver metro have been met with a deluge of noise complaints from homeowners near pickleball courts.

"Here [at Infinity Park], it's a really busy corner. There's no housing. And, you probably could fit six pickleball courts," Schlager said.

Ultimately, he hopes his fellow tennis players and fellow pickleball players will be able to play each on courts throughout Glendale and Colorado.

"Pickleball is just exploding all over the country. People are really enjoying it," he said. "It's Colorado. Like, we should be the leader. Denver should be the leader in all of these things that are recreation oriented. It's a great outdoor city, as opposed to kind of going the other way that discourages this kind of activity."

Hello neighbor!

We are writing to inform you that there is a push in City Council to use taxpayer dollars to convert 2 Alta Vista tennis courts into 8 **dual use** pickleball courts. As a resident and/or homeowner on South Juanita Avenue, this affects you greatly in the following ways:

- 1) **Noise:** The Redondo Beach Noise Regulation Ordinance around Alta Vista Park limits maximum permissible sound to 50 decibels. The sound a SINGLE plastic pickleball make when hitting a hard plastic pickleball paddle registers at about 70 - **85** decibels. Much like ping pong balls, pickle balls make a higher pitched, rapidly repetitive annoying sound. And, because Alta Vista Park is shaped like an amphitheater, any noise in the park will be amplified up to us residents with large park facing decks. Any noise mitigating structure that they try to build will need to be built above our roofline. Noise mitigation only works in communities on flat land. **Can you let me know where you got that from**
- 2) **Noise cont'd:** The California Commission of Parks and Recreation recommends 400 to 600 feet between the center of a pickleball courts and the nearest residential property line. Torrance recently adopted **is considering 250 down from 500** for new courts. Homes on South Juanita are 130 feet from the proposed pickle ball courts.
- 3) **Property value:** My family invested in the Alta Vista neighborhood because we knew we were buying into a great neighborhood where our home values would continue to increase. Living directly across the street from pickleball courts is a nonstarter for some buyers and experts **can you let me know where you got this opinion** say could reduce our property values during negotiation by 10-20%.
- 4) **Traffic and congestion:** 24 **32** additional people on the court would result in at least 24 **32** additional cars in the lot and a total of at least 48 cars (pre and post court changeover to new players on the hour). The Alta Vista lots can not currently handle the cars from tennis courts, baseball games, soccer games, school activities, community garden and the dog park. Parking overflow will result in additional parking on South Juanita and neighboring streets.

WHAT CAN YOU DO?

- 1) **SIGN THE PETITION:** Myself or several tennis players from Alta Vista will be stopping by some time in the coming days with a petition to City Council to ask them to consider other sites for pickleball. Please sign it.
- 2) **WRITE TO THE MAYOR AND CITY COUNCIL MEMBERS:** Please reach out to the RB Mayor and all 5 City Council members to express your concern and opposition. Feel free to use the information and verbiage I've outlined above.

Jim Light, Mayor	james.light@redondo.org	310-697-3653
Nils Nehrenheim, Council Member	nils.nehrenheim@redondo.org	310-318-0689
Todd Loewenstein, Council Member	todd.loewenstein@redondo.org	310-318-0679
Paige Kaluderovic, Council Member	paige.kaluderovic@redondo.org	310-697-3819
Zein Obagi Jr, Council Member	zein.obagi@redondo.org	310-318-0693
Scott Behrendt, Council Member	scott.behrendt@redondo.org	310-310-0669

- 3) **ATTEND CITY COUNCIL MEETINGS OVER THE NEXT FEW WEEKS AND VOICE YOUR CONCERN:** Council Meetings are held on the first, second and third Tuesdays of every month beginning 6:00pm in the Council Chambers at 415 Diamond Street. The first half hour of every meeting is open to community concerns and is an opportunity for anyone to speak. Pickleball players from neighboring cities have been attending in large numbers. If you can attend any or all meetings to speak we would greatly appreciate it. The next meetings are:

April 2

April 9

April 16

May 7 (final decision on pickle ball courts at Alta Vista will be officially on the agenda at this meeting)

Thank you in advance for your help!

Sincerely,

Concerned neighbors and tennis players of Alta Vista Park (reach us at altavistaneighborhoodresidents@gmail.com)

IS NOISE THE BIGGEST OBSTACLE TO GROWTH FOR PICKLEBALL?

[Strategy & Technique](#) **Stacie Townsend** 06-12-2023

One of the biggest obstacles to the growth of the sport of pickleball is the noise that results when a paddle hits a pickleball. Although most pickleball players may love to hear that sound, neighbors of the courts do not always agree (and have even sparked litigation and disputes, pitting neighbor against neighbor).

The sound of a pickleball hitting a paddle reaches a decibel level of 70 dBA when measured 100 feet away from the court. This is higher than tennis (at 40 dBA), city noise (at 55 dBA), and a whisper (at 25 dBA). But, this is lower than a vacuum cleaner (at 75 dBA). However, what may be more striking than the decibel level, **is the frequency**. Pickleball has a high pitch, with a frequency of about 1.2k Hz, which is similar to the beeping noise that a reversing garbage truck makes. The garbage truck is intended to be loud and “annoying” in order to catch your attention on the roads. So, this “annoying frequency” is an issue for pickleball.

One pickleball player—Bob Unetich—is trying to solve this problem. Unetich is a retired engineer and pickleball advocate, who founded Pickleball Sound Mitigation LLC to study the noise issues around pickleball and to advise communities, municipalities, and others on how to best resolve the sound. His advice that he provides to these groups ([according to The Hustle](#)) is to **“Do whatever you can to ensure that the average sound emanating from the court to the nearest homes is 50 dBA or less.”**

The primary way to keep the decibel level down is through distance. According to Unetich, most people do not complain about the sound if they are **at least 500 feet from** the pickleball courts. However, distance requires careful development planning and is becoming more difficult as the sport expands to more densely populated areas (for instance, when pickleball expands to Europe, how will the neighbors in a densely populated city like London react to the sound?). Other solutions include sound barriers, but those are quite expensive. Unetich is also pushing for noise-reducing materials to be used in the construction of paddles and balls and for USA Pickleball to work on a noise-friendly certification.

Ways to reduce the noise of pickleball will solve and prevent neighbor disputes. Plus, noise reduction will open new areas and opportunities for court development. The noise has been a barrier to court construction and the more we can remove these barriers—just as Unetich and his Pickleball Sound Mitigation company are working to do—the more opportunities the sport of pickleball will have to flourish.

KPBS

Homeowners are increasingly taking legal action over pickleball racket

By [Scott Rodd](#) / Investigative Reporter

Contributors: [Jacob Aere](#) / General Assignment Reporter

Published September 5, 2023 at 5:00 AM PDT

Jaye Gleyzal moved to the Sea Cliff gated community in Carlsbad six years ago.

She enjoyed exploring its many walking paths and listening to the gentle buzz of busy hummingbirds on her patio.

But that idyllic tranquility didn't last.

Two years ago, they started pickleball," she said with an exhausted laugh. "Oh my God, it changed my life overnight."

Even if you haven't played pickleball, you've probably heard about it from a fanatical uncle or roommate who says you've just got to try it. The game is similar to tennis, but it's played with paddles and a hard plastic ball.

The Sea Cliff Homeowners Association painted pickleball lines on one of the community tennis courts, which is about 60 feet from Gleyzal's bedroom window.

The sound — "*POP, POP, POP,*" as she describes it — is a nuisance that's frayed her last nerve. Unlike tennis, where players rally a fuzzy ball across an 80-foot court, pickleball involves rapid-fire points exchanged at the net.

"It can be up to eight hours a day, seven days a week," she said.

Pickleball is the [fastest growing sport](#) in America. According to many who live near courts, it's also one of the loudest. People in the San Diego region and across the country are increasingly taking legal action to resolve pickleball noise disputes. There's now a cottage industry of attorneys and consultants ready to jump in, and in some cases, pickleball has been banned outright in specific locations.

After Gleyzal wrestled with the Sea Cliff HOA for years, and after mediation didn't yield an acceptable compromise, she took the HOA to court.

She recognizes a lawsuit is an extreme step – one she didn't anticipate at the dispute's outset – but she argues the sound is more than just an annoyance. Gleyzal works from home in the evenings and tries to sleep during the day, but the endless *pop-pop*-ing often keeps her awake. If games are still going by the time she starts work, Gleyzal has to wear noise canceling headphones to focus. On days off, she'll often leave the house to escape the din.

She claims the noise has even started affecting her health.

"I would get these splitting headaches," she said. "And then, my blood pressure started going up, and this was the only consistent irritation in my life."

Her lawsuit aims to ban pickleball from the community tennis courts and seeks \$300,000 in damages for the distress she's experienced.

A representative for the homeowners association declined an interview request, and no players were on the court to offer comment on the day KPBS visited the community. That's a rare occurrence, according to Gleyzal.

Bring in the lawyers and consultants

Nicholas Caplin didn't plan on specializing in pickleball disputes when he decided to go to law school.

"I thought I was going to be a big corporate transactional lawyer sealing mergers and acquisitions," he said.

Turns out, poring over contracts wasn't Caplin's thing. He liked advocating for clients, and real estate law was the perfect venue for him. His rise in the field – he's now a partner at the law firm Lubin Pham + Caplin – happened to

coincide with the exploding popularity, and attendant frustrations, of pickleball.

“I’m glad to be doing what I’m doing, but I certainly didn’t envision it when I graduated law school,” he said with a smirk.

While pickleball may be fun and games for players, it’s serious business for Caplin. At a recent afternoon meeting with his client Gleyzal, he showed up sporting a powder blue suit, pocket square and Persol designer sunglasses. His attire and jet-black Cadillac combine to exude big lawyer energy.

Caplin said his firm has handled more than 25 cases related to pickleball disputes.

“From Sacramento down to Chula Vista ... Orange County, Los Angeles County, San Francisco County – I could go on and on,” he said.

Some of his clients have taken on homeowners associations, while others challenged cities and counties that allowed pickleball in public parks near their homes.

Some cases go to court, according to Caplin, but most are settled through mediation or arbitration.

“We have obtained outright bans on pickleball, we’ve obtained money damages,” he said. “In certain circumstances, homeowners are amenable to (sound) mitigation measures.”

Caplin insists he has nothing against the sport. It gets people active and is accessible for players of all ages, especially older generations. All good things, in his opinion.

“But what I do believe is that it shouldn’t infringe on somebody else’s rights,” he said.

Assessing sound and annoyance can be subjective, so homeowners often seek out acoustical engineering professionals to get a scientific measure of the noise produced by nearby pickleball courts.

Lance Willis is among the top engineers in this small but burgeoning niche of acoustics consulting. His Tucson-based firm, Spendiarian & Willis Acoustics &

Noise Control, has handled about 80 pickleball noise consultations since 2010.

Some consultations are tied to legal disputes, while others are commissioned by cities and counties where pickleball is a contentious issue. One recent [assessment](#) of pickleball noise for the city of Centennial, Colorado totalled nearly 80 pages.

“It's really a matter of finding that balance between people doing the things that they want to do, but also not overly impacting the people around them,” Willis said.

He explained that pickleball noise can be irritating for neighbors because of its “impulsive” nature. In lay terms, that means it’s a sharp sound that can pierce even high levels of ambient noise.

That’s why it’s so hard to mitigate the sound of a pickleball court after it’s been built, he said, and one reason why converting tennis courts for pickleball use stirs up controversy over noise. Not to mention, it also causes friction between the two sports. In San Diego, a [heated turf war](#) between tennis and pickleball players over court space even led to the police being dispatched.

Typical sound-masking techniques, like having a court next to a busy roadway, are not very effective for pickleball. Sound barriers like walls or fence covers can help, but their impact is limited. There’s also a [push to develop](#) balls and paddles that produce less noise, but Willis’s research has found the equipment doesn’t make a big difference.

The best way to mitigate the sound of a pickleball court, according to Willis, is to start thinking about noise abatement before the court is constructed. The firm’s research suggests noise mitigation measures — such as lowering the courts several feet into the ground and constructing sound barriers — are needed for most courts within 350 feet of homes. Extensive sound mitigation is often required for homes within 150 feet, and the firm discourages courts within 100 feet of residences.

Willis cautioned that pickleball noise can tear neighborhoods apart.

“It is kind of sad to watch in some situations, because I have seen it divide communities right down the middle,” he said. “And it's something that we would like to avoid happening if we could.”

Finding common ground

At Gershwin Park in San Diego, a group of pickleball players are trying to find common ground with neighbors to avoid that kind of division.

On a recent Tuesday morning, more than a dozen players gathered on the park's tennis court, which has been divided into four pickleball courts. Folding canvas chairs lined the fence, where players taking a break cheered and kibitzed their fellow picklers.

Bob Schaible, a retired school teacher, has lived in the neighborhood for more than two decades and plays pickleball here most mornings. But he acknowledges the sport is a source of tension.

"We try to be as respectful as possible," Schaible said. "Beyond that, I don't know that there's an easy solution."

In recent weeks and months, some frustrated neighbors have filed noise complaints with the city's Parks and Recreation Department. For now, the city gives priority to pickleball in the morning and then tennis later in the day — though it's unclear if that will placate homeowners within earshot.

Anna Wolf, another longtime resident in the neighborhood who plays at Gershwin Park, said her group abides by the hours established by the city. She also tells fellow players to park on the side of the street adjacent to the park, in order to minimize congestion near houses.

But she acknowledges the tensions may persist, because she and other players don't plan on relocating.

"Pickleball is just growing every day," she said. "I love enjoying our park. It's great to see everyone out and playing and enjoying themselves."

Schaible said the long-term answer may be found in embracing the sport's exploding popularity.

"As the city develops more public courts ... it will lessen the impact on individual neighborhoods like this one," he said.

He argues more places to serve, slice and dink means spreading out the noise, and hopefully keeping pickleball on the playing courts – and out of the court of law.

[Pickleball](#), a racquet-based sport that combines elements of tennis, badminton and ping-pong, is one of the [fastest-growing](#) sports in the United States. It can be played indoors or outdoors, and the courts and nets are smaller than their tennis counterparts. Using a paddle and a plastic ball with holes, the sport can be played either as a singles or a doubles game. Pickleball first found popularity among active adults and retirees as a less physically demanding alternative to tennis, but today the sport is enjoyed by all ages and skill levels.

While playing pickleball offers health and other benefits, it also has impacts that need to be considered and mitigated. The major negative impact associated with pickleball is noise. When the hard surface of the pickleball racket connects with the hard surface of the ball, sound waves vibrate rapidly, registering a decibel level of around 70 dBA at 100 feet from the court. (In comparison, tennis noise is closer to 40 dBA.)

This article by Mark Dent features Bob Unetich, a retired engineer, university professor, and founder of [Pickleball Sound Mitigation LLC](#). He has become a go-to source for information in the pickleball wars, studying everything from paddles to the placement of courts. When Unetich has discussions with clients, he gives a primary piece of advice: Do whatever you can to ensure that the average sound emanating from the court to the nearest homes is 50 dBA or less.

According to Unetich's studies and experience, residents of suburban areas generally do not complain about that noise level, which is a few decibels above typical suburban background noise. In noisier city environments, Unetich has proposed a maximum noise limit of 3 dBA above the background sound. Getting down to 50 dBA is possible with planning. Data from one of Unetich's papers estimates that even in a wide-open space the sound of pickleball will likely be tolerable to people living at a distance of 977 feet or farther from a court, and anecdotally he has rarely heard complaints from people living more than roughly 500 feet away.

Community Council Members Informed of Pickleball Noise: Private Citizen Cannot Collect Fees

Posted on [June 1, 2023](#) by [Sue](#)



Pickleball USA did a sound analysis on Courts 7 & 8 and said there was no way to mitigate the noise.

Joe Halper, who was a member of the Los Angeles Recreation and Parks Board of Commissioners (RAP) for almost five years and is now the Pacific Palisades Community Council Parks Advisor, spoke at the meeting on May 25.

He acknowledged the community interest in pickleball and gave a brief background of the action at the Palisades Recreation Center regarding the sport that sprang up during Covid.

The staff at the Palisades Recreation Center had initially requested approval to line tennis court 7 for pickleball. RAP Commissioners approved the request with the condition that the site be in keeping with LAMC sound ordinances.

“The services of an acoustical engineer were secured as a courtesy from Pickleball USA,” Halper said. “The results of the analysis of the sound engineer were that it would be impractical to attempt to mitigate the sound of pickleball play at that location due to the terrain issues involved.

“The adjacent homes to the park on Alma Real are at a height above the tennis courts that would require a 17-foot-high sound absorbing or deflecting wall to shield the noise at that location to mitigate the noise of pickleball play,” Halper said.

5 Responses to *Community Council Members Informed of Pickleball Noise: Private Citizen Cannot Collect Fees*



Paula H Deats says:

June 4, 2023 at 6:57 pm

Good “note”, editor! You WOULD find the ideal solution.



Helen Meisel says:

June 4, 2023 at 7:50 pm

Your suggestion to use the Paul Revere courts seems reasonable. The lack of senior safety response is laughable. I’m sure there are many pickleball players that could afford to help repair the courts.



Linda R Friar says:

June 4, 2023 at 8:05 pm

Pickleball players appear to be using courts 7 and 8. For the last two weeks, weekend tennis players have noticed blue tape, which is used to mark pickleball courts, in the trash on both courts. Today, there were two pickleballs left in the area. Is this allowed? Your article seems to confirm that pickleball has not been approved for either court.



Linda R Friar says:

June 4, 2023 at 8:08 pm

For the last two weeks, weekend tennis players have noticed blue tape, which is used to mark pickleball courts, in the trash on both courts 7 and 8. Today, there were two pickleballs left in the area. Is this allowed? Your article seems to confirm that pickleball has not been approved for either court.

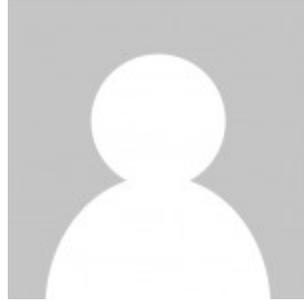


Wharfplank says:

June 5, 2023 at 7:00 am

Sounds like the park needs a pickle ball building...maybe a soft top roof on Knee walls?

Pickleball's Popularity Precipitates HOA Protests, Problems and Polarity



Published On - [October 9, 2023](#)
[admin](#) [Conflict Resolution](#), [HOA](#), [Litigation](#), [Mediation](#), [Pickleball](#)

By Brendan Ford, Founding Partner

Are you on team pickleball, or do you find its rapid rise noisy? With 36.5 million players nationwide, it's clear that pickleball is making a racket in the sports world. As HOAs introduce courts to cater to this trend, they also navigate challenges, from spirited debates to legal disputes. This underscores the need for HOAs to up their game in understanding pickleball and strategize to address players' needs, homeowners' rights and associations' obligations.

Pickleball Wars Intensify

At Ford & Duilio, the most common pickleball issues we have seen HOAs grapple with include safety concerns and noise. With pickleball's ever-growing participation, the risk of injury increases significantly, becoming a concern with HOAs. Additionally, pickleball generates pronouncedly more noise than tennis, which becomes a disruption with locals and legality problems with HOAs.

Safety concerns. People of all ages play pickleball, and it's become the nation's fastest-growing sport. But with this increased activity comes increased risks of injuries. According to a recent UBS Group AG report, pickleball injuries may cost Americans \$377 million in health care costs this year, accounting for 5% to 10% of unexpected medical expenses.

When individuals are injured on HOA property, there is always the risk that a lawsuit may follow, alleging a dangerous condition, negligent upkeep, or other premises liability theories. This risk increases if the alleged injury occurs due to a fellow homeowner's actions or inactions on the pickleball court.

Noise nuisance. By far, the most common complaint with HOA is noise. There are a few reasons why pickleball is noisier than tennis.

- **The materials used to make the ball and paddles.** Pickleball balls are made of plastic, while tennis balls are made of felt. The plastic pickleball ball makes a louder sound when it hits the paddle than the felt tennis ball. Moreover, pickleball paddles are made of wood or graphite, while tennis rackets are made of strings; this means that pickleball paddles produce a louder noise when hit
- **The size of the court.** Pickleball courts are smaller than tennis courts. This means that the ball is hit more often and with more force, which can create more noise. Furthermore, pickleball games often host four people on the court, whereas tennis matches only house two. This means more people are on each court, causing more human noise.
- **The speed of the game.** Pickleball is a faster-paced game than tennis. This means that the ball is hit more often and with more force, which can create more noise.
- **The environment.** The environment of the court can also affect the noise level of pickleball. For example, the sound will be amplified if the court is near a wall or other hard surface. The loudest sound produced hundreds of times during a pickleball match is inherently louder than those of sports like tennis or basketball.

“We hear the ball hit the paddle from inside our homes all day long, 8 a.m. to 8:30 p.m. I want to stress that it’s all day, nonstop,” said Katie Pazan, a resident of a luxury townhome community within earshot of the Goleta Valley Community Center.

Goleta, home of UC Santa Barbara, has been embroiled in a legal battle for months over the future of pickleball on a 27-year-old tennis court at the Goleta Valley Community Center in the city’s old town district.

Last year, the center asked the City Council to greenlight a plan to convert the tennis court into four pickleball courts, permanently resurface and paint the playing surface, install fixed net posts, and replace damaged fencing. The city owns the outdoor facility, but the nonprofit center has leased it for years and said it would pay for the upgrades.

During several hours of public meetings, local officials read and heard testimonials from hundreds of pickleball fans who support the project and a handful of nearby residents who consider it a nuisance.

Legal claims against municipalities in California and across the country have forced similar resolutions because volume levels associated with pickleball violate noise restriction ordinances for residential areas. As one resident said, the claims often result in “really ugly neighborhood [drama](#),” but people who live near the courts typically win out. Here are but a few examples of recent lawsuits involving pickleball courts. In these legal proceedings, and dozens more like them, people claim that allowing pickleball violates local municipal codes, HOA rules, or condominium associations’ rules:

- In 2022, a couple in **Scottsdale, Arizona**, sued their HOA after the HOA converted a nearby tennis court into two pickleball courts. The couple claimed that the noise from the pickleball courts made it difficult to enjoy their backyard and that the HOA had yet to consult them about the decision to convert the tennis court.
- In 2021, a homeowner in **San Diego, California**, sued his HOA after being fined for playing pickleball on the community’s tennis courts after hours. The homeowner argued that the HOA’s noise restrictions were unreasonable and that he was not disturbing any of his neighbors.
- In 2020, a group of homeowners in **Austin, Texas**, sued their HOA after the HOA approved a plan to build a pickleball court in the community’s common area. The homeowners argued that the pickleball court would increase noise levels and traffic in the community.

- In 2022, a couple in **Rancho Mirage, California**, sued their HOA after the HOA converted a nearby tennis court into two pickleball courts. The couple claimed that the noise from the pickleball courts made it difficult to enjoy their backyard and that the HOA had yet to consult them about the decision to convert the tennis court.
- In 2021, a homeowner in **La Jolla, California**, sued his HOA after being fined for playing pickleball on the community's tennis courts after hours. The homeowner argued that the HOA's noise restrictions were unreasonable and that he was not disturbing any of his neighbors.
- In 2020, a group of homeowners in **Corona Del Mar, California**, sued their HOA after the HOA approved a plan to build a pickleball court in the community's common area. The homeowners argued that the pickleball court would increase noise levels and traffic in the community.
- In a lawsuit against **Newport Beach, California**, a Corona del Mar woman claimed the sounds of people playing pickleball 100 yards from her home caused her "severe mental suffering, frustration and anxiety."
- A **South Carolina** couple filed suit against a country club near their home, alleging that late-night pickleball games caused "unreasonable interference with" their "enjoyment of their property."

These are just a few examples of the many lawsuits that have been filed involving pickleball and HOAs. As the popularity of pickleball continues to grow, we will likely see more of these lawsuits in the future.

Pickleball wars: Long Beach park to get sound panels after noise complaints



by [Alicia Robinson](#) Aug 26, 2023

Next week, Long Beach is set to install sound-muffling panels at a park in Bixby Knolls. The reason? Everyone's favorite sport: pickleball.

The panels are the city's solution to complaints from residents near Somerset Park that dozens of pickleball players are showing up at the park every day, generating hours of noise they can hear even with their windows closed.

At a City Council meeting last month, resident Sean Charles told city leaders he's tried earplugs and noise-canceling headphones to no avail; the action on the pickleball courts is about the same piercing volume as a garbage truck's back-up beeping.

Plus, Charles said, the players take up all the street parking and sometimes park illegally, and their large gatherings overwhelm the small neighborhood park to the point that residents can't use it.

"Don't put pickleball close to homes. Don't put it in a park that doesn't have a parking lot," he said.

Anti-pickleball sentiment hasn't quite reached the fever pitch here that it has in other communities, where some residents have [filed lawsuits](#) over the noise (one article [describes a consulting business](#) formed exclusively to reduce pickleball noise).

But Long Beach officials are taking the complaints from around Somerset Park seriously.

“From what we understand, the sport of pickleball is noisier than the sport of tennis,” and because the play area is smaller, one tennis court can hold up to 16 people playing pickleball, Parks, Recreation and Marine Department Director Brent Dennis said in a July interview.

Dennis has met with the Somerset Park neighbors several times, he said, and “a lot of their challenges really are about the numbers of people coming there.”

The city has already adjusted the park lights to turn off at 9 p.m. instead of an hour later, and the sound panels should go in starting Wednesday, Aug. 30. Officials are also considering painting some curb sections red to deter people from blocking residents’ driveways.

While Dennis said in July that Marina Vista Park also was being considered for sound panels, his assistant said in an email this week that there is not currently funding to install the panels at any other parks.

Councilmember Kristina Duggan, whose district includes Marina Vista, said she hasn’t gotten any complaints about noise, and in fact, the city may add more tennis courts so the park’s existing courts can be reserved for pickleball.

Dennis said this fall the city will build dedicated pickleball courts at DeForest and Veterans parks, and Recreation Park is slated to get up to a dozen pickleball courts next to the Billie Jean King Tennis Center.

1. REALTOR® Magazine
2. Real Estate News

Homeowners' Growing Ire: Pickleball

March 14, 2022

Residential Real Estate

Pickleball courts are popping up across the country, but homeowners who live near these courts increasingly have a complaint: They're too noisy.

The sport has been growing more popular across the country. But the smacking of balls on courts about one-fourth the size of a tennis court is prompting backlash in communities—and even some lawsuits.

In one lawsuit in Newport Beach, Calif., a woman alleges that the noise from a pickleball court 100 yards from her home is causing “severe mental suffering, frustration, and anxiety.” In another lawsuit, in South Carolina, a couple alleges that late-night pickleball games at courts near their home are causing them less enjoyment of their home.

Homeowners are emerging successful in a dozen legal proceedings that claim pickleball is violating noise ordinances or homeowner or condo association rules, the *Los Angeles Times* reports.

Nearby homeowners also are starting to step in when they hear pickleball courts are to be built near their properties, prompting some lively city council debates across the country.

Noise complaints with pickleball are resulting in “really ugly neighborhood drama,” Nicholas Caplin, a founding partner at Lubin Pham & Caplin in Irvine, Calif., told the *Los Angeles Times*.

Researchers have found the sound of a pickleball paddle hitting a ball can be more than 25 decibels louder than the equivalent action in a tennis match.

“Pickleball may not appear to produce high levels of acoustical energy, but it does,” Lance Willis, principal acoustical engineer at Spendiarian & Willis Acoustics & Noise Control in Tuscon, Ariz., told the *Los Angeles Times*. “It is not equivalent to tennis or basketball or a lot of the other common activities that you hear at parks. It really has a higher noise impact.”

Nevertheless, pickleball’s popularity is increasing among young and old Americans alike. About 4.8 million people played pickleball at least once in the U.S. in 2020, a nearly 40% increase compared to two years prior, according to the USA Pickleball Association.

Skechers Deepens Pickleball Focus With New Sponsorship Deals in England

The deal marks the company's latest investment in the fast-growing sport.

BY [SHOSHY CIMENT](#)

JULY 10, 2023 10:19 AM

[Skechers](#) is leaning more deeply into [pickleball](#) with a new partnership with Pickleball England. The comfort-focused footwear brand has been named the official footwear sponsor for the 2023 English Open and English Nationals Pickleball Tournaments.

The announcement marks [Skechers](#)' latest investment in the [fast-growing sport](#). Skechers was previously named the official footwear sponsor of the US Open Pickleball Championships and the Carvana Professional Pickleball Association tour, starting in the 2023 season. Skechers also became the footwear sponsor for the Pickleball Canada National Championship in May and has sponsored Major League Pickleball and the Association of Pickleball Players.

With the launch of Skechers Viper Court in 2022, Skechers has fast become the leading pickleball footwear brand in the United States, and we're looking to repeat that success in the UK," said Richard Parker, managing director for Skechers in the UK and Ireland. "Now as the sport is rapidly growing in the country, it's time for players here to experience the advantage of Skechers pickleball footwear designed specifically for comfort and performance on the court." Skechers last year signed [Tyson McGuffin](#) and Catherine Parenteau, its first two pickleball athletes in the U.S. and Canada. The brand first introduced its Viper Court pickleball footwear at the US Open Pickleball Championships in Florida in April 2022.

Pickleball England's English Open will take place between August 3 and 6 at the Telford International Centre in Shropshire. The English Nationals will happen between October 26 and 29 at the Bolton Arena in Greater Manchester.

"Skechers currently sponsors major elite professional pickleball tours in the United States and in Canada, so it's fantastic to have their support for our biggest events over here," said chair and co-founding director of Pickleball England Karen Mitchell in a statement. "We can't wait to work together to reach new audiences and help more people fall in love with this incredible sport and Skechers footwear."

As pickleball gains momentum, other brands like Fila, K-Swiss and Alice + Olivia have also looked to capitalize on the growth with pickleball capsules, product launches and sponsorship deals.

Why Are Your Pickleball Courts Receiving Complaints from Neighbors?

by [Lance Willis](#)

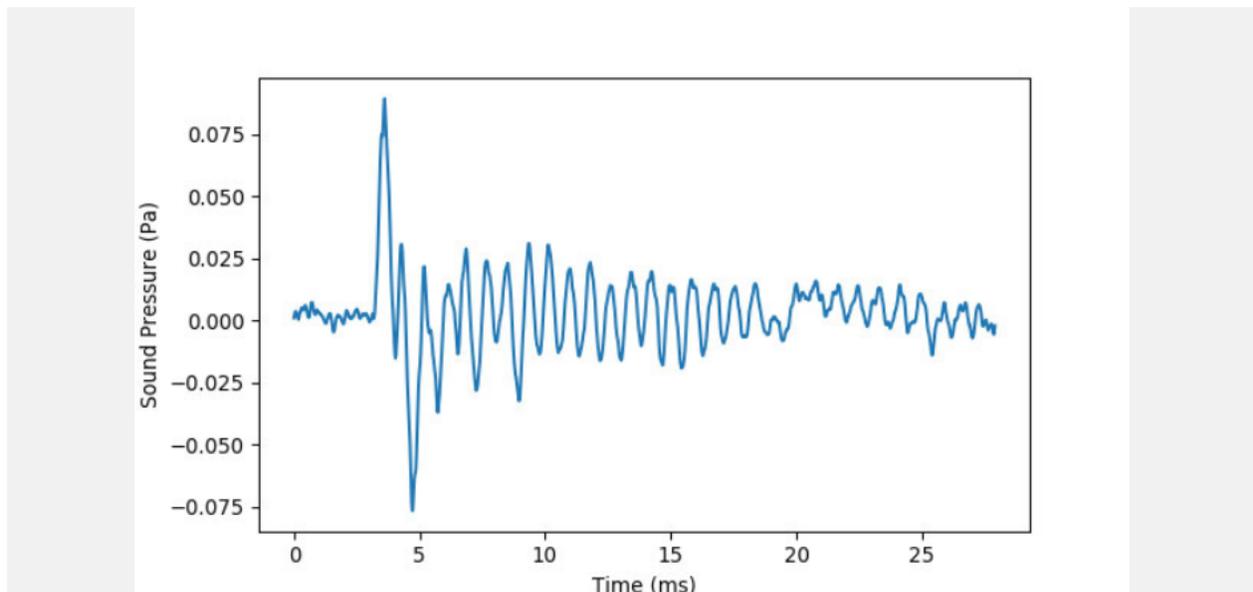
Posted on [April 25, 2018](#)

[Pickleball](#) is a game played with a paddle and ball on a converted tennis court or dedicated asphalt pad. It has become very popular in retirement resort communities and other recreation centers. Unfortunately, some developers of pickleball courts have not adequately addressed the sound produced by the impact of the hard paddle and ball which creates a sharp pop. This has led to controversy between facility owners and neighbors when new pickleball courts are planned.

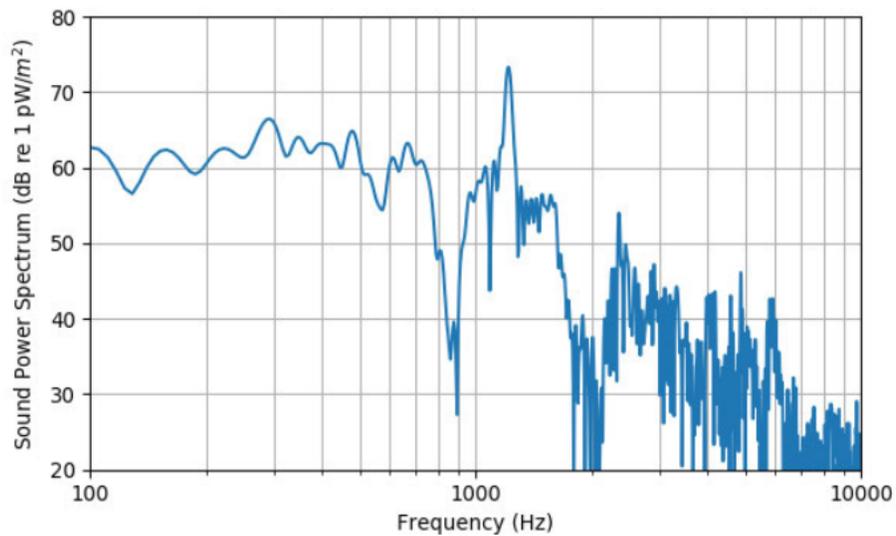
Here in Arizona and elsewhere we have planned and mitigated many of these sites. We have had the opportunity to work with both pickleball clubs and home owners associations. In this post we will outline the process we have developed to evaluate the noise impact of pickleball courts and to enable pickleball to coexist with the surrounding community.

Characteristics of Pickleball Sound

The sound produced by the impact between a pickleball and paddle is characterized by a sudden onset and brief duration, typically on the order of two milliseconds for the direct path sound. Figure 1 shows a time trace of a pickleball paddle impact measured near Phoenix, Arizona. The main part of the direct sound impulse can be seen to be less than two milliseconds followed a rapid decay and some later reverberant arrivals.



The spectral content of the paddle impact is narrowband with a center frequency typically between 1,000 and 2,000 Hertz (see Figure 2). Although it does not meet most guidelines for tonal prominence such as Annex C of ANSI S12.9 Part 4 or ANSI S1.13, it does impart a vague sensation of pitch similar to a musical wood block percussion instrument. The radiation pattern of the paddle is more or less a dipole, i.e. the sound from the front and back of the paddle is of opposite polarity and cancels itself in the plane of the paddle. Therefore, orienting the courts so that the direction of play faces away from noise sensitive areas can provide some attenuation.



Measuring Pickleball Sound

Due to the short duration of the impact, averaging sound pressure level metrics such as equivalent level (L_{eq}) and even maximum fast exponential time weighted level (L_{max}) fail to accurately represent the perceived loudness of the impact. The fast exponential time weighting filter is a first order lowpass filter with a 125 millisecond time constant applied to the square of the acoustic pressure waveform. If a tone burst is applied to the squaring circuit and filter, after two milliseconds the filter output will only rise to a level that is 18 dB lower than the root-mean-square or equivalent level of the input signal. Because the short impulse is being significantly attenuated by the averaging in the sound level meter, in practice it is in general not possible to distinguish pickleball paddle impacts from the background noise when measuring L_{eq} or L_{max} using an integrating sound level meter even though the paddle impacts may be identified by a listener as the primary sound source.

The paddle impact sound pressure level is better represented by the sound exposure level (SEL). This involves windowing the measured sound pressure in time to include only the paddle impact and reflections from nearby surfaces. The equivalent sound pressure level of the windowed impact is then normalized to the length of the window giving a representation of the energy in the impact alone. Appropriate adjustments for impulsive sounds can then be applied to the impacts as described next.

Most acoustical standards for sound pressure levels with regard to compatible land use provide adjustment factors for different types of sound, e.g. impulsive, tonal, time of day, etc. Each of these categories of sound produces different levels of community impact and annoyance due to their temporal or spectral characteristics in comparison to a broadband sound that does not vary in level or frequency content with time. The purpose of the adjustment factors is to normalize these types of sound to a neutral broadband sound pressure level so that they can be reasonably compared to a defined sound pressure level limit or the background noise level.

ANSI S12.9 Part 4 gives criteria for assigning adjustment factors to a variety of impulsive sounds. Sounds produced by many impact processes are classified as 'highly impulsive' and assigned a 12 dB adjustment. Although not specifically enumerated in definition 3.4.1 of the standard, experience has shown that pickleball paddle impacts should be adjusted as highly impulsive sounds in order to set appropriate performance goals for abatement treatments. Inadequate abatement treatment may lead to ongoing complaints, strained relations with neighbors, legal action, the need for continued involvement on the part of authorities, additional retrofitting, and possibly demolition costs to improve the abatement later.

Site Planning Considerations for Pickleball

Based on our experience working with pickleball facilities, courts located within 350 feet of residential structures often require abatement. Courts located within 150 feet require careful abatement design to avoid complaints.

Abatement treatments usually consist of freestanding walls strategically placed to shield noise sensitive areas from the pickleball courts. To be effective, the walls must block the line of sight to the paddles during play. On level terrain this means a minimum wall height of eight feet above the playing surface. The cost of the walls can be reduced by lowering the courts into the ground and using the excess soil to build a berm around the courts. Placing the wall on top of the berm will lower the required height of the wall itself, reducing construction costs. The wall may be masonry or a solid fence system having sufficient mass for effective sound insulation.

For pickleball courts located in the middle of a residential area with houses on more than two sides, screen walls may be required on opposite sides of the courts. When these walls are parallel to each other, reflections between them can degrade the performance of the walls significantly. In this case, sound absorbing panels may need to be installed on one or both walls to stop multiple reflections from amplifying the sound going over the walls. This can almost double the cost of the walls and may make the site financially unfeasible.

Court orientation also plays a role. More sound propagates in the direction of play than to the sides of the pickleball court. By positioning the courts so that the line of the net runs through the most noise sensitive area, a noticeable reduction in sound pressure level can be achieved at this location.

When to Hire an Acoustical Consultant

We recommend that pickleball courts to be located within 500 to 600 feet of residential properties or other noise sensitive areas be reviewed by an acoustical engineer during the site selection phase in order to avoid choosing a site that is expensive to mitigate, results in unexpected limitations on court use, or leads to ongoing disputes with neighbors. For sites that have a water feature or golf course as part of the intervening ground between the courts and homes or for sites located in a valley, it may be necessary to consider abatement at buffer distances greater than 500 to 600 feet due to additional refraction effects created in these situations.

The abatement plan for the site should be prepared by an acoustical engineer with experience in assessing the community impact of short duration impulsive sounds such as those produced by pickleball paddle impacts. As can be seen from procedure outlined above, properly measuring sound from pickleball courts is not a simple matter of setting up a sound level meter and logging an equivalent sound pressure level (L_{eq}). The short duration impulses produced by the paddle impacts require a detailed process of applying a metric that can accurately represent the community noise impact of the pickleball courts. If you are in the process of planning pickleball for your site, consulting an acoustician can reveal unforeseen issues with the selected courts site or the site plan before investing tens or hundreds of thousands of dollars in design and construction. Preparing a formal abatement plan can also ease concerns of neighbors about the community noise impact of the courts.

If you would like us to help plan or mitigate your pickleball courts, [contacts us](#) today for more information.

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CITY OF LAS VEGAS

REGIONAL PICKLEBALL COMPLEX

AT WAYNE BUNKER PARK

NOISE STUDY

FEBRUARY 15, 2024

PREPARED FOR:
CITY OF LAS VEGAS

PREPARED BY:
ACOUSTICS GROUP, INC.
CONSULTANTS IN ACOUSTICS, NOISE & VIBRATION





**CITY OF LAS VEGAS
REGIONAL PICKLEBALL COMPLEX
AT WAYNE BUNKER PARK
NOISE STUDY**

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EXECUTIVE SUMMARY

Acoustics Group, Inc., (AGI) was retained by the City of Las Vegas to evaluate the pickleball noise levels associated with the Proposed Regional Pickleball Complex at Wayne Bunker Park. The project proposes adding twenty-four (24) pickleball courts to the park. AGI has reviewed the City of Las Vegas's Municipal Code Noise Standards, Clark County Noise Standards, conducted ambient noise level measurements, analyzed pickleball noise, assessed the impact of the pickleball courts, and evaluated noise control measures for reducing the noise from the proposed pickleball courts at the nearby residential homes.

The predicted future hourly Leq noise level from the proposed pickleball activity will be 56.7, 41.2, 53.4, and 63.3 dBA at the nearest receivers to the north (NM1), east (NM2), south (NM3A), and west (NM4), respectively. At NM1 and NM2, the pickleball noise level would be below ambient noise levels throughout the operating hours and will comply with the recommended noise standard for City of Las Vegas. At NM3A, the pickleball noise level will exceed the Clark County Leq Noise Standard of 52.9 dBA. At NM4, the pickleball noise level would exceed ambient noise levels and will not comply with the noise standard for the City of Las Vegas.

The Lmax from proposed pickleball activity will be as high as 71.4 dBA at the exterior of the southern residences (NM3A). Pickleball would exceed the Clark County Lmax Noise Standard of 56 dBA. However, the ambient background Lmax during operating the hours of 7AM to 10PM, ranges from 62.1 to 88.7 dBA. The future pickleball noise Lmax would fall within the existing ambient background noise range.

The impulse noise from pickleball play will be noticeable at the nearest receptors to the north, east, south, and west.

Noise control is recommended to reduce the pickleball noise at the impacted noise-sensitive receptors to the south and west. With the implementation of noise control options, pickleball noise would be reduced. However, the impulsive character of the noise could remain audible and may still be a source of annoyance to sensitive individuals, especially when the ambient background noise level is lower or when there are lulls in traffic noise.

This report has been organized into multiple sections for ease of reference. Section 1 introduces the Project and provides a general discussion on the Project Components. Section 2 discusses Noise Fundamentals. Section 3 presents the County of Clark and City of Las Vegas Noise Standards. Section 4 discusses the Ambient Noise Survey; Section 5 discusses the Impact Assessment. Section 6 presents the Noise Control Analysis, including Recommendations. Section 7 discusses the Conclusion.



INTRODUCTION

Acoustics Group, Inc., (AGI) was retained by the City of Las Vegas to evaluate the noise levels associated with the pickleball court project at Wayne Bunker Park in Las Vegas, NV. The City is proposing a Regional Pickleball Complex with twenty-four pickleball courts and some of the nearby residents are concerned about the potential increase in noise from the future pickleball operations. To the north and east of the project site, are noise sensitive residences under the City of Las Vegas jurisdiction. To the south of the project site, are noise sensitive residences under Clark County jurisdiction. To the west of the project site is a church under the City of Las Vegas jurisdiction. Figure 1 shows the location of the future pickleball courts with respect to the surrounding land uses. Figure 2 shows the pickleball court layout.



Figure 1. Location of Proposed Pickleball Courts



Figure 2. Proposed Pickleball Complex Layout



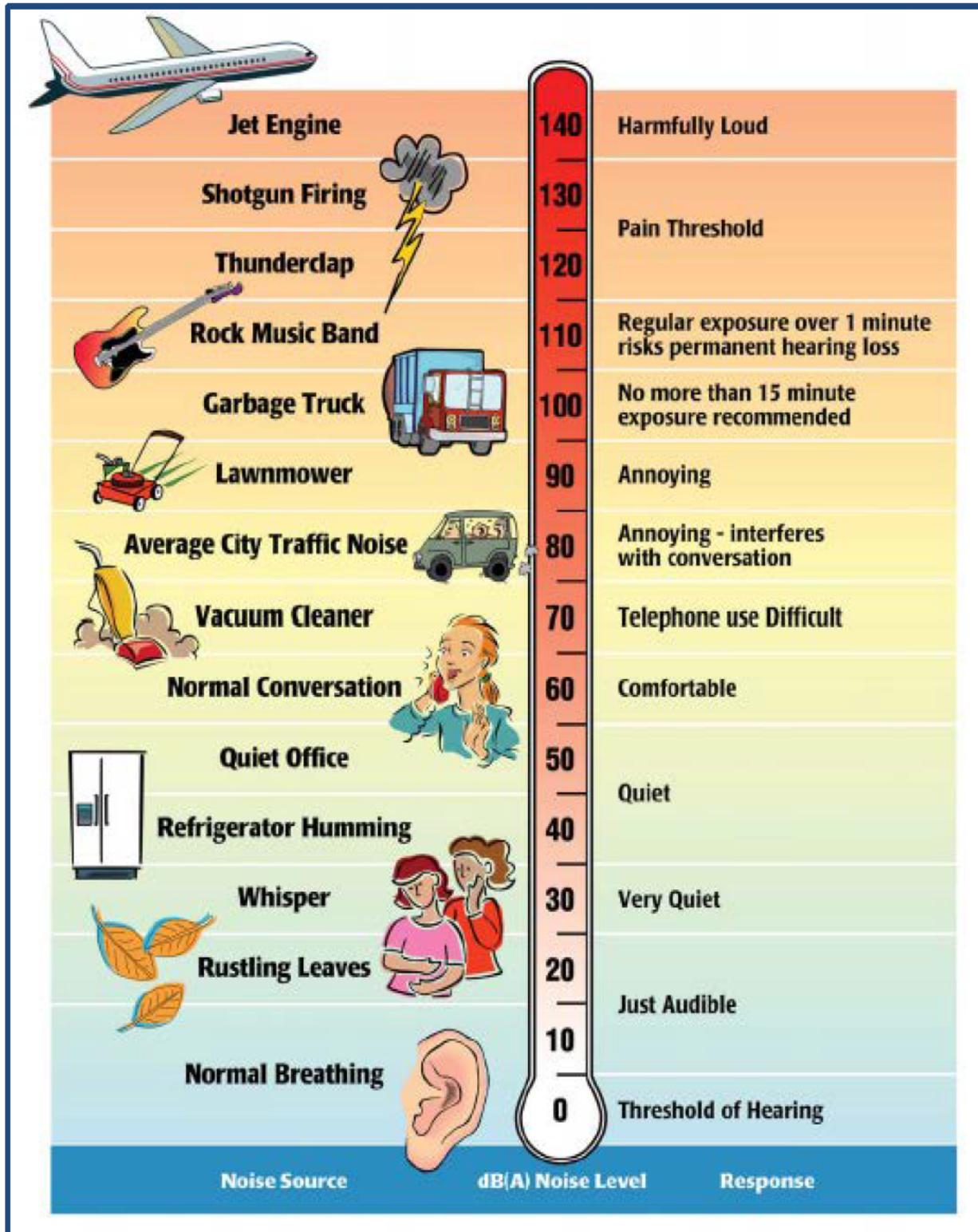
NOISE FUNDAMENTALS

Noise is most often defined as unwanted sound. Although sound can be easily measured, the perceptibility is subjective and the physical response to sound complicates the analysis of its impact on people. People judge the relative magnitude of sound sensation in subjective terms such as “noisiness” or “loudness.” Sound pressure magnitude is measured and quantified using a logarithmic ratio of pressures, the scale of which gives the level of sound in decibels (dB).

The human hearing system is not equally sensitive to sound at all frequencies. Therefore, to approximate this human, frequency-dependent response, the A-weighting filter system is used to adjust measured sound levels. The A-weighted sound level is expressed in “dBA” or “dB(A)”. Figure 3 provides typical A-weighted sound levels measured for various sources, as well as people’s responses to these levels.

When sound is measured for distinct time intervals, the statistical distribution of the overall sound level can be obtained during that period. The energy-equivalent sound level (L_{eq}) is the most common parameter associated with such measurements. The L_{eq} metric is a single-number noise descriptor which represents the average sound level over a given period of time, where the actual sound level varies with time. L_{max} , L_{min} , and L_{xx} are also common noise descriptors. L_{max} and L_{min} are the maximum and minimum noise levels, respectively, and L_{xx} , known as a statistical sound level, is the time-varying noise level which would be exceeded xx percent of the time. For example, L_{50} is the average noise level that is exceeded 50% of the measurement duration or for 30-minutes in a 60-minute period.

Reverberation is the prolongation of sound after the source has stopped. Reverberation time (RT_{60}), for a given frequency, is the number of seconds it takes for the average sound pressure level in a room (originally in a steady state) to decrease 60 dB after the source is stopped. RT_{60} is a measure of the amount of absorption within a space or the “liveliness” of the room.



Source: Melville Branch and R. Beland, 1970. EPA/ONAC 550/9-74-004, March 1974.

Figure 3. Typical A-weighted Noise Levels



NOISE STANDARDS

City of Las Vegas

The City of Las Vegas Municipal Code Section 9.16.020 prohibits “Noise of such character, intensity or duration as to be detrimental to the life or health of any individual, or in disturbance of the public peace and welfare is prohibited” and does not specifically adopt noise standards or limits to regulate intrusive noise. However, as per Industry Guidelines, an appropriate noise level increase of greater than 3 dB above measured ambient noise levels would be considered the threshold of significance for determining noise impact. The acceptance of any noise guideline would be subject to the approval of the planning commission; however, the greater than 3 dB increase criteria is suggested for this project to determine project noise impacts. Due to the logarithmic nature of decibels, pickleball noise levels should not exceed ambient noise levels which is reflective of a 3 dB increase from the project when added to the ambient background. Refer to the Appendix for the City of Las Vegas Municipal Code.

Clark County

The Clark County Noise Ordinance Section 30.68.020 specifies maximum permitted sound levels for residential districts by octave band. The Leq, which is the A-weighted energy sum of the octave band sound levels, is a practical way to interpret the standard. An Leq of 52.9 and 43.4 dBA are the A-weighted energy sum of the octave band sound levels during the daytime and nighttime, respectively. Additionally, impulsive noise is not permitted to exceed 56 and 46 dBA during the daytime and nighttime, respectively. The impulse noise is interpreted to be the maximum noise level described as Lmax. Tables 1 and 2 summarize the Clark County Noise Standards.

Table 1. Clark County Residential Noise Standards

Period	Sound Level, dB at Octave Band Center Frequency, Hz									Leq, dBA
	31.5	63	125	250	500	1K	2K	4K	8K	
Daytime (7AM to 10PM)	72	65	58	53	50	47	43	40	37	52.9
Nighttime (10PM to 7AM)	65	58	50	44	40	37	33	30	27	43.4

Source: Clark County Municipal Code, Section 30.68.020

Table 2. Clark County Impulsive Noise Maximum Residential Sound Level

Period	Maximum Permitted Sound Levels (Lmax), dB
Daytime (7AM to 10PM)	56
Nighttime (10PM to 7AM)	46

Source: Clark County Municipal Code, Section 30.68.020

AMBIENT NOISE SURVEY

AGI conducted an ambient noise survey on January 23 through 24, 2024, to document baseline ambient noise levels around the project site. The hourly A-weighted noise level was continuously monitored and logged for 24-hours to quantify the existing background noise at four locations around the project site. The noise measurements were performed at the nearest Residences to the North (NM1), East (NM2), and the nearest Church to the West (NM4). Noise measurement NM3 was placed along the north side of Constantinople Ave, directly adjacent to the Project Site's southern boundary. This location was selected because the residential property line directly south of Constantinople Ave did not allow us to securely place a noise monitor along the property boundary. Due to the relative distances to N Buffalo Dr. and W Alexander Rd., the ambient background noise at location NM3 would be expected to be similar to the ambient background noise at the nearest residences to the south (NM3A). Therefore, the ambient noise measurement data at NM3 will be used to represent NM3A. Refer to Figure 4 for the locations of the noise monitors.



Figure 4. Long-Term Ambient Noise Monitoring Locations



Methodology

Four (4) Brüel & Kjær Model 2270 Acoustical Analyzers were used to conduct ambient noise measurements. The analyzers are precision Type 1 instruments that were calibrated to laboratory standards. The instrument systems were field calibrated before and after the measurements to ensure accuracy and were operated per manufacturer’s recommendations.

Ambient Survey

At NM1, the measured ambient Leq ranged from 54.6 to 69.8 dBA. At NM2, the measured ambient Leq ranged from 55.5 to 72. 2 dBA. At NM3, the measured ambient Leq ranged from 42.4 to 61.9 dBA. At NM4, the measured ambient Leq ranged from 43.4 to 64.1 dBA. Noise sources from vehicular traffic contributed to the ambient noise measurement data at all four measurement locations. Children playing loudly were the predominant noise source from the hour of 2PM to 3PM and contributed to a higher ambient noise level than surrounding hours for receptor locations NM3 and NM4. Table 3 summarizes the ambient noise measurement data.

Table 3. Existing Ambient Noise Levels

Receiver		Existing Ambient Noise Levels, dBA				Description
		Time	Leq	Lmin	Lmax	
NM1	Nearest Residence to the North	1/23/24 11:00 AM – 1/24/24 11:00 AM	54.6 - 69.8	35.4	94.6	Vehicular Traffic
NM2	Nearest Residence to the East	1/23/24 11:00 AM – 1/24/24 11:00 AM	55.5 - 72.2	40.0	102	Vehicular Traffic
NM3	Project Site Southern Property Line	1/23/24 11:00 AM – 1/24/24 11:00 AM	42.4 - 61.9	36.1	88.7	Vehicular Traffic, Children at Park ¹
NM4	Church Eastern Property Line /Project Site Western Property Line	1/23/24 11:00 AM – 1/24/24 11:00 AM	43.4 - 64.1	36.4	81.7	Vehicular Traffic, Children at Park ¹

Note: ¹Children playing loudly was the predominant noise source from the hour of 2PM to 3PM and has a higher ambient noise level than surrounding hours.



NOISE ANALYSIS AND IMPACT ASSESSMENT

Methodology

The methodology used to analyze and predict operations noise involved the use of the CadnaA computer noise model. CadnaA can simulate the physical environment by factoring in x, y, and z geometrics of a particular site to simulate the buildings, obstacles, and topography. The model uses industry recognized algorithms (ISO 9613) to perform acoustical analyses. The noise generated by future pickleball courts was calculated by inputting acoustical sources at the project site. AGI's measurement data from the pickleball noise measurements at other pickleball locations were used for the modeling inputs and calibration. The CadnaA Noise Model was also used to evaluate noise control options.

Project Design Pickleball Noise

The proposed project will create the highest noise when all 24 pickleball courts are in operation. The pickleball courts will operate only during the daytime hours of 7:00AM to 10:00PM. Pickleball activity during maximum operations will generate an hourly Leq as high as 56.7, 41.2, 53.4, and 63.3 dBA at receivers NM1, NM2, NM3A, and NM4, respectively. Note that the project design includes a 12-foot-high concrete masonry unit (CMU) wall along the southern property line to shield residences that are located on Constantinople Ave. Refer to Figure 5 for a noise contour map of the hourly Leq created by future pickleball operations. A detailed evaluation and assessment of the pickleball noise at noise sensitive receptors within the City of Las Vegas and Clark County is provided in this section.

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Figure 5. Leq Noise Contour Map for the Project Design Pickleball Operations



City of Las Vegas

Noise sensitive receptors NM1, NM2, and NM4 are in the City of Las Vegas’ jurisdiction. Future hourly Leq noise levels from the proposed pickleball activity will be 56.7, 41.2, and 63.3 dBA at receivers NM1, NM2, and NM4, respectively. At NM1 and NM2, pickleball noise will not exceed ambient noise levels by greater than 3 dB and therefore complies with the recommended noise standard. Pickleball would exceed ambient noise levels by greater than 3 dB and would be considered a noise impact at NM4. The project design noise barrier only provides shielding for the residences directly south of the courts and does not provide acoustical shielding for the church at NM4.

Pickleball would be considered a noise impact at NM4 when pickleball noise exceeds ambient noise levels. This would occur when the courts are at capacity. Additionally, the impulsive character of the pickleball noise could be audible and could be a source of annoyance to sensitive individuals, especially when the ambient background noise level is lower or when there are lulls in traffic noise.

Noise control was evaluated to reduce future pickleball noise at the church (NM4). Table 4 summarizes the assessment of the future pickleball noise levels from the Project Design with the ambient background and the recommended noise standard for the City of Las Vegas receptors. Tables 5 through 7 summarize the assessment of the pickleball noise levels from Project Design with the hourly ambient background and the recommended noise standard at NM1, NM2, and NM4, respectively. Figures 6 through 8 show a comparison of the future combined pickleball and ambient noise levels from the Project Design with the hourly ambient noise levels and recommended noise standard.

Table 4. Summary of Impact Assessment of Pickleball Noise - Project Design

Receptor		Range in Ambient Noise Level during Pickleball Operating Hours, Leq, dBA ¹	Recommended Noise Standard, Leq, dBA ²	Future Project Design Pickleball Noise Level, Leq, dBA	Assessment
NM1	Nearest Residence to the North	63.9 - 69.8	66.9 - 72.8	56.7	Compliance
NM2	Nearest Residence to the East	62.5 - 72.2	65.5 - 75.2	41.2	Compliance
NM4	Church Eastern Property Line / Project Site Western Property Line	51.5 - 64.1	54.5 - 67.1	63.3	Exceedance

Note: ¹Pickleball will operate during the hours of 7AM to 10PM.

²The Recommended Noise Standard for the City of Las Vegas is a noise level increase that does not exceed 3 dB above measured ambient noise levels for the hour period. Due to the logarithmic nature of decibels, pickleball noise levels should not exceed ambient noise levels which is reflective of a 3 dB increase from the project when added to the ambient background.



Table 5. Impact Assessment of Pickleball Noise from the Project Design at NM1

Hour Start Time	Pickleball Noise Level, Leq, dBA	Ambient Noise, Leq, dBA ¹	Pickleball + Ambient Noise, dBA	Recommended Noise Standard, Leq, dBA ²	Assessment
7:00:00 AM	56.7	69.3	69.6	72.3	Compliance
8:00:00 AM	56.7	68.3	68.6	71.3	Compliance
9:00:00 AM	56.7	66.4	66.8	69.4	Compliance
10:00:00 AM	56.7	66.2	66.6	69.2	Compliance
11:00:00 AM	56.7	69.5	69.7	72.5	Compliance
12:00:00 PM	56.7	69.4	69.6	72.4	Compliance
1:00:00 PM	56.7	68.6	68.9	71.6	Compliance
2:00:00 PM	56.7	69.6	69.8	72.6	Compliance
3:00:00 PM	56.7	69.8	70.0	72.8	Compliance
4:00:00 PM	56.7	69.3	69.5	72.3	Compliance
5:00:00 PM	56.7	68.9	69.1	71.9	Compliance
6:00:00 PM	56.7	67.5	67.8	70.5	Compliance
7:00:00 PM	56.7	66.3	66.8	69.3	Compliance
8:00:00 PM	56.7	65.0	65.6	68.0	Compliance
9:00:00 PM	56.7	63.9	64.6	66.9	Compliance

Note: ¹Pickleball will operate during the daytime hours of 7AM to 10PM

²The Recommended Noise Standard for the City of Las Vegas is a noise level increase that does not exceed 3 dB above measured ambient noise levels for the hour period. Due to the logarithmic nature of decibels, pickleball noise levels should not exceed ambient noise levels which is reflective of a 3 dB increase from the project when added to the ambient background.

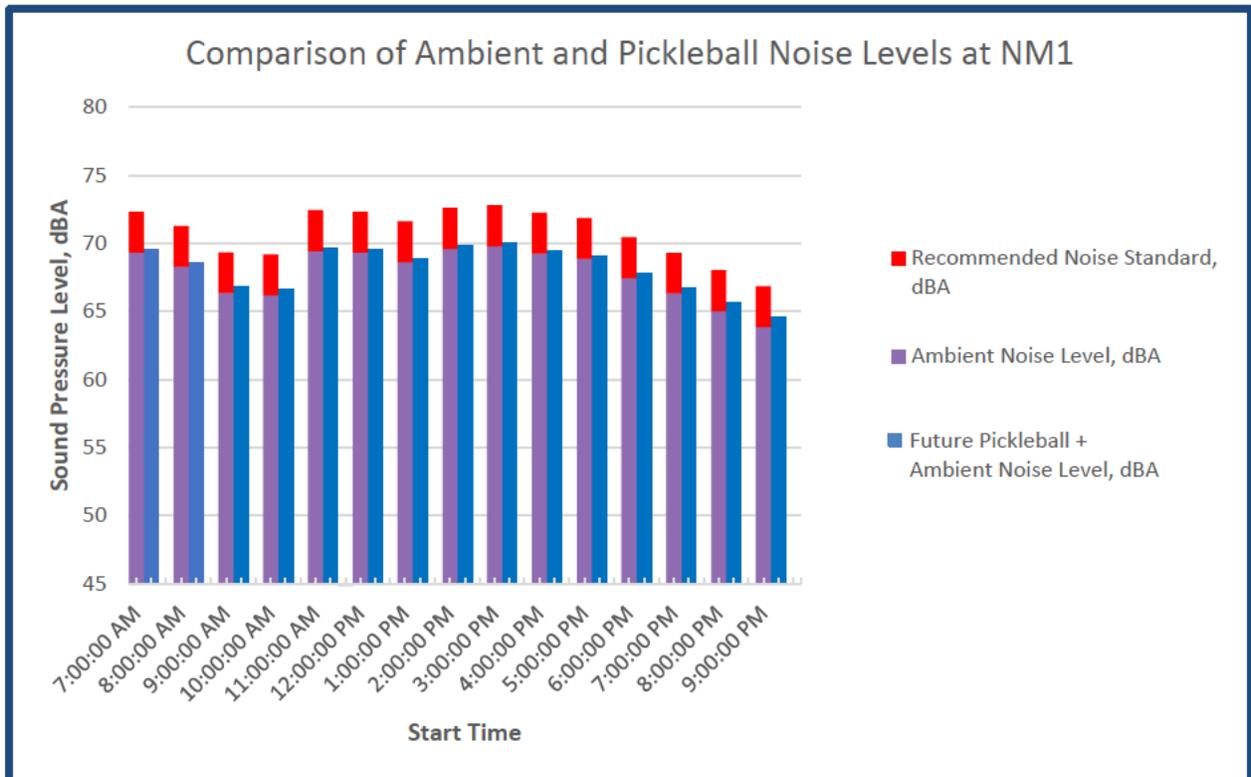


Figure 6. Comparison of Future Leq Pickleball Noise from Project Design with Ambient Noise and Noise Standard at NM1



Table 6. Impact Assessment of Pickleball Noise from Project Design at NM2

Hour Start Time	Pickleball Noise Level, Leq, dBA	Ambient Noise, Leq, dBA ¹	Pickleball + Ambient Noise, Leq, dBA	Recommended Noise Standard, Leq, dBA ²	Assessment
7:00:00 AM	41.2	69.4	69.4	72.4	Compliance
8:00:00 AM	41.2	69.2	69.2	72.2	Compliance
9:00:00 AM	41.2	68.1	68.1	71.1	Compliance
10:00:00 AM	41.2	67.9	67.9	70.9	Compliance
11:00:00 AM	41.2	68.3	68.3	71.3	Compliance
12:00:00 PM	41.2	68.7	68.7	71.7	Compliance
1:00:00 PM	41.2	68.3	68.3	71.3	Compliance
2:00:00 PM	41.2	72.2	72.2	75.2	Compliance
3:00:00 PM	41.2	70.1	70.1	73.1	Compliance
4:00:00 PM	41.2	69.5	69.5	72.5	Compliance
5:00:00 PM	41.2	69.5	69.5	72.5	Compliance
6:00:00 PM	41.2	68.8	68.8	71.8	Compliance
7:00:00 PM	41.2	66.0	66.0	69.0	Compliance
8:00:00 PM	41.2	65.6	65.6	68.6	Compliance
9:00:00 PM	41.2	64.0	64.0	67.0	Compliance

Note: ¹ Pickleball will operate during the daytime hours of 7AM to 10PM

²The Recommended Noise Standard for the City of Las Vegas is a noise level increase that does not exceed 3 dB above measured ambient noise levels for the hour period. Due to the logarithmic nature of decibels, pickleball noise levels should not exceed ambient noise levels which is reflective of a 3 dB increase from the project when added to the ambient background.

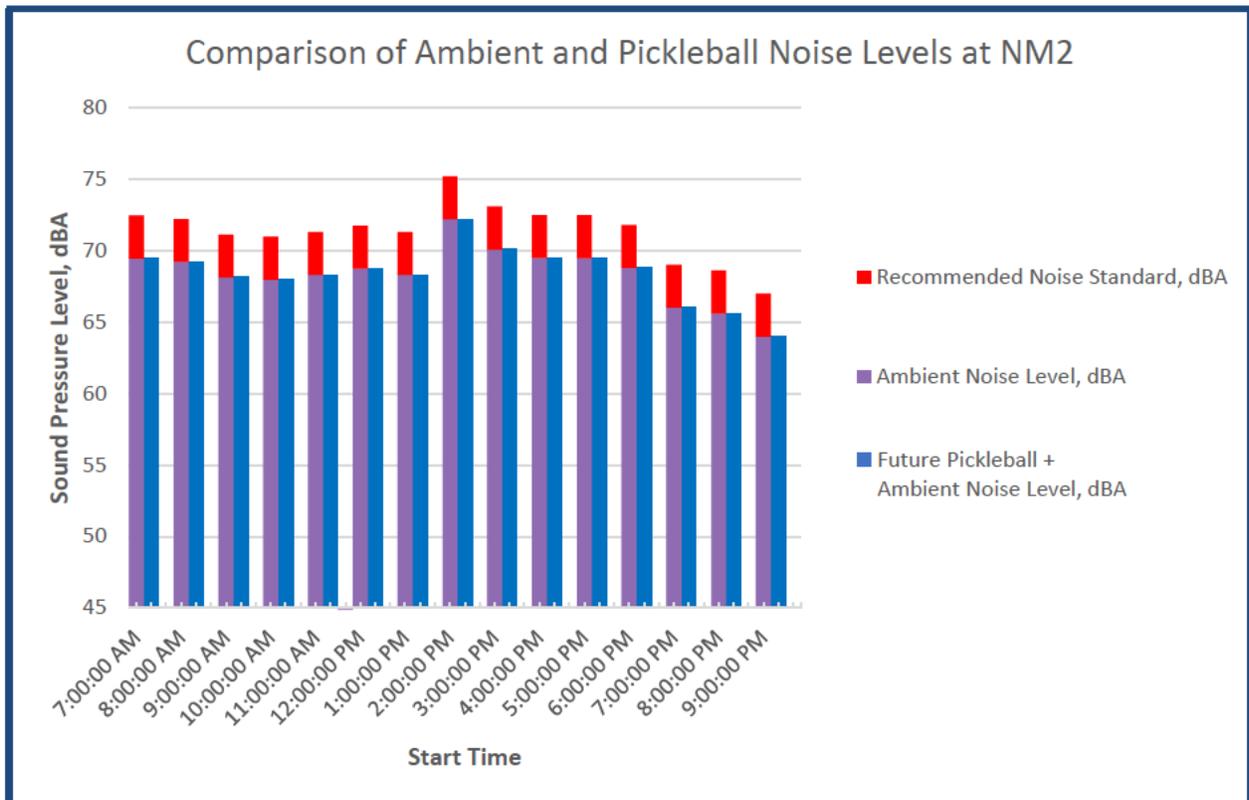


Figure 7. Comparison of Future Leq Pickleball Noise from Project Design with Ambient Noise and Noise Standard at NM2



Table 7. Impact Assessment of Pickleball Noise from Project Design at NM4

Hour Start Time	Pickleball Noise Level, Leq, dBA	Ambient Noise, Leq, dBA ¹	Pickleball + Ambient Noise, Leq, dBA	Recommended Noise Standard, Leq, dBA ²	Assessment
7:00:00 AM	63.3	56.7	64.2	59.7	Exceedance
8:00:00 AM	63.3	54.8	63.9	57.8	Exceedance
9:00:00 AM	63.3	54.9	63.9	57.9	Exceedance
10:00:00 AM	63.3	55.4	64.0	58.4	Exceedance
11:00:00 AM	63.3	54.4	63.8	57.4	Exceedance
12:00:00 PM	63.3	57.5	64.3	60.5	Exceedance
1:00:00 PM	63.3	53.3	63.7	56.3	Exceedance
2:00:00 PM	63.3	64.1	66.7	67.1	Compliance
3:00:00 PM	63.3	56.6	64.1	59.6	Exceedance
4:00:00 PM	63.3	54.9	63.9	57.9	Exceedance
5:00:00 PM	63.3	55.3	63.9	58.3	Exceedance
6:00:00 PM	63.3	53.7	63.7	56.7	Exceedance
7:00:00 PM	63.3	53.3	63.7	56.3	Exceedance
8:00:00 PM	63.3	52.9	63.7	55.9	Exceedance
9:00:00 PM	63.3	52.1	63.6	55.1	Exceedance

Note: ¹ Pickleball will operate during the daytime hours of 7AM to 10PM

²The Recommended Noise Standard for the City of Las Vegas is a noise level increase that does not exceed 3 dB above measured ambient noise levels for the hour period. Due to the logarithmic nature of decibels, pickleball noise levels should not exceed ambient noise levels which is reflective of a 3 dB increase from the project when added to the ambient background.

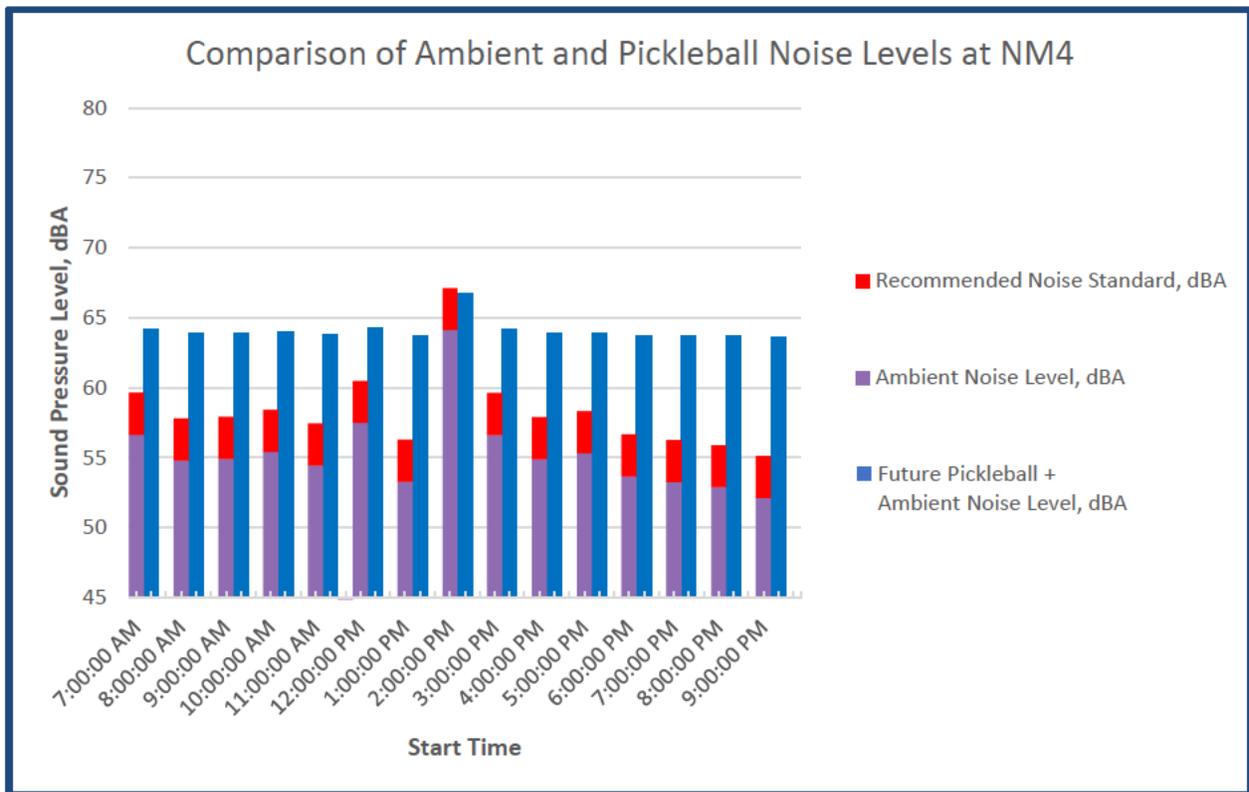


Figure 8. Comparison of Future Leq Pickleball Noise from Project Design with Ambient Noise and Noise Standard at NM4



Clark County

Noise sensitive receptor NM3A is in Clark County jurisdiction. Hourly Leq noise levels from the proposed pickleball activity will be 53.4 dBA at the residences located south of the future pickleball complex and represented by NM3A. Pickleball would exceed the Clark County Leq Noise Standard of 52.9 dBA. At NM3A, the future pickleball noise level would exceed ambient noise levels throughout many of the operating hours. Pickleball noise would be considered an impact at the residences to the south when the courts are operating at maximum capacity.

Noise control was evaluated to reduce pickleball noise at the residences represented by NM3A. Table 8 summarizes the assessment of the future pickleball hourly Leq noise levels from the Project Design with the ambient background and the Clark County Leq Noise Standards. Table 9 summarizes the assessment of the pickleball noise levels from the Project Design with the hourly ambient background and the noise standard. Figure 9 shows a comparison of the future combined pickleball and hourly ambient noise levels from Project Design with the ambient noise level and noise standard.

Table 8. Summary of Impact Assessment of Pickleball Noise - Project Design

Receptor		Range in Ambient Leq Noise Level during Pickleball Operating Hours, Leq, dBA ¹	Clark County Noise Standard, Leq, dBA	Project Design Pickleball Noise Level, Leq, dBA	Assessment
NM3A	Nearest Residence to the South	50.3 - 61.9	52.9	53.4	Exceedance ²

Note: ¹Pickleball will operate during the daytime hours of 7AM to 10PM.

²The nearest residence to the south is under Clark County jurisdiction and has a noise standard of 52.9 dBA Leq.



Table 9. Impact Assessment of Pickleball Noise from Project Design at NM3A

Hour Start Time	Pickleball Noise Level, Leq, dBA	Ambient Noise, Leq, dBA ¹	Pickleball + Ambient Noise, Leq, dBA	Clark County Noise Standard, Leq, dBA	Assessment
7:00:00 AM	53.4	55.8	57.8	52.9	Exceedance ²
8:00:00 AM	53.4	52.9	56.2	52.9	Exceedance ²
9:00:00 AM	53.4	51.1	55.4	52.9	Exceedance ²
10:00:00 AM	53.4	52.7	56.1	52.9	Exceedance ²
11:00:00 AM	53.4	52.4	56.0	52.9	Exceedance ²
12:00:00 PM	53.4	52.6	56.0	52.9	Exceedance ²
1:00:00 PM	53.4	51.6	55.6	52.9	Exceedance ²
2:00:00 PM	53.4	61.9	62.5	52.9	Exceedance ²
3:00:00 PM	53.4	55.3	57.5	52.9	Exceedance ²
4:00:00 PM	53.4	59.8	60.7	52.9	Exceedance ²
5:00:00 PM	53.4	54.6	57.1	52.9	Exceedance ²
6:00:00 PM	53.4	52.9	56.2	52.9	Exceedance ²
7:00:00 PM	53.4	52.1	55.8	52.9	Exceedance ²
8:00:00 PM	53.4	52.3	55.9	52.9	Exceedance ²
9:00:00 PM	53.4	52.1	55.8	52.9	Exceedance ²

Note: ¹Pickleball will operate during the daytime hours of 7AM to 10PM.

²The nearest residence to the south is under Clark County jurisdiction and has a noise standard of 52.9 dBA Leq.

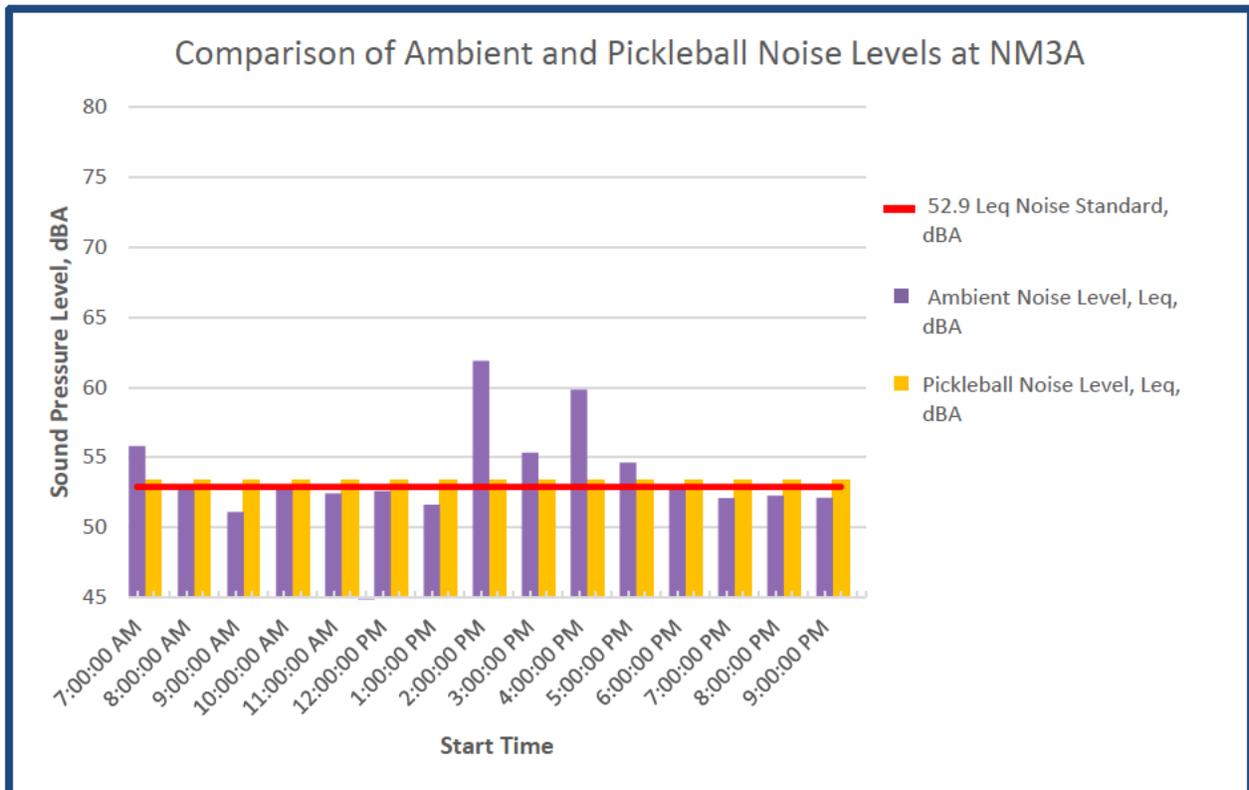


Figure 9. Comparison of Future Leq Pickleball Noise from Project Design with Ambient Noise and Noise Standard at NM3A



Additionally, the impulsive character of the pickleball noise could be audible and could be a source of annoyance to sensitive individuals, especially when the ambient background noise level is lower or when there are lulls in traffic noise. The L_{max} from proposed pickleball activity will be as high as 71.4 dBA at the exterior of NM3A residences. Pickleball would exceed the Clark County L_{max} Noise Standard of 56 dBA. However, the ambient background L_{max} during operating the hours of 7AM to 10PM, ranges from 62.1 to 88.7 dBA. The future pickleball noise L_{max} would fall within the existing ambient background noise range.

NOISE CONTROL ANALYSIS

Noise Control

The noise control analysis evaluated additional noise barrier heights and locations to reduce pickleball noise to comply with the noise standards. The height of the noise barrier along the southern property line should be increased to 13-ft and be extended to shield the west property line with a 10-ft high noise barrier section, per Figure 10. The future pickleball noise at NM1 and NM2 would remain the same as without the noise barrier because the barrier does not provide shielding for the residences to the north and east. Pickleball noise levels with this configuration will be reduced to 52.5 and 51.1 dBA at NM3A and NM4, respectively. Refer to Figure 11 for a Leq noise contour map of the pickleball noise level with noise control. A detailed evaluation and assessment of the pickleball noise at noise sensitive receptors within the City of Las Vegas and Clark County is provided in this section.



Figure 10. Location of Noise Barriers



Figure 11. Leq Noise Contour Map for the Pickleball Complex with Noise Control



City of Las Vegas

Noise levels at the noise sensitive receptors to the north (NM1) and east (NM2) remain unchanged with the noise barrier and in compliance with the City’s standards because the noise barrier does not provide shielding in the north and east directions. At NM4, pickleball noise levels with the recommended noise barrier configuration will be reduced to a Leq of 51.1 dBA. The reduced pickleball noise will comply with the City of Las Vegas recommended noise standard at the church. Table 10 summarizes the pickleball noise with the noise control recommendations for properties located within the City of Las Vegas jurisdiction. Table 11 summarizes the assessment of the pickleball noise levels from noise control recommendations with the hourly ambient background and the recommended noise guideline at receptor NM4. Figure 12 shows a comparison of the pickleball noise levels with full noise control recommendations with the hourly ambient noise level and recommended noise guideline at NM4.

**Table 10. Summary of Impact Assessment of Pickleball Noise
– with Recommended Noise Control**

Receptor		Range in Ambient Leq Noise Level during Pickleball Operating Hours, Leq, dBA ¹	Recommended Noise Standard, Leq, dBA ²	Pickleball Noise Level with Recommended Noise Control, Leq, dBA	Assessment
NM1	Nearest Residence to the North	63.9 - 69.8	66.9 - 71.8	56.7	Compliance
NM2	Nearest Residence to the East	62.5 - 72.2	65.5 - 75.2	41.2	Compliance
NM4	Church to the West	51.5 - 64.1	54.5 - 67.1	51.1	Compliance

Note: ¹Pickleball will operate during the daytime hours of 7AM to 10PM.

²The Recommended Noise Standard for the City of Las Vegas is a noise level increase that does not exceed 3 dB above measured ambient noise levels for the hour period. Due to the logarithmic nature of decibels, pickleball noise levels should not exceed ambient noise levels which is reflective of a 3 dB increase from the project when added to the ambient background.



Table 11. Impact Assessment of Pickleball Noise with Noise Control at NM4

Hour Start Time	Pickleball Noise Level with Noise Control, Leq, dBA	Ambient Noise, Leq, dBA ¹	Pickleball + Ambient Noise, Leq, dBA	Recommended Noise Standard, Leq, dBA ²	Assessment
7:00:00 AM	51.1	56.7	57.7	59.7	Compliance
8:00:00 AM	51.1	54.8	56.3	57.8	Compliance
9:00:00 AM	51.1	54.9	56.4	57.9	Compliance
10:00:00 AM	51.1	55.4	56.8	58.4	Compliance
11:00:00 AM	51.1	54.4	56.1	57.4	Compliance
12:00:00 PM	51.1	57.5	58.4	60.5	Compliance
1:00:00 PM	51.1	53.3	55.3	56.3	Compliance
2:00:00 PM	51.1	64.1	64.3	67.1	Compliance
3:00:00 PM	51.1	56.6	57.7	59.6	Compliance
4:00:00 PM	51.1	54.9	56.4	57.9	Compliance
5:00:00 PM	51.1	55.3	56.7	58.3	Compliance
6:00:00 PM	51.1	53.7	55.6	56.7	Compliance
7:00:00 PM	51.1	53.3	55.3	56.3	Compliance
8:00:00 PM	51.1	52.9	55.1	55.9	Compliance
9:00:00 PM	51.1	52.1	54.6	55.1	Compliance

Note: ¹Pickleball will operate during the daytime hours of 7AM to 10PM.

²The Recommended Noise Standard is the lowest ambient noise level during the hour period.

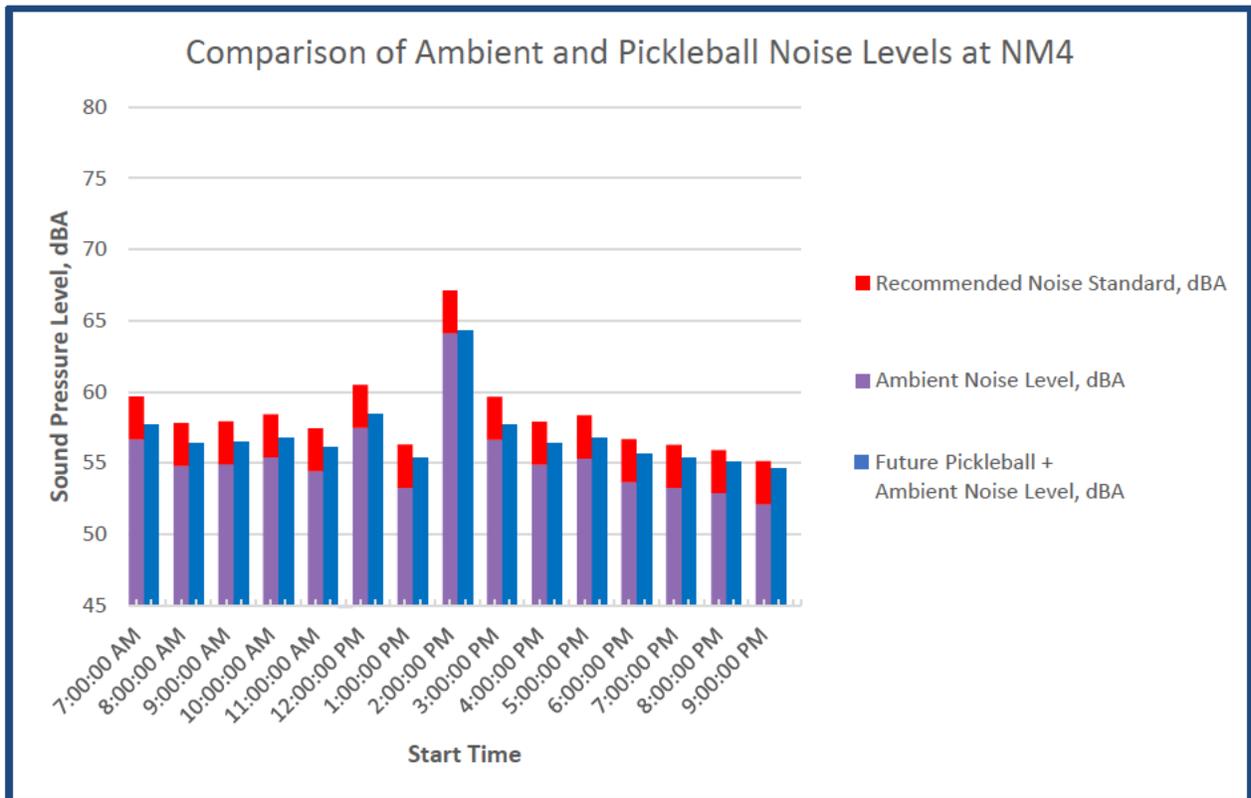


Figure 12. Comparison of Future Leq Pickleball Noise with Noise Control with Ambient Noise and Noise Guideline at NM4



Additionally, the impulsive character of the pickleball noise could be audible and could be a source of annoyance to sensitive individuals, especially when the ambient background noise level is lower or when there are lulls in traffic noise. The future pickleball noise Lmax at NM1, NM2, and NM4 would fall within the existing ambient background Lmax noise range. The addition of the recommended noise barrier will provide additional noise reduction of the impulsive pickleball noise at NM4.

The noise reduction provided by adding absorptive materials to the northern face of the noise barrier wall was evaluated and determined to be not significantly effective for the residences located to the north, east, south and the church to the west. The area located within 75 feet north of the noise barrier could experience 1 to 2 dB of moderate noise reduction from the absorptive material; however, the noise reduction would not be noticeable to the receptors north, east, west and south of the project site. Therefore, absorptive materials are not recommended for the noise barrier.

Clark County

At the residences located south of the complex and represented by NM3A, pickleball noise levels with the recommended noise barrier configuration will be reduced to a Leq of 52.5 dBA. The reduced pickleball noise will comply with the Clark County Noise Standard of Leq 52.9 dBA. Table 12 summarizes the pickleball noise with the Clark County Noise Standard. Table 13 summarizes the assessment of the pickleball noise levels with noise control recommendations, with the hourly ambient background and the noise standard at NM3A. Figure 13 shows a comparison of the pickleball noise levels with full noise control recommendations with the hourly ambient noise level and noise standard at NM3A.

Table 12. Summary of Impact Assessment of Pickleball Noise with Recommended Noise Control

Receptor		Range in Leq Ambient Noise Level during Pickleball Operating Hours, Leq, dBA ¹	Clark County Noise Standard, Leq, dBA ²	Future Pickleball Noise Level with Noise Control, Leq, dBA	Assessment
NM3A	Nearest Residence to the South	50.3 – 61.9	52.9	52.5	Compliance

Note: ¹Pickleball will operate during the daytime hours of 7AM to 10PM.

²The nearest residence to the south is under Clark County jurisdiction and has a noise standard of 52.9 dBA Leq.



Table 13. Impact Assessment of Pickleball Noise with Noise Control at NM3A

Hour Start Time	Pickleball Noise Level with Noise Control, Leq, dBA	Ambient Noise, Leq, dBA ¹	Pickleball + Ambient Noise, Leq, dBA	Clark County Noise Standard, Leq, dBA ²	Assessment
7:00:00 AM	52.5	55.8	57.8	52.9	Compliance ²
8:00:00 AM	52.5	52.9	56.2	52.9	Compliance ²
9:00:00 AM	52.5	51.1	55.4	52.9	Compliance ²
10:00:00 AM	52.5	52.7	56.1	52.9	Compliance ²
11:00:00 AM	52.5	52.4	56.0	52.9	Compliance ²
12:00:00 PM	52.5	52.6	56.0	52.9	Compliance ²
1:00:00 PM	52.5	51.6	55.6	52.9	Compliance ²
2:00:00 PM	52.5	61.9	62.5	52.9	Compliance ²
3:00:00 PM	52.5	55.3	57.5	52.9	Compliance ²
4:00:00 PM	52.5	59.8	60.7	52.9	Compliance ²
5:00:00 PM	52.5	54.6	57.1	52.9	Compliance ²
6:00:00 PM	52.5	52.9	56.2	52.9	Compliance ²
7:00:00 PM	52.5	52.1	55.8	52.9	Compliance ²
8:00:00 PM	52.5	52.3	55.9	52.9	Compliance ²
9:00:00 PM	52.5	52.1	55.8	52.9	Compliance ²

Note: ¹Pickleball will operate during the daytime hours of 7AM to 10PM.

²The nearest residence to the south is under Clark County jurisdiction and has a noise standard of 52.9 dBA Leq. Pickleball will comply with the Leq noise standard.

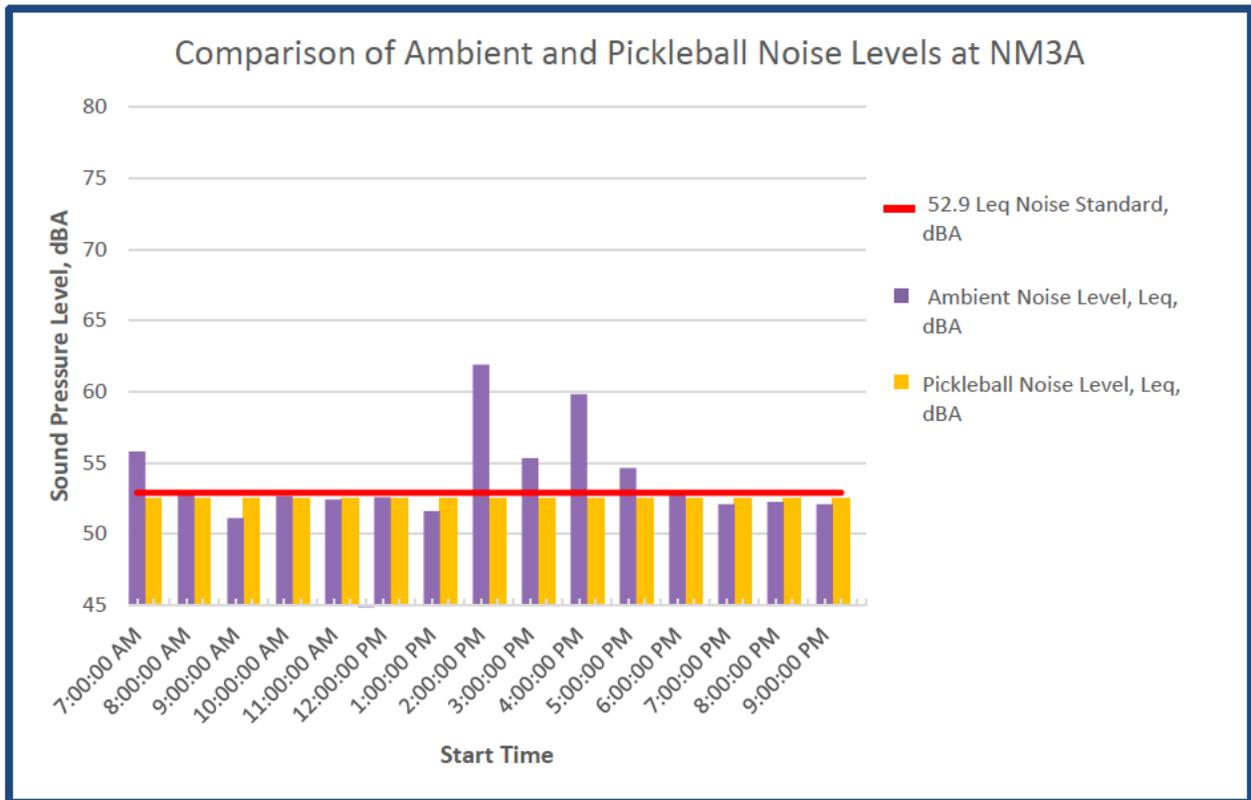


Figure 13. Comparison of Pickleball Noise with Noise Control with Ambient Noise and Noise Standard at NM3A

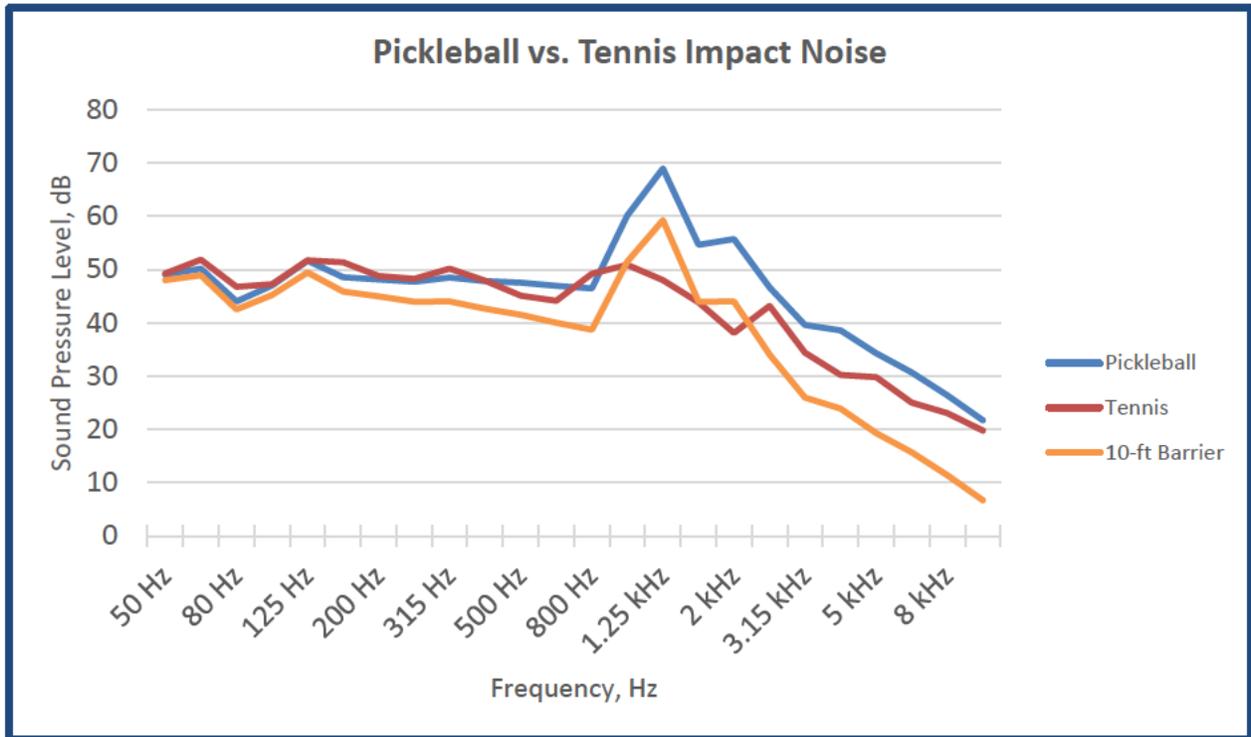
Additionally, the impulsive character of the pickleball noise could be audible and could be a source of annoyance to sensitive individuals, especially when the ambient background noise level is lower or when there are lulls in traffic noise. With the noise control barrier, the Lmax from proposed pickleball activity will be reduced to 70.5 dBA at the exterior of NM3A residences. Pickleball would exceed the Clark County Lmax Noise Standard of 56 dBA. However, the ambient background Lmax, during operating the hours of 7AM to 10PM, ranges from 62.1 to 88.7 dBA. The future pickleball noise Lmax would fall within the existing ambient background noise range.

Additional General Noise Control Options

1. Require the use of newer low noise padded neoprene paddles at all times. Each player's paddle should be inspected by City personnel prior to access to the courts. Players using old high noise paddles would not be allowed court time.
2. The City should maintain a list of acceptable quieter pickleball paddles and balls to minimize noise disturbances. The list shall be updated as necessary to reflect the current technology for paddles and balls.
3. Encourage the use of low noise pickleball equipment whenever possible.
4. Consider quiet days or hours.
5. Consider the use of quiet foam balls during the nighttime hours.

FREQUENCY CONTENT OF PICKLEBALL NOISE

The sound produced by the impact between a pickleball and paddle is characterized by a sudden onset and brief duration. The spectral content of the paddle impact is narrowband with a center frequency typically between 800 and 2,000 Hertz. Due to the frequency content of a pickleball strike, and the quantity of impact events, the impulsive character of the noise could remain audible and may still be a source of annoyance to sensitive individuals. Figure 14 displays the frequency plot of tennis, pickleball noise (no noise control), and pickleball noise with a 10-ft barrier at approximately 50-ft from the court. The impact sound of pickleball and its frequency characteristics can be further reduced with the use of padded paddles and to a greater extent foam balls. An additional 3 to 10 dB of noise reduction can be achieved with low noise equipment.



Note: †Taken from noise measurement location at approximately 50-ft from court.

Figure 14. Frequency Content of Pickleball vs Tennis Strike

CONCLUSION

Acoustics Group, Inc., (AGI) was retained by the City of Las Vegas to evaluate the pickleball noise levels associated with the Proposed Regional Pickleball Complex at Wayne Bunker Park. The project proposes adding twenty-four (24) pickleball courts to the park. AGI has reviewed the City of Las Vegas's Municipal Code Noise Standards, Clark County Noise Standards, conducted ambient noise level measurements, analyzed pickleball noise, assessed the impact of the pickleball courts, and evaluated noise control measures for reducing the noise from the proposed pickleball courts at the nearby residential homes.

The predicted future hourly Leq noise level from the proposed pickleball activity will be 56.7, 41.2, 53.4, and 63.3 dBA at the nearest receivers to the north (NM1), east (NM2), south (NM3A), and west (NM4), respectively. At NM1 and NM2, the pickleball noise level would be below ambient noise levels throughout the operating hours and will comply with the recommended noise standard for City of Las Vegas. At NM3A, the pickleball noise level will exceed the Clark County Leq Noise Standard of 52.9 dBA. At NM4, the pickleball noise level would exceed ambient noise levels and will not comply with the noise standard for the City of Las Vegas.

The Lmax from proposed pickleball activity will be as high as 71.4 dBA at the exterior of NM3A residences. Pickleball would exceed the Clark County Lmax Noise Standard of 56 dBA. However, the ambient background Lmax during operating the hours of 7AM to 10PM, ranges from 62.1 to 88.7 dBA. The future pickleball noise Lmax would fall within the existing ambient background noise range.

The impulse noise from pickleball play will be noticeable at the nearest receptors to the north, east, south, and west.

Noise control is recommended to reduce the pickleball noise at the impacted noise-sensitive receptors to the south and west. With the implementation of noise control options, pickleball noise would be reduced. However, the impulsive character of the noise could remain audible and may still be a source of annoyance to sensitive individuals, especially when the ambient background noise level is lower or when there are lulls in traffic noise.



APPENDIX

FIELD DATA SHEETS

CITY OF LAS VEGAS MUNICIPAL CODE

CLARK COUNTY MUNICIPAL CODE

NOISE MODELING INPUT/OUTPUT



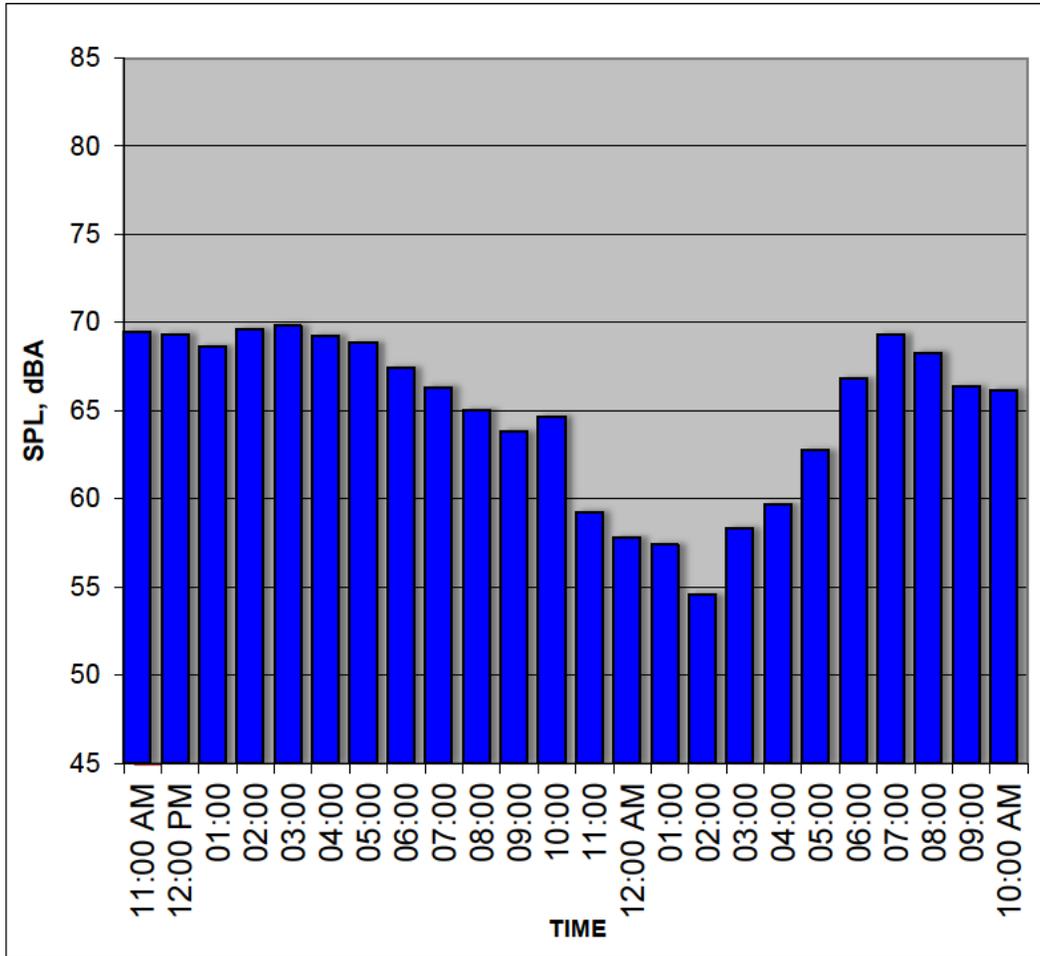
FIELD DATA SHEETS

MEASUREMENT DATA - HOURLY NOISE LEVELS

Project: City of Las Vegas Pickleball
Address: 7351 W Alexander Rd., Las Vegas, NV 89129
Location: 7401 Summer Crest Ln, Las Vegas, NV 89129 -
 on a light pole 10 ft off the ground

Date: 1/23/2024
 - 1/24/2024
Position: NM1

Noise Sources: Vehicular Traffic



TIME	HNL, dB(A)
11:00 - 12:00 PM	69.5
12:00 - 01:00 PM	69.4
01:00 - 02:00 PM	68.6
02:00 - 03:00 PM	69.6
03:00 - 04:00 PM	69.8
04:00 - 05:00 PM	69.3
05:00 - 06:00 PM	68.9
06:00 - 07:00 PM	67.5
07:00 - 08:00 PM	66.3
08:00 - 09:00 PM	65.0
09:00 - 10:00 PM	63.9
	64.6
	59.2
	57.8
	57.4
	54.6
	58.3
	59.7
	62.7
	66.8
07:00 - 08:00 AM	69.3
08:00 - 09:00 AM	68.3
09:00 - 10:00 AM	66.4
10:00 - 11:00 AM	66.2
CNEL:	70.3

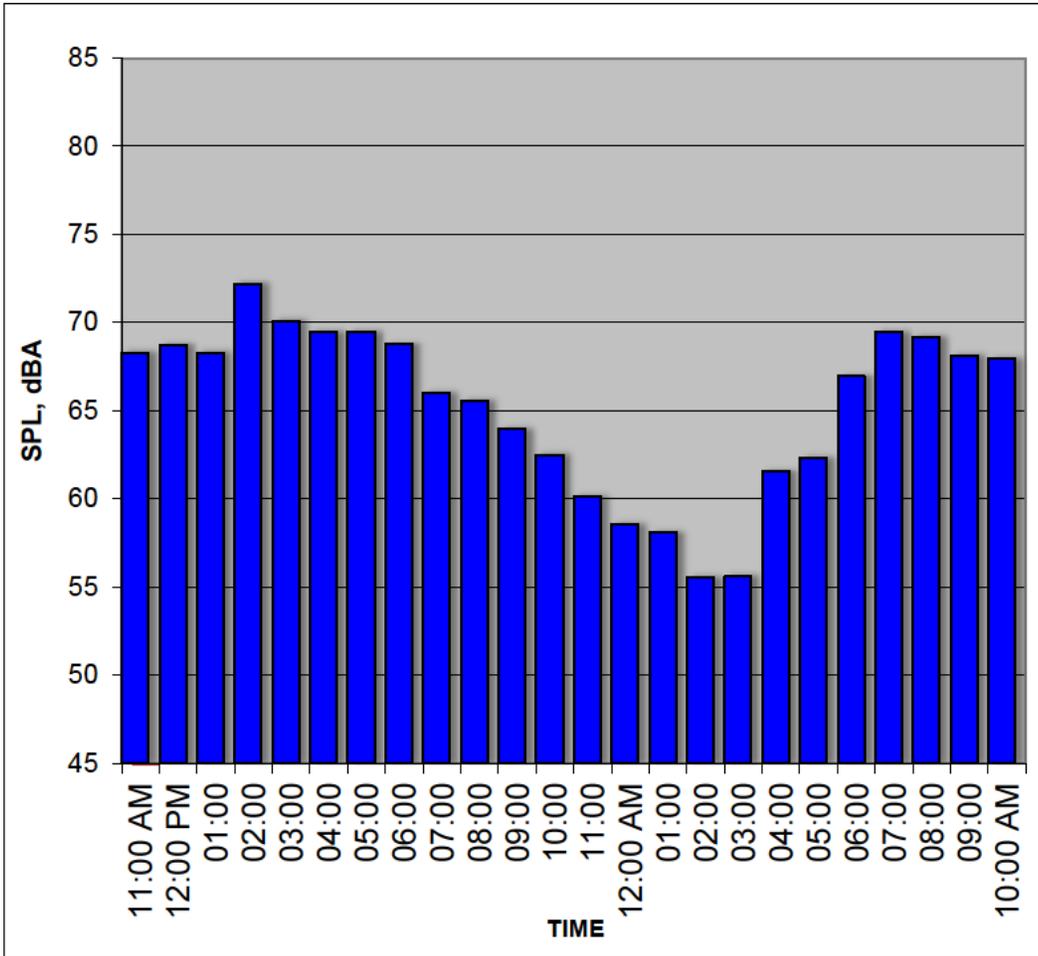
Notes:



MEASUREMENT DATA - HOURLY NOISE LEVELS

Project: City of Las Vegas Pickleball
Address: 7351 W Alexander Rd., Las Vegas, NV 89129
Location: 7132 W Tropical Island Cir, Las Vegas, NV 89129 -
 on a light pole 10 ft off the ground
Noise Sources: Vehicular Traffic

Date: 1/23/2024
 - 1/24/2024
Position: NM2



TIME	HNL, dB(A)
11:00 - 12:00 PM	68.3
12:00 - 01:00 PM	68.7
01:00 - 02:00 PM	68.3
02:00 - 03:00 PM	72.2
03:00 - 04:00 PM	70.1
04:00 - 05:00 PM	69.5
05:00 - 06:00 PM	69.5
06:00 - 07:00 PM	68.8
07:00 - 08:00 PM	66.0
08:00 - 09:00 PM	65.6
09:00 - 10:00 PM	64.0
10:00 - 11:00 PM	62.5
11:00 - 12:00 AM	60.1
12:00 - 01:00 AM	58.6
01:00 - 02:00 AM	58.1
02:00 - 03:00 AM	55.5
03:00 - 04:00 AM	55.6
04:00 - 05:00 AM	61.6
05:00 - 06:00 AM	62.3
06:00 - 07:00 AM	67.0
07:00 - 08:00 AM	69.4
08:00 - 09:00 AM	69.2
09:00 - 10:00 AM	68.1
10:00 - 11:00 AM	67.9
CNEL:	70.4

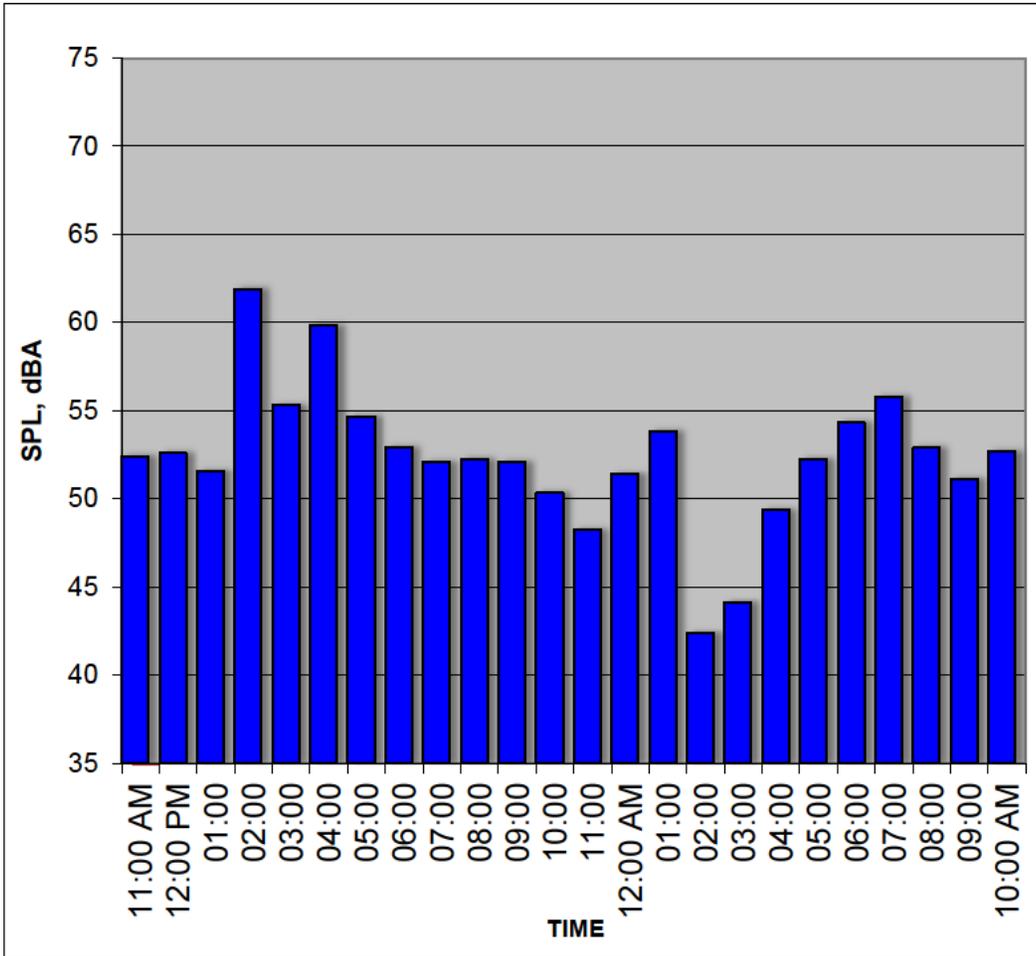


MEASUREMENT DATA - HOURLY NOISE LEVELS

Project: City of Las Vegas Pickleball
Address: 7351 W Alexander Rd., Las Vegas, NV 89129
Location: North of 7445 Constantinople Ave, Las Vegas, NV 89129 -
 5 ft off the ground

Date: 1/23/2024
 - 1/24/2024
Position: NM3

Noise Sources: Vehicular Traffic, Aircraft, & Lawn Mower



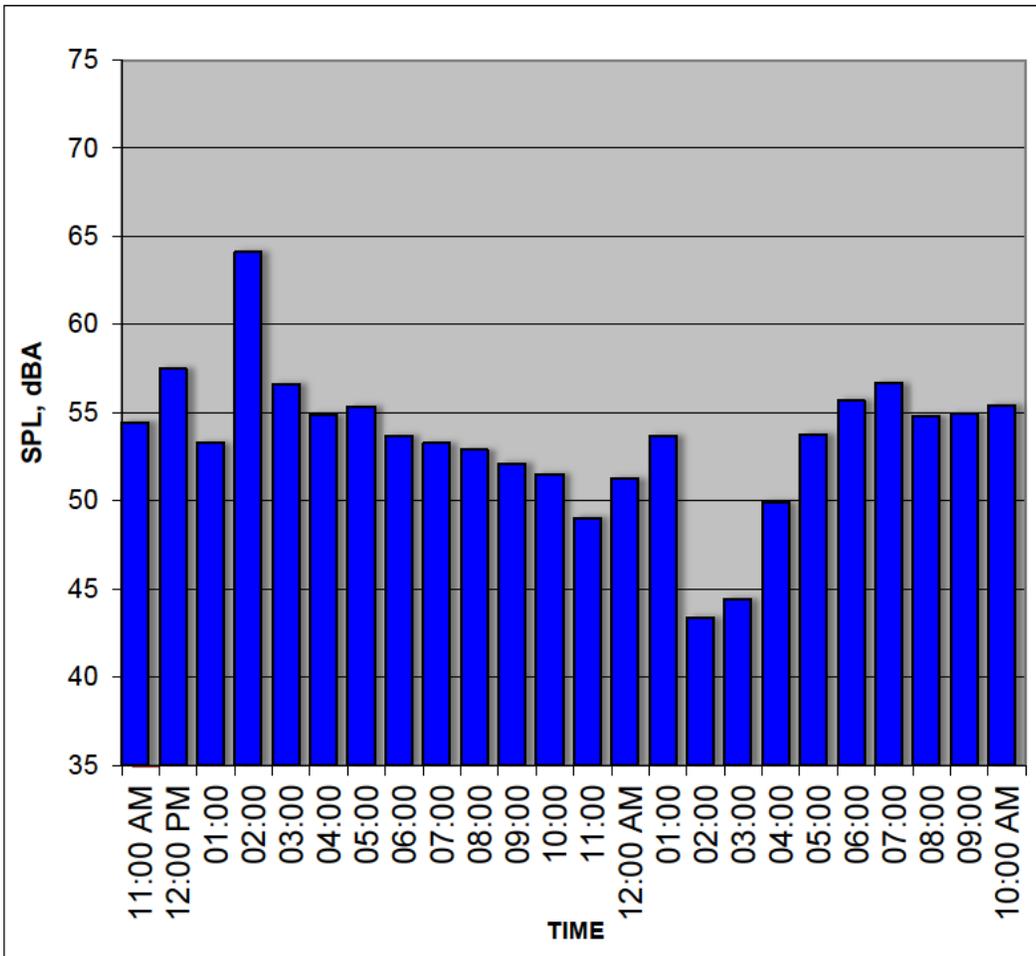
TIME	HNL, dB(A)
11:00 - 12:00 PM	52.4
12:00 - 01:00 PM	52.6
01:00 - 02:00 PM	51.6
02:00 - 03:00 PM	61.9
03:00 - 04:00 PM	55.3
04:00 - 05:00 PM	59.8
05:00 - 06:00 PM	54.6
06:00 - 07:00 PM	52.9
07:00 - 08:00 PM	52.1
08:00 - 09:00 PM	52.3
09:00 - 10:00 PM	52.1
	50.3
	48.3
	51.4
	53.8
	42.4
	44.1
	49.4
	52.3
	54.3
07:00 - 08:00 AM	55.8
08:00 - 09:00 AM	52.9
09:00 - 10:00 AM	51.1
10:00 - 11:00 AM	52.7
CNEL:	58.6



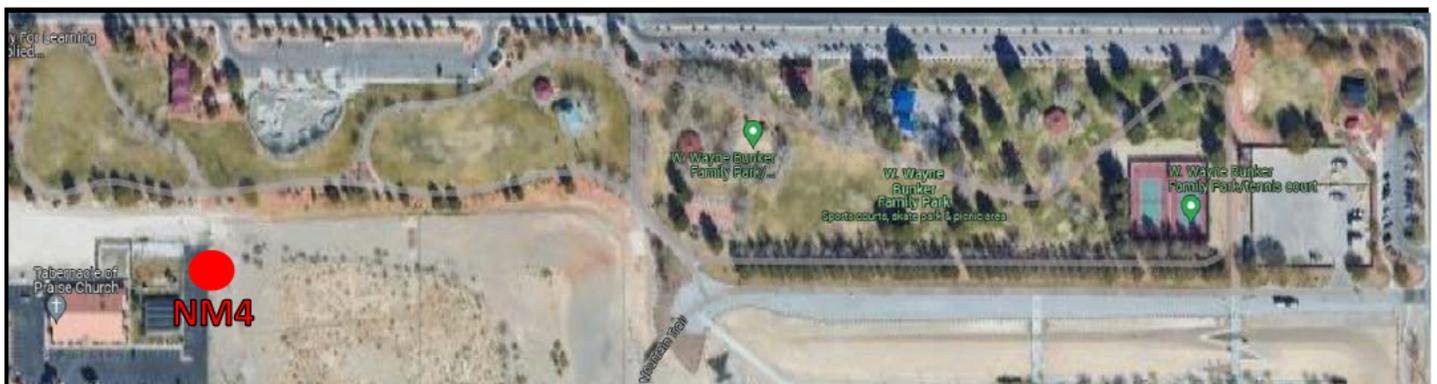
MEASUREMENT DATA - HOURLY NOISE LEVELS

Project: City of Las Vegas Pickleball
Address: 7351 W Alexander Rd., Las Vegas, NV 89129
Location: East of 7550 Constantinople Ave Bldg. 2, Las Vegas, NV 89129 - 5 ft off the ground
Noise Sources: Vehicular Traffic & Children playing on playground

Date: 1/23/2024
 - 1/24/2024
Position: NM4



TIME	HNL, dB(A)
11:00 - 12:00 PM	54.4
12:00 - 01:00 PM	57.5
01:00 - 02:00 PM	53.3
02:00 - 03:00 PM	64.1
03:00 - 04:00 PM	56.6
04:00 - 05:00 PM	54.9
05:00 - 06:00 PM	55.3
06:00 - 07:00 PM	53.7
07:00 - 08:00 PM	53.3
08:00 - 09:00 PM	52.9
09:00 - 10:00 PM	52.1
	51.5
	49.0
	51.3
	53.7
	43.4
	44.4
	49.9
	53.8
	55.7
07:00 - 08:00 AM	56.7
08:00 - 09:00 AM	54.8
09:00 - 10:00 AM	54.9
10:00 - 11:00 AM	55.4
CNEL:	59.5





CITY OF LAS VEGAS MUNICIPAL CODE

CHAPTER 9.16 - NOISE

9.16.005 - Definitions.

As used in this Chapter, unless the context otherwise indicates, the following terms shall have the meanings that are ascribed to them as follows:

- (A) "Demolition" means any dismantling, intentional destruction or removal of structures, utilities, public or private right-of-way surfaces or similar property.
- (B) "Emergency" means an occurrence or set of circumstances that involves actual or imminent physical trauma or property damage which demands immediate action.
- (C) "Emergency work" means any work that is performed for the purpose of preventing or alleviating the physical trauma or property damage that is threatened or caused by an emergency.
- (D) "Muffler or sound dissipation device" means a device for abating the sound of escaping gases of an internal combustion engine.
- (E) "Noise" means any useless sound which annoys or disturbs humans or which causes or tends to cause an adverse psychological or physiological effect on humans.
- (F) "Noise disturbance" means any sound which is unreasonably loud, disturbing or unnecessary or which endangers or injures the health of humans or annoys or disturbs a reasonable person of normal sensitivities.
- (G) "Public right-of-way" means any street, avenue, boulevard, highway, sidewalk, alley or similar place which is owned or controlled by a governmental entity.
- (H) "Public space" means any real property or structures thereon which is owned or controlled by a governmental entity.

(Ord. 3359 §§ 1, 2, 1988)

9.16.010 - Prohibited noises—Exceptions.

Subject to the provisions of this Chapter, no person shall make, cause, create or continue any noise disturbance within the corporate boundaries of the City. Noncommercial public speaking and public assembly activities that are conducted on any public right-of-way or in any public space shall be exempt from the operation of this Chapter.

(Ord. 3359 § 3, 1988; Ord. 2100 § 3 (part), 1980; Ord. 412 § 1 (part), 1950; prior code § 6-1-24 (part))

9.16.020 - Detrimental noises prohibited.

Noise of such character, intensity or duration as to be detrimental to the life or health of any individual, or in disturbance of the public peace and welfare is prohibited.

(Ord. 2100 § 3 (part), 1980; Ord. 412 § 1 (part), 1950; prior code § 6-1-24 (part))

9.16.030 - Enumeration of prohibited noises.

The following acts, among others, are declared to be noise disturbances and noises in violation of, and unlawful under, this Chapter, but this enumeration shall not be deemed to be exclusive:

- (A) The sounding of any horn or signal device on any automobile, motorcycle or bus while it is in motion except as a danger signal if another vehicle is approaching apparently out of control or, if in motion, only as a danger signal after the brakes have been or are being applied and the deceleration of the vehicle is intended, the creation by means of any such horn or signal device of any unreasonably loud or harsh sound or the sounding of such horn or device for an unnecessary and unreasonable period of time.

- (B) Operating or playing, or permitting the operation or playing of, any radio, television, phonograph, stereo, drum, musical instrument, sound amplifier or similar device which produces, reproduces or amplifies sound in such a manner as to create a noise disturbance:
- (1) To any person who resides or works in the vicinity. The operation or playing of such radio, television, phonograph, stereo, drum, musical instrument, sound amplifier or similar device in such a manner or at such a volume as to be plainly audible to the human ear at a distance of fifty feet from the source of the noise shall be prima facie evidence of a violation of this Chapter; or
 - (2) At a distance of fifty feet from such radio, television, phonograph, stereo, drum, musical instrument, sound amplifier or similar device when it is played or operated in or on a motor vehicle that is on any public right-of-way or in any public space.

This subsection shall not apply to any noncommercial spoken language that is subject to Subsection (K) of this Section

- (C) Yelling, shouting, hooting, whistling or singing on the public streets, particularly between the hours of eleven p.m. and seven a.m., or at any time or place in such a manner or at such a volume as to annoy or disturb the quiet, comfort or repose of any person in any hospital, dwelling, hotel or any other type of residence or of any person in the vicinity.
- (D) The keeping of any animal, bird or fowl which, by causing frequent or long-continued noise, disturbs the comfort or repose of any person in the vicinity.
- (E) The use of any automobile or motorcycle so out of repair, so loaded or in such manner as to cause loud and unnecessary grating, grinding, rattling or other noises.
- (F) The blowing of any steam whistle that is attached to any stationary boiler except to give notice of the time to begin or stop work, as a warning of fire or other danger or upon the request of the proper authorities of the City.
- (G) The discharge into the open air of the exhaust of any steam engine, stationary internal combustion engine, motor vehicle or motor boat engine except through a muffler or other sound dissipation device which will effectively prevent loud or explosive noises therefrom.
- (H) The erection, including the excavation, demolition, alteration or repair of any building in any new or existing residential district, or the excavation, construction or repair of any right-of-way improvements in any new or existing residential district other than between the hours of seven a.m. and six p.m., except in the case of urgent necessity in the interest of public health and safety and then only with a permit from the designated official. Such a permit may be granted for a period not to exceed thirty days while the condition of urgent necessity continues. Such a permit may be granted only upon a determination by the designated official that the public health and safety will not be impaired by the performance of the work between the hours of six p.m. and seven a.m. and that loss or inconvenience would otherwise result to any party in interest regarding the work. Such a permit may be granted only if application therefor is made at the time that the permit for such work is issued or at any time during the progress of such work. In connection with the permit process described in this Subsection, the designated official may establish such forms, policies and procedures as deemed necessary. For purposes of this Subsection, the "designated official" means:
- (1) For work involving buildings, the Director of Community Development or a designee.
 - (2) For work involving right-of-way improvements, the City Traffic Engineer or a designee.
- (I) The creation of any excessive noise on any street that is adjacent to any school, institution of learning, church or court while the same is in session, or is adjacent to any hospital, which unreasonably interferes with the working or sessions thereof or the persons therein.
- (J) The loading, unloading, opening, closing or other handling of boxes, crates, containers, building materials, garbage cans or similar objects between the hours of eleven p.m. and seven a.m. in such a manner as to project a noise disturbance across the boundary of any residential real property.
- (K) The use or operation for any purpose of a loudspeaker, public address system, or sound amplification device in connection with any radio, phonograph, tape recorder, microphone or similar device:

- (1) In such a manner or at such a volume that it is plainly audible to the human ear at a distance of fifty feet or more from the source of the sound;
- (2) Between the hours of eleven p.m. and seven a.m. on any public right-of-way or in any public space; or
- (3) On a truck or other vehicle, either moving or standing, for advertising or any other purpose.
- (L) The offering for sale or selling of anything by shouting or outcry within any residential or commercial area of the City.
- (M) The repairing, rebuilding, modifying or testing of any motor vehicle, motorcycle or motorboat in such a manner as to project a noise disturbance across the boundary of any residential real property.
- (N) The intentional sounding or permitting the sounding outdoors of any fire, burglar or civil defense alarm, siren, whistle or similar stationary emergency signaling device except for emergency purposes or for the testing, between the hours of eight a.m. and six p.m., of:
 - (1) A stationary emergency signaling device; provided, however, that each such test shall be performed at the same time of day, and any such testing shall use only the minimum cycle test time, which, in no event, shall exceed sixty seconds
 - (2) The complete emergency signaling system, including the functioning of the signaling device and the personnel response to the signaling device; provided, however, that such testing shall not be performed more than once in each calendar month.
- (O) The sounding or permitting the sounding of any exterior burglar alarm or any motor vehicle burglar alarm unless such alarm is automatically terminated within fifteen minutes after its activation.

(Ord. No. 6816, § 89, 8-17-22; Ord. No. 6161, § 1, 9-21-11; Ord. 5038 § 1, 1997; Ord. 3359 § 4, 1988; Ord. 2100 § 3 (part), 1980; Ord. 1890 § 1 (part), 1977; Ord. 1745 § 1 (part), 1975; Ord. 412 § 1 (1), 1950; prior code § 6-1-24(A—K))

9.16.040 - Exemptions from chapter provisions.

None of the terms or prohibitions that are contained in this Chapter shall apply to or be enforced against:

- (A) Any vehicle that belongs to, or is used by, the City or its authorized garbage collection contractor while it is engaged in any necessary public business;
- (B) The excavation or repair, or both, of streets, highways or bridges that are made during the night by or on behalf of the City, Clark County or the State, if the public welfare and convenience renders it impracticable to perform such work during the day;
- (C) The emission of sound to alert persons to the existence of an emergency;
- (D) Sounds that are emitted in the performance of emergency work;
- (E) Any event that:
 - (1) Is authorized by a special event permit issued by the City; or
 - (2) Takes place on the premises of a business that is licensed pursuant to [Chapter 6.39](#) or [Chapter 6.50](#) and is located within the Downtown Entertainment Overlay District, as described in LVMC 19.10.120, but only if and to the extent that all outdoor speakers or other amplification devices comply with the requirements and limitations of LVMC [6.39.050\(D\)\(5\)](#).
- (F) The exempt portion of any event that takes place on the premises of a business that is located within 18B the Las Vegas Arts District, as described in the Las Vegas Downtown Centennial Plan. The "exempt portion" of an event includes the following:
 - (1) For events beginning on Sunday through Wednesday, event activities that do not extend beyond ten p.m.;
 - (2) For events beginning on Thursday, event activities that do not extend beyond midnight; and
 - (3) For events beginning on Friday and Saturday, event activities that do not extend beyond two a.m. the following morning; or
- (G)

Civic functions, including without limitation parades, concerts, athletic events, group use of public facilities and other public gatherings for which a license or permit has been issued pursuant to any chapter of this Code.

(Ord. No. 6648, § 2, 10-17-18; Ord. No. 6157, § 1, 8-17-11; Ord. 6004 § 1, 2008; Ord. 3359 § 5, 1988; Ord. 2100 § 3 (part), 1980; Ord. 1890 § 1 (part), 1977; Ord. 1745 § 1 (part), 1975; Ord. 412 § 1 (2), 1950; prior code § 6-1-24(L))

9.16.050 - Violation—Penalty.

Any person violating any provision of this Chapter is guilty of a misdemeanor. A person who is convicted of a violation of Subsection (B) or Subsection (K) of Section 9.16.030 shall be punished by a fine not less than fifty dollars for the first offense, one hundred dollars for the second offense and two hundred fifty dollars for the third and all subsequent offenses.

(Ord. 5038 § 2, 1997)



CLARK COUNTY MUNICIPAL CODE

30.68.020 - Noise.

- a. Excessive noise shall be muffled to mitigate objectionable intermittence, beat frequency, shrillness or volume.
- b. The maximum permissible sound pressure level of any continuous, regular, or frequency source of sound produced by any activity shall be established by time period and type of zoning district per Table 30.68-1.
- c. Public address systems of any kind shall only be permitted subject to special use permit approval unless in conjunction with live entertainment or a temporary outdoor commercial event which is otherwise approved.
- d. Sound levels shall be measured with a sound level meter and associated octave band filter, manufactured according to standards prescribed by the American National Standards Institute, ANSI S1.2-1962 "American Standard Meter for the Physical Measurement of Sound" and the revisions thereof, including ANSI S1.1-1976, ANSI S1.6-1984, ANSI S1.4-1983- Type 1 Precision, ANSI S1.11-1986 and ANSI S1.13 Field Method. Measurements shall be made using the flat network of the sound level meter.
- e. Impulsive type noises shall be subject to the standards described in Table 30.68-2, provided they are capable of being accurately measured with the equipment described above.
- f. For the purpose of this Chapter, noises capable of being measured shall be those which cause rapid fluctuations of the sound level meter needle with a variation of no more than plus or minus two (2) decibels. Noises incapable of being measured, such as irregular and intermittent sound emissions, shall be controlled so as not to become a nuisance to adjacent uses.
- g. Sound pressure levels shall be measured at all property lines at a height of at least four (4) feet above the ground surface.
 1. Where the emitting and receiving premises are in different zoning districts, the limits governing the more restrictive district shall apply to any regulated noise entering that district.
 2. The levels specified may be exceeded by ten decibels (10dB) for a single period not to exceed fifteen (15) minutes in any one day.
- h. Requirements of this Section do not apply to:
 1. Construction and/or demolition activities when conducted during daytime hours.
 2. Sound generating equipment or apparatus used for public safety or to warn the public of an emergency.
 3. Noise from use-related loading/unloading operations that affect residential areas when conducted during daytime hours.
 4. Lawn maintenance and home repair only if conducted during daytime hours as a normal function of any authorized use, and the equipment is maintained in proper working condition.
 5. Aircraft Noise.
 6. Properties located within the Gaming Enterprise District located between Sahara Avenue and St. Rose Parkway and Koval Lane or its alignment and Cameron Street or its alignment.

Table 30.68-1 Noise - Maximum Permitted Sound Levels (Decibels)

OCTAVE BAND CENTER FREQUENCY (HERTZ)	WITHIN RESIDENTIAL DISTRICTS		WITHIN BUSINESS AND INDUSTRIAL DISTRICTS	
	DAYTIME	NIGHTTIME	DAYTIME	NIGHTTIME
31.5	72	65	76	65
63	65	58	69	62
125	58	50	62	54

250	53	44	58	49
500	50	40	55	45
1,000	47	37	52	42
2,000	43	33	49	38
4,000	40	30	46	35
8,000	37	27	43	32

Table 30.68-2 Impulsive Noise - Maximum Permitted Sound Levels (Decibels)			
WITHIN RESIDENTIAL DISTRICTS		WITHIN BUSINESS AND INDUSTRIAL DISTRICTS	
DAYTIME	NIGHTTIME	DAYTIME	NIGHTTIME
56	46	65	61
<i>Source: American National Standards Institute, Inc.</i>			

(Ord. 2907 § 11 (part), 2003; Ord. 2483 § 16 (part), 2000; Ord. 2481 § 3 (part), 2000; Ord. No. 4089, § 1, 3-6-2013)



NOISE MODELING INPUT/OUTPUT

Pickleball	PB	Lw	83.4	78.4	74.5	73.1	74.1	75.6	70.1	65.4	60.4	78.5	86.2
Car Start	CS	Lw	99.3	90.4	83.9	83.2	81.8	81.4	78.8	75.5	69.6	86	100.2
Car Door S	CD	Lw	104	102	96	94	89	85	80	80	80	91.8	106.9
Person	P	Lw	56.2	57.3	59.9	56.5	56.5	54.3	51.1	43	37	58.9	65.1

Result Table

Receiver Name	ID	Land Use	Limiting Value		rel. Axis			Lr w/o Noise Control		dL req.		Lr w/ Noise Control		Exceeding		passive NC
			Day dB(A)	Night dB(A)	Station m	Distance m	Height m	Day dB(A)	Night dB(A)	Day dB(A)	Night dB(A)	Day dB(A)	Night dB(A)	Day dB(A)	Night dB(A)	
NM1			0	0	0	187.93	1.5	56.7	56.7	56.7	56.7	0	0	-	-	-
NM2			0	0	251	447.75	1.5	41.2	41.2	41.2	41.2	0	0	-	-	-
NM3			0	0	170	25.59	1.5	53.1	53.1	53.1	53.1	0	0	-	-	-
NM4			0	0	30	15.76	1.5	63.3	63.3	63.3	63.3	0	0	-	-	-
NM3A			0	0	251	28.37	1.5	51.6	51.6	51.6	51.6	0	0	-	-	-
NM3A			0	0	251	38.65	1.5	52	52	52	52	0	0	-	-	-

			Weight.	31.5	63	125	250	500	1000	2000	4000	8000 A	lin	
Pickleball	PB	Lw		83.4	78.4	74.5	73.1	74.1	75.6	70.1	65.4	60.4	78.5	86.2
Car Start	CS	Lw		99.3	90.4	83.9	83.2	81.8	81.4	78.8	75.5	69.6	86	100.2
Car Door S	CD	Lw		104	102	96	94	89	85	80	80	80	91.8	106.9
Person	P	Lw		56.2	57.3	59.9	56.5	56.5	54.3	51.1	43	37	58.9	65.1

Result Table

Receiver Name	ID	Land Use	Limiting Value		rel. Axis			Lr w/o Noise Control				dL req.		Lr w/ Noise Control		Exceeding		passive NC
			Day	Night	Station	Distance	Height	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	
			dB(A)	dB(A)	m	m	m	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
NM1			0	0	0	187.93	1.5	56.8	56.8	56.8	56.8	0	0	-	-	-	-	-
NM2			0	0	406	416.82	1.5	41.2	41.2	41.2	41.2	0	0	-	-	-	-	-
NM3			0	0	295	7.21	1.5	52.5	52.5	52.5	52.5	0	0	-	-	-	-	-
NM4			0	0	30	22.87	1.5	51.1	51.1	51.1	51.1	0	0	-	-	-	-	-
NM3A			0	0	386	7.87	1.5	50.8	50.8	50.8	50.8	0	0	-	-	-	-	-
NM3B			0	0	182	9.88	1.5	49.1	49.1	49.1	49.1	0	0	-	-	-	-	-

[REDACTED]

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To: James Light <james.light@redondo.org>; Scott Behrendt <Scott.Behrendt@redondo.org>; Nils Nehrenheim Council Member Redondo Beach <nils@voteformils.org>; Todd Loewenstein <Todd.Loewenstein@redondo.org>; Paige Kaluderovic <Paige.Kaluderovic@redondo.org>; Zein Obagi <Zein.Obagi@redondo.org>; Eleanor Manzano <Eleanor.Manzano@redondo.org>
Cc: Mike Witzansky <Mike.Witzansky@redondo.org>; Eleanor Manzano <Eleanor.Manzano@redondo.org>; Michael Webb <Michael.Webb@redondo.org>; Cameron Harding <Cameron.Harding@redondo.org>
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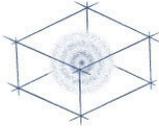
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Hi Ms. Manzano,

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Thanks,

Ken Bernstein



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The Form and Function of Sound

(520) 623-6003

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4335 N Alvernon Way, Tucson, AZ 85718

Pickleball Noise Impact Assessment and Abatement Planning

Prepared for

**City of Centennial
13133 E. Arapahoe Road
Centennial, Colorado 80112**

**Project Manager
Neil Marciniak**

Lance Willis, PhD

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R. 0, July 11, 2023

Executive Summary

As pickleball grows in popularity across North America it has become necessary to define more accurate methods of assessing the noise impact of the sport on the surrounding community and plan effective strategies for integrating it into various recreational venues. The purpose of this document is to provide descriptions of measurement protocols appropriate for assessing short duration impulsive sound such as pickleball and paddle impacts, definitions of terms and acoustical metrics, and guidance for acoustical planning of new pickleball courts. Basic methodologies and best practices for community noise assessment, environmental acoustics measurements, and noise regulation documents are described.

The main concern for neighbors living close to pickleball courts is the popping sound produced by the paddle when it strikes the ball. This sound is narrowband, imparting a sensation of pitch, and very short in duration. For the latter reason, measurement techniques that involve averaging the sound pressure over time tend to underestimate the noise impact of the impulsive sound produced by the paddles. For this type of sound, the noise assessment methodology described in ANSI S12.9 Part 4 for the highly impulsive classification of sound, based on adjusted sound exposure level, is recommended as the most accurate means of assessing the community response to pickleball paddle impacts.

Planning open air pickleball courts begins with selecting an appropriate site that has sufficient setbacks to ensure an effective noise abatement plan will be possible. Most of the work of reducing sound levels at the neighbors is done by noise barriers in the form of sound walls or mass-loaded vinyl (MLV) fence covers. These are, however, limited in the amount of noise reduction they can provide making setbacks a critical component for success of the overall noise abatement plan. In order for a noise barrier to provide acoustical shielding it must be able to block the line of sight from the players on the pickleball courts to the surrounding noise sensitive areas including upper level windows and raised decks. These geometrical considerations, which will include topography as well as the neighboring structures themselves, may affect the minimum setbacks needed in a particular application.

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1. Introduction

1.1 Pickleball and Pickleball Sound

Pickleball is popular and rapidly growing paddle sport in the United States and Canada. It is played with a hard plastic ball similar to a wiffle ball. A pickleball court is 44 feet long and 20 feet wide compared to a tennis court at 78 feet long and 36 feet wide. A tennis court can be converted into four pickleball courts.



Figure 1.1. Pickleball Game

As the sport has grown so have concerns from those living near pickleball courts over noise. The impact of the pickleball on the paddle causes a sharp popping sound that can be heard hundreds

of feet from the courts. Unfortunately, poor siting and inadequate noise impact assessment and abatement at many locations have made open air pickleball courts controversial additions in many neighborhood settings. This document will provide guidance on noise impact assessment in general, how to accurately measure the sound produced by pickleball courts, site selection, and effective mitigation treatments.

1.2 Properties of Sound

Sound, for the purposes of this document, is a small pressure disturbance in the atmosphere producing the sensation of hearing. It may be produced by the vibration of a surface or by the pulsation of an airstream such as a rotating fan blade or the human vocal cords. Sound propagates through the atmosphere as a compression wave with a speed that increases with the temperature of the air. The characteristics of a particular sound are described in terms of amplitude (loudness), frequency (pitch), and the change of amplitude and frequency with time (impulsiveness, modulation, onset rate, or rise time).

Noise is unwanted sound. This may be a subjective assessment or it may imply effects on health, well being, and speech communication. Community noise impact is assessed in terms of both annoyance and public safety.

1.3 Annoyance

The subjective aspect of noise is known as “annoyance.” Annoyance describes the quality of a sound that is perceived as objectionable. It differs from loudness, the perceived amplitude of a sound. Annoyance is often influenced by nonacoustic factors such as habituation or sensitization to the sound, involvement in activities that require concentration, attitudes towards sound sources and their operators, and the perceived necessity of the noise intrusions. For these reasons, reports of annoyance will have varying degrees of response bias.

Annoyance as a basis for determining acceptable noise levels can be traced to a paper by T. J. Schultz [Schultz, 1978] and the work of other researchers in the 1960's and 1970's. Schultz aggregated a group of social surveys regarding transportation noise in different cities and found that the results could be explained using a noise dosage relationship. This method has since been adopted by federal agencies tasked with regulating and evaluating road, rail, and air transportation noise.

Early research into the community impact of noise focused mainly on road traffic noise. As a result, other sound sources studied later were compared to traffic noise impact studies to determine their level noise impact. It was found that the sound pressure levels of sound sources having special characteristics such as impulsiveness and tonality did not correlate well with community questionnaires when directly compared to traffic sound pressure levels. The annoyance of these sources was often higher than the traffic noise for the same sound pressure level.

For this reason, the sound pressure levels of sound sources having these special characteristics are given an adjustment to compensate for the difference in noise impact. Part 4 of the ANSI S12.9 standard gives adjustments and measurement methodologies for a variety of sound

classifications and is used as the basis for the sound pressure level adjustments in this document.

1.4 Physiological Effects of Sound

While it is well known that high amplitude acoustical pressures can cause hearing impairment as well as other types injury to the body, lower amplitude sound can also have adverse long term physiological effects.

The World Health Organization recognizes that low level noise exposure has measurable health effects:

Sound/noise is a psychosocial stressor that activates the sympathetic and endocrine system. Acute noise effects do not only occur at high sound levels in occupational settings, but also at relatively low environmental sound levels when, more importantly, intended activities such as concentration, relaxation or sleep are disturbed. [WHO, *Night Noise Guidelines*, p. 61]

The sympathetic nervous system is part of the autonomic nervous system and is involved in the body's fight or flight arousal response. Chronic activation of the sympathetic system leads to stress, fatigue, and anxiety.

In addition to nervous system activation, sleep disturbance from noise can involve difficulty in falling asleep as well as awakenings that occur during sleep. Frequent awakenings lead to sleep fragmentation. This disrupts the normal stages of sleep and may lead to further neurocognitive manifestations not limited to daytime tiredness, loss of concentration, morning confusion, irritability, anxiety, and depression. [WHO, *Night Noise Guidelines*, p. 48, 26]

Environmental noise also has implications for the cardiovascular system, metabolism, and homeostasis, the ability of the body to regulate itself.

The auditory system is continuously analyzing acoustic information, which is filtered and interpreted by different cortical and subcortical brain structures. The limbic system, including the hippocampus and the amygdala, plays an important role in the emotional processing pathways. It has a close connection to the hypothalamus that controls the autonomic nervous system and the hormonal balance of the body. Laboratory studies found changes in blood flow, [blood pressure] and heart rate in reaction to noise stimuli as well as increases in the release of stress hormones... Acoustic stimulation may act as an unspecific stressor that arouses the autonomic nervous system and the endocrine system... The arousal of the sympathetic and endocrine system is associated with changes in the physiological functions and the metabolism of the organism, including [blood pressure], cardiac output, blood lipids (cholesterol, triglycerides, free fatty acids, phosphatides), carbohydrates (glucose), electrolytes (magnesium, calcium), blood clotting factors (thrombocyte, aggregation, blood viscosity, leukocyte count) and others. In the long term, functional changes and dysregulation may occur, thus increasing the risk of manifest diseases. [WHO, *Night Noise Guidelines*, p. 62-63]

The effects of stress can take many forms as seen above. Low level noise exposure that disturbs

sleep and concentration are known to produce a range of diagnosable illnesses and disorders.

1.5 Long Term and Short Term Community Impact

Community response to noise is different for short term and long term exposures. Short term impact refers to sounds that occur occasionally for a limited period of time, usually on an irregular basis, that are not part of the normal activities on a property. These types of sounds are generally addressed in the municipal code.

Zoning or land use regulations focus on long term community noise impact. These sounds occur regularly over a period of time measured in weeks, months, or years and are usually part of the normal activities on a property. In most cases, however, this would not include construction activities as these are temporary and not a normal part of the usage of the site.

Municipal code noise regulations and land use code noise regulations serve different purposes, but compliment each other to protect the community from excessive noise under differing circumstances. The land use code governs long term community noise exposure and is directed mainly to developers and commercial property owners. A municipal code applies to short term noise sources that generally do not operate on a regular basis. The table below shows a comparison of how these two codes work separately and together to provide a more complete community noise policy.

Table 1.1. Application of Short and Long Term Noise Regulation

	Municipal Code	Land Use Code
Assessment Type:	Short term noise impact	Long term noise impact
Directed Toward:	Residents, public gatherings, noise control officers, police officers	Developers, architects, acoustical engineers, planning & development dept., noise control officers
Purpose:	<ul style="list-style-type: none"> • Set threshold for offenses • Define penalties 	<ul style="list-style-type: none"> • Guidance for site planning • Standards for noise abatement • Long term noise assessment
Main Area of Law:	Criminal	Civil
Findings:	<ul style="list-style-type: none"> • Made by officer on scene • Immediate determination of required action 	<ul style="list-style-type: none"> • Assessment of all sound sources affecting surrounding properties by acoustical engineer • Analysis presented in detailed report
Expected Outcomes:	<ul style="list-style-type: none"> • Immediate action • Possible cease and desist order, citation, or arrest 	<ul style="list-style-type: none"> • Comprehensive plan to bring the site into compliance • Installation of noise abatement treatments

2. Definitions

A-weighted sound level

A measurement of a sound level obtained using “A” frequency weighting. This weighting curve approximates the frequency response of human hearing for low to moderate sound pressure levels. The frequency weighting characteristics of the A-weighting filter are defined in ANSI S1.42 and ANSI S1.4.

Background sound

Sound from all existing sources near and far that may interfere with a sound pressure level measurement, not to include the sound source being evaluated.

Decibel (dB)

Ten times the logarithm to the base ten of the ratio of two quantities that are proportional to power. Quantities denoted as a “level” are decibel quantities, e.g. sound pressure level.

Ensemble sound

Sound from all normal existing sources near and far at a given location, including the sound source being evaluated. The union of all sound sources observable at the point of assessment.

Equivalent-continuous sound pressure level

The sound pressure level of a steady, continuous sound having the same sound energy as the time varying sound measured. Ten times the logarithm to the base ten of the time average over the period of a measurement of the square of the ratio of the sound pressure to the reference sound pressure of 20 micropascals expressed in decibels (dB).

Fast exponential time weighting

A lowpass filter for the purpose of averaging or smoothing a signal having a time constant of 0.125 seconds applied to the square of the sound pressure as specified in ANSI S1.4-1983.

Highly impulsive sound

Impulsive sound having very rapid onset rate or rise time typically resulting from impact processes or small arms gunfire including, but not limited to: metal hammering, wood hammering, drop hammering, pile driving, drop forging, pneumatic hammering, pickleball paddle and ball impacts, pavement breaking, metal impacts during rail-yard shunting operation, and riveting. ISO 1996 differentiates highly impulsive sound from regular impulsive sound by its noted level of intrusiveness.

Impulsive sound

Sound that is characterized by brief excursions of sound pressure, typically less than one second, whose peak pressure noticeably exceeds the background sound pressure.

Insertion loss (IL)

For a sound attenuator, noise barrier, or other noise abatement treatment, the decrease in sound level at a point of observation when the noise abatement treatment is inserted between the sound source and point of observation.

Noise

Any sound which annoys or disturbs humans or which causes or tends to cause an adverse effect on humans, domesticated animals, or livestock.

Noise abatement plan

A detailed plan demonstrating the mitigation measures to be taken in order to meet the requirements of this noise regulation. The noise abatement plan should describe the construction and locations of abatement treatments with the expected sound pressure levels at the receiving properties.

Noise impact assessment

An analysis performed by a qualified acoustical engineer which determines the potential noise impacts of a proposed use.

Peak sound pressure

The largest absolute value of the instantaneous sound pressure in pascals (Pa) in a stated frequency band during a specified time interval.

Regular impulsive sound

Impulsive sound that is not highly impulsive sound. This includes speech and music.

Sound exposure level (SEL)

Sound exposure level is a descriptor for characterizing the sound from individual acoustical events. The sound exposure is the time integral of the square of the sound pressure over a time interval equal to or greater than an acoustical event having units of pascal squared seconds. The sound exposure level is ten times the logarithm to the base ten of the ratio of the sound exposure to the product of the square of the reference sound pressure of 20 micropascals and the reference time of one second expressed in decibels (dB).

Sound level meter (SLM)

An instrument used to measure sound pressure levels meeting the Type 1 standards for accuracy in ANSI S1.4-1983. Integrating sound level meters shall comply with ANSI S1.43-1997 Type 1. If octave band or fractional octave band filters are used, they shall comply with ANSI S1.11-2004 Class 1.

Sound pressure

A disturbance or perturbation of the atmospheric pressure with respect to the mean barometric pressure producing the sensation of hearing or vibration measured in units of pascal (Pa).

Sound pressure level (SPL)

20 times the logarithm to the base 10 of the ratio of the sound pressure to the reference sound pressure of 20 micropascals (μPa) expressed in decibels (dB).

Tonal sound

Sound having one or more single frequency oscillations (pure tones) or that is confined to a narrow band of frequencies meeting the criteria for tonal prominence. See ANSI S12.9 Part 4 Annex C or ANSI S1.13 Annex A.

3. Noise Regulation Best Practices

3.1 Purpose

A community is made up of individuals, families, businesses, government, land owners, tenants, and other groups conducting activities for their livelihoods and enjoyment. The purpose of noise regulation is to find a balance between the legitimate activities of one group and the need for peace and quiet of another and to provide a clear process for resolving disputes when they arise. Zoning noise regulations provide design goals for developers in planning a site for a specific activity and serve as criteria for assessing the community noise impact of existing sites. Clear guidance with regard to acceptable sound pressure levels is essential for ensuring new projects conform to community standards and for evaluating the compliance of existing land uses.

Noise regulations should set clear and enforceable limits on community noise exposure that accurately reflect the community response to a variety of common sound sources. Overly strict regulations lead to arbitrary and selective enforcement while overly simplistic sound pressure level limits lead to the impact of certain classifications of sound being underestimated or ignored completely.

A well provisioned noise regulation will therefore provide a comprehensive and accurate methodology for assessing the most common classifications of sound that impact a community. This ensures that community noise impact will be evaluated in a way that is representative of the experience of living and working in the community and also protects property owners from unreasonable demands for mitigation. Most importantly the noise regulations should provide a definitive means for bringing noise disputes to resolution.

Key goals of noise regulation include:

- Provide quantitative design targets for noise abatement
- Provide protections for neighbors for all classifications of sound
- Protect property owners from drawn out noise disputes

Benefits of good noise regulation:

- Defined design requirements for developers
- Easier to get financing for projects due to lower risk and uncertainty
- Enforceable standards for compliance
- No cutting corners for contractor at risk

3.2 Measurement Procedures

Noise regulation generally takes the form of specifying maximum allowable A-weighted sound pressure levels at a given location. It is important that the locations specified for assessment and compliance be accessible such as at a property boundary.

Property boundary regulations protect the receiving property in its entirety against noise intrusions from adjacent sites. They also do not require entering private property in order to conduct acoustical testing. Performing acoustical measurements on the offending site creates bias due to the closer proximity to the sound source. Creating a noise abatement plan for new developments using noise assessment locations on the receiving property or inside a structure makes ensuring compliance more complicated. This will be discussed further in Section 3.3.

3.3 Common Ordinance Noise Descriptors

Noise ordinances often do not have objective limits on sound pressure level, but instead use subjective criteria to evaluate noise impact. This leads to a great deal of difficulty in resolving noise disputes since neither side can agree on what the terms mean.

One common term is “audible” or “plainly audible.” The problem with this criterion is that neighbors will always be audible at certain times depending on meteorological conditions, time of day, etc. This places everyone in violation of the noise code leading to arbitrary and selective enforcement. The threshold of audibility depends on the background noise level at a specific location and time. It is therefore unpredictable for site planning purposes and unrepeatable. There is also no practical way to monitor without setting up a surveillance style recording system and reviewing the playback to identify the source in question.

Another common ordinance criterion is “excessive, unnecessary or offensive noise which disturbs the peace or quiet of any neighborhood or which causes discomfort or annoyance to any reasonable person of normal sensitivity residing in the area.” This regulation puts the arbiter in the position of deciding who is a reasonable person and what constitutes normal sensitivity. It turns an engineering problem of assessing noise impact based on decades on scientific field studies into a personal problem with no clear guidance on consistent application or how to reach resolution.

The Maricopa County, Arizona Code, section P-23, prohibits sounds that can be “heard from within closed residential structures.” This code is unenforceable because it is untestable. First, it requires access to a private home or place of business. The home or business must then be searched to verify that all doors and windows are closed. For a developer it is impossible to plan for or ensure compliance with such an ordinance because it is dependent on the construction of the receiving structures.

The subjective criteria described above may be difficult to enforce due to vagueness. Under the vagueness doctrine a statute may be void if it leads to arbitrary enforcement, does not provide fair notice of what is and is not punishable, or does not detail the procedures followed by officers or judges of the law.

3.4 Reducing Vagueness

The first step in reducing vagueness in noise regulation is to adopt a comprehensive, objective standard that addresses the most common sources of noise complaints, particularly impulsive and tonal sounds. There should be separate criteria for short and long term noise impacts. The zoning or land use code should focus on long term impacts while the municipal code addresses short term nuisance noise. The standards should not be overly restrictive such that common, everyday activities cause violations leading to arbitrary enforcement.

Sounds that are subjectively negative and disturbing for contextual reasons may require enumeration and specific restrictions in addition to sound pressure level limits. This may involve use limitation to certain times of day, complete prohibition, or other policies as deemed appropriate to the situation. A 5 to 10 dB adjustment for the enumerated sound sources may also be an effective means to address their greater noise impact.

3.5 Current Standards in Noise Regulation

3.5.1 European Union Directive 2002/49

The current, most up to date noise regulations with regard to scientific research have been enacted through European Union Directive 2002/49. This directive implements the noise assessment methodology in International Organization for Standardization standard ISO 1996. The American adaptation of ISO 1996 is ANSI S12.9 Part 4. These standards provide a comprehensive, objective method to assess the community noise impact of the most common sources of noise complaints including broadband continuous, impulsive, and tonal sounds.

In addition to the assessment methodology, ANSI S12.9 Part 5 provides guidance for acceptable day-night levels for a variety of land uses. In practice, setting sound pressure level limits for residential, commercial, and industrial zoning areas is usually sufficient.

4. Classification of Environmental Sound

The impact of noise on a community is not always simply determined by the amplitude of the sound. Sounds that vary rapidly with time or have certain frequency characteristics can have an additional impact. This chapter discusses the classification of sounds with special characteristics and how they relate to community noise response.

4.1 Amplitude Characteristics

4.1.1 Sound Pressure

The most fundamental characteristic of sound is its pressure amplitude measured in units of Pascals (Pa). Due to the extremely wide sensitivity range of human hearing, sound pressure is normally presented on a logarithmic scale known as the decibel scale and denoted by the symbol, dB.

It is important to note that the decibel is a scale or unit of level, not a unit of measure. A decibel quantity must therefore have a reference value to define it. Any acoustic quantity described as a “level” is by definition on a decibel scale. The sound pressure level (SPL) is the sound pressure in Pascals normalized to the standard acoustical reference pressure of $20 \cdot 10^{-6}$ Pascals as follows,

$$SPL = 20 \log_{10} \left(\frac{p}{20 \cdot 10^{-6}} \right)$$

where p is the sound pressure in Pascals and SPL is the sound pressure level in dB.

Figure 4.1 shows some typical sound pressure levels of common sound sources. Sound pressure levels in the blue range are very quiet and usually found only in special environments such as anechoic test chambers or remote forest areas. The green range is typical of quiet environments. For outdoor sound, most daytime noise regulations begin to apply in the yellow range at starting 55 dBA. The U.S Department of Housing and Urban Development will require a noise abatement before funding residential projects above 65 dBA. Above 75 dBA they will require a stringent approval process. At 90 dBA in the workplace, OSHA will require a hearing protection program for workers.

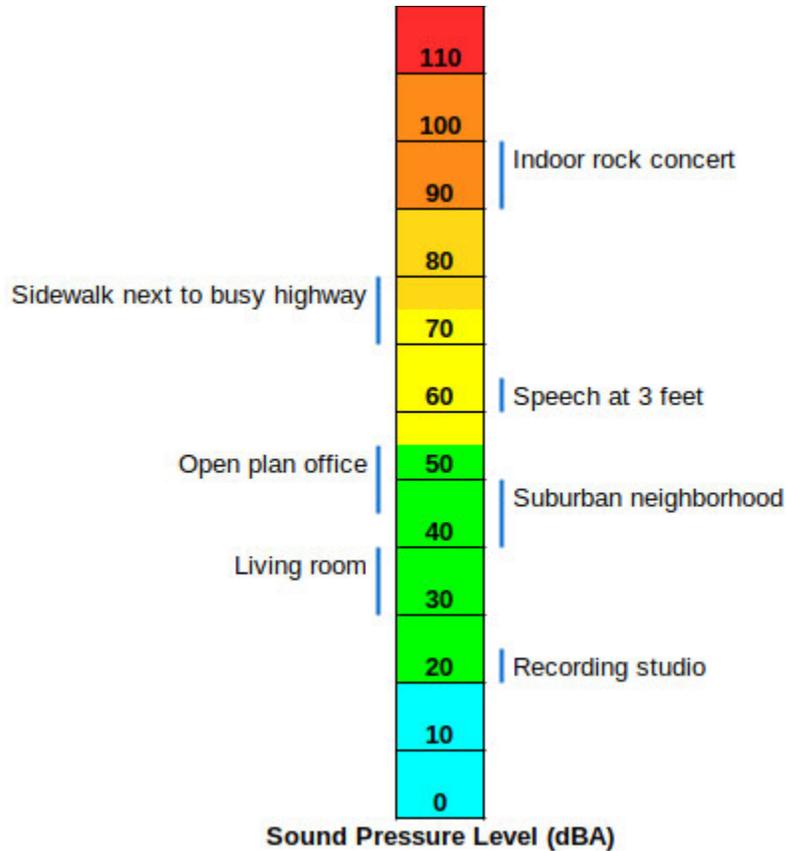


Figure 4.1. Sound Pressure Levels of Some Common Sources

4.1.2 Broadband Continuous Sound

A sound pressure level reading that does not change rapidly with time, does not contain tones, and covers a wide frequency range is said to be broadband with respect to frequency and continuous with respect to time. Broadband continuous sounds are characterized primarily by their sound pressure level. Common examples are fans, well pumps, and traffic noise.

Broadband continuous sounds are the simplest to quantify and are used as a point of comparison for other types of sound. That is, they provide a stable and relatively neutral basis for comparing tonal, impulsive, and other special sound classifications. The sound pressure level limits set in most noise regulations apply to this type of sound. Other sound classifications are adjusted so that their impact can be compared to a broadband continuous sound pressure level. This greatly simplifies noise regulations; however, it requires methodologies to be defined to accurately normalize sounds with special characteristics on the basis of community response to those characteristics.

4.2 Spectral Characteristics

The spectrum of an acoustic wave refers to its frequency content. The frequency range that a sound occupies may cover a wide band of frequencies, only a very narrow band, or even a single frequency in the case of a tone. Frequency is measured in units of Hertz (Hz) which are equivalent to one cycle per second.

4.2.1 Broadband

As described above, broadband means that the sound covers a broad spectrum of frequencies. This type of sound is in general the most neutral in terms of subjective sound quality. A broadband source with emphasis on the frequencies above 1,000 Hz may, however, be characterized as sharp or shrill.

4.2.2 Narrowband

Sounds occupying only a narrow portion of the auditory spectrum are said to be narrowband. Narrowband can be regarded as having a bandwidth less than 1/3 of an octave. This type of sound is sometimes encountered in impact processes where the impact excites a structural resonance, but the duration of the sound is very short due to damping in the structure. Narrowband sounds will require a sound pressure level adjustment due to their spectral characteristics in relation to broadband continuous sounds if they have tonal prominence (see Section 5.5.1 Assessing Tonal Sounds).

4.2.3 Tonal

Sounds containing pure tonal frequencies are usually produced by rotating machinery, but can also be electrically amplified signals such as those created by a backup alarm. Human hearing is sensitive to tones. Sounds having tonal prominence will require an adjustment in order to be compared to broadband continuous levels (see Section 5.5.1 Assessing Tonal Sounds).

4.2.4 Infrasound and Ultrasound

The nominal range of human hearing is 20 Hz to 20,000 Hz. Sounds outside this range are referred to as infrasound if below 20 Hz and ultrasound if above 20,000 Hz. Objectionable infrasound can sometimes be generated by wind turbines or industrial sound sources.

4.3 Temporal Characteristics

The way sound changes with time can have a significant influence on the noise impact. Accounting for these characteristics is important for accurately predicting community response.

4.3.1 Stationary or Continuous

Sound that changes slowly in amplitude with time is known as continuous or in statistical terms, stationary. In practice, sounds that do not meet the criteria for impulsive, rapid onset, or modulated are considered continuous and do not require any sound pressure level adjustment for

their temporal characteristics.

4.3.2 Impulsive

Impulsive sound is characterized by brief excursions of sound pressure whose peak pressure noticeably exceeds the continuous sound pressure. The duration of a single impulsive event is usually less than one second.

Impulsive sounds often create annoyance because they are similar to sounds that contain important information about our environment such as a sound outside the house or a door closing. We are sensitive to these types of sounds because they alert us to events occurring nearby that we may need to respond to. Continuous false alarms make it difficult to relax, concentrate, or sleep soundly without disturbance.

Many researchers have found that impulsive sound requires a level adjustment to properly account for the special characteristics and sensitivity to this class of sound [Buchta, Smoorenburg, Vos] and that listeners are able to differentiate between loudness and annoyance for sounds with temporal variance [Dittrich].

Impulsive sound is considered to have three subcategories: regular impulsive, highly impulsive, and high energy impulsive. Each of these categories has a different sound pressure level adjustment.

Highly Impulsive

Highly impulsive sound is characterized by a sudden onset and high degree of intrusiveness. This is common for impact processes and small arms fire. Highly impulsive sound in general has a duration too short to be accurately measured using maximum fast exponential time weighting. Impulses with a regular repetition rate greater than 20 Hertz may be perceived as tonal rather than impulsive and require a tonal level adjustment.

Research has indicated that highly impulsive sound should receive a 12 to 13 dB adjustment [Buchta, Smoorenburg]. ANSI S12.9 Part 4 and ISO 1996 Part 1 recommend a 12 dB adjustment.

High Energy Impulsive

High energy impulsive sound is usually produced by explosive sources where the equivalent mass of dynamite exceeds 25 grams. Common sources are blasting or artillery fire. Sonic booms not produced by small arms fire are also included in this subcategory. High energy impulsive sound differs from highly impulsive sound mainly in the amount of low frequency energy produced.

Regular Impulsive

Impulsive sound not categorized as high energy or highly impulsive is categorized as regular impulsive. ANSI S12.9 Part 4 and ISO 1996 Part 1 recommend a 5 dB adjustment for regular impulsive sound.

Modulated

Another type of transient sound is characterized by amplitude modulation. These sounds consist of a continuous series of impulsive events such as speech or music. Human hearing is most sensitive to amplitude modulation at a rate of about 4 Hz [Zwicker & Fastl, p. 177, 247-8]. This, not surprisingly, is the rate at which talkers typically produce syllables when speaking. Sounds having amplitude modulation near this rate may cause higher annoyance than continuous sounds at the same sound pressure level and should be treated as regular impulsive. When a large number of conversations is occurring at once such that the words of individual speakers cannot be understood, the noise impact may be more similar to a broadband continuous sound source.

4.3.3 Time of Occurrence

Sounds that occur at certain times may become more objectionable. The community noise impact of sounds that occur at night is higher than in the daytime. Community noise impact is also higher during times when people are normally at home than when they are normally away at work.

4.4 Ensemble and Background Sound Pressure Levels

Noise complaints usually involve a specific sound source. In any outdoor environment the source of interest will be among many background sources. Since it is in general not possible to remove the background sources, acoustical measurements must be performed in the presence of all active sound sources. “Ensemble sound pressure level” will refer to the sound produced by all sources at a given location including the source of interest. “Background sound pressure level” will refer to the sound present with the source of interest deactivated.

5. Measurement and Assessment of Environmental Sound

5.1 Quantification of Sound

5.1.1 Sound Pressure

The measurement of sound in regard to noise regulation focuses on the sound pressure level (SPL) as described in Section 4.1.1. The human ear is a pressure sensor; therefore, the SPL most directly relates to the community response to noise. The human sensation of hearing does not, however, work in the same way that a microphone does. Spectral and temporal characteristics of a sound source can have a significant effect on the community response to that source. Signal processing must be applied to the measured sound pressure in order to adjust the measurement to the actual sensitivities of human hearing.

5.1.2 Frequency Weighting

The first step in accurately representing the perceived loudness of sound is to simulate the frequency response of the human ear. Human hearing has lower sensitivity to sounds below 250 Hz and above 8,000 Hz as seen in Figure 5.1 [ISO 226]. Hearing sensitivity as a function of frequency is, however, also a function of amplitude. Different frequency weighting filters must therefore be used for different amplitude ranges. Figure 5.2 illustrates the A and C frequency weighting curves [ANSI S1.4] that simulate the equal loudness contours of human hearing with respect a 1,000 Hz tone at sound pressure levels of 40 and 100 dB respectively. Noise regulations generally specify the A-weighted sound pressure level since this curve most closely matches the target noise level goal for broadband sound sources.

A-weighted sound pressure levels are commonly expressed as dBA, dB(A), or L_A .

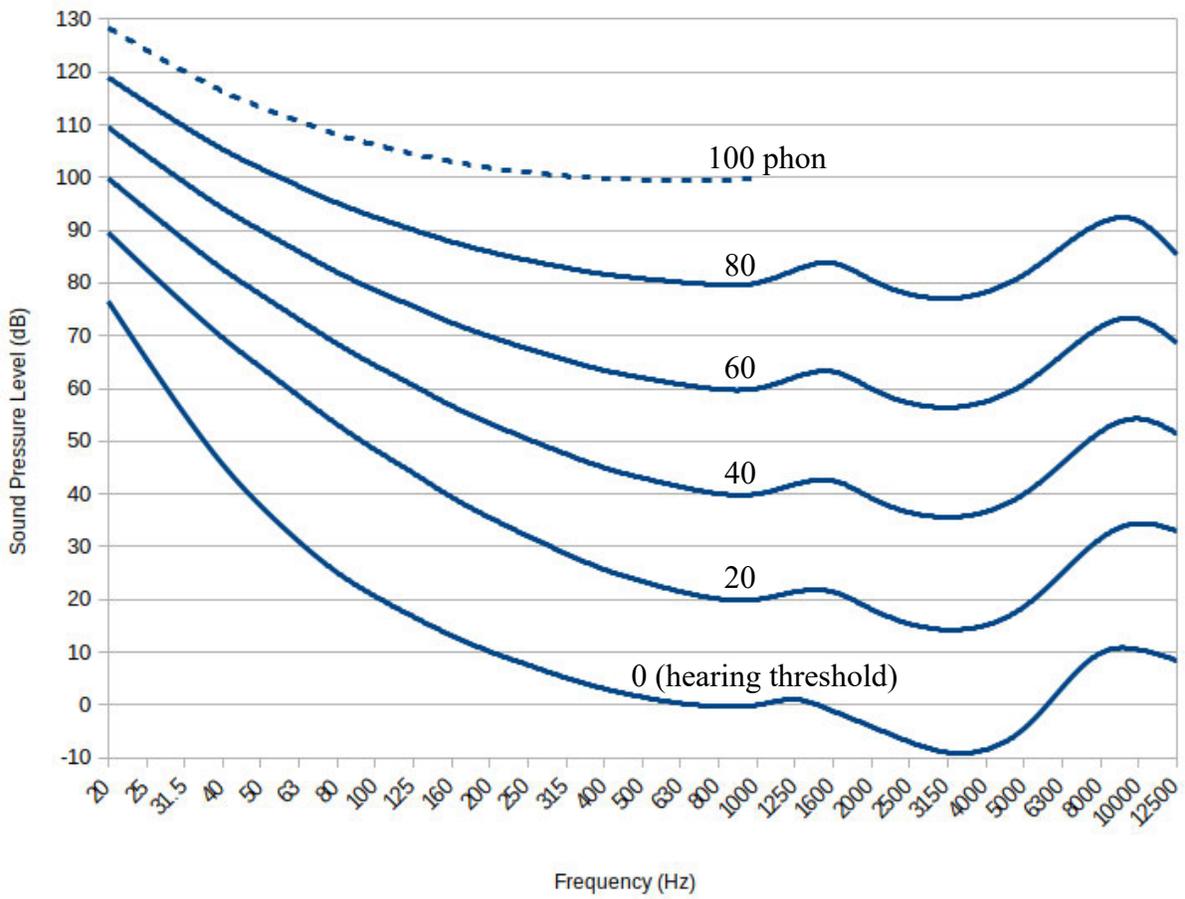


Figure 5.1. ISO 226 Equal Loudness Contours

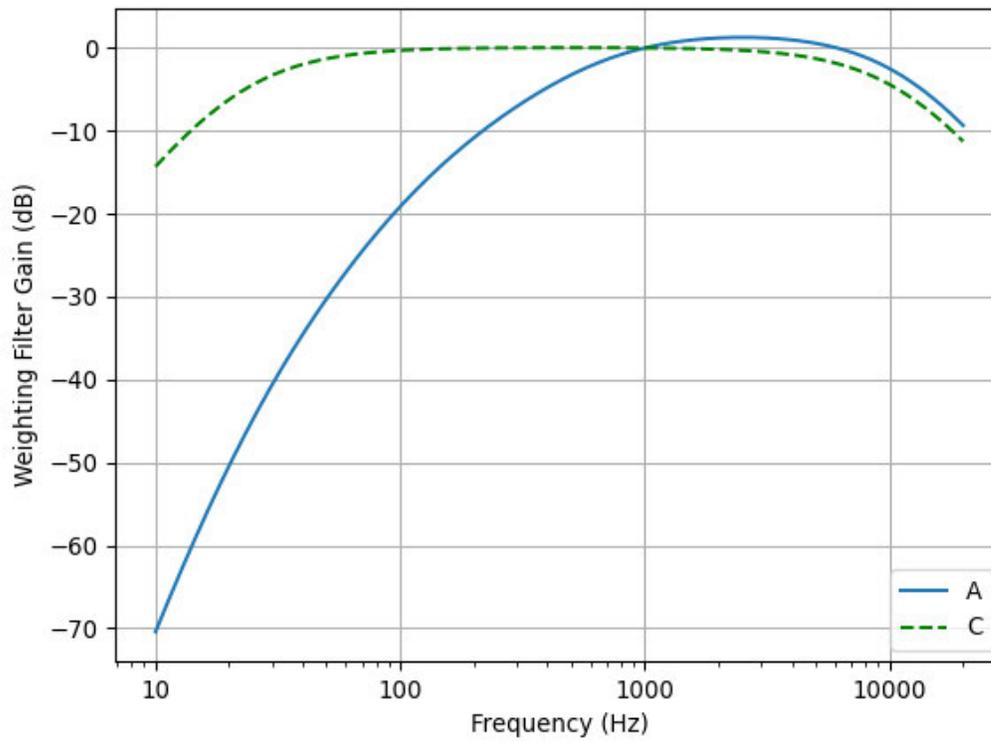


Figure 5.2. ANSI S1.4-2014 Frequency Weighting Curves

5.1.3 Equivalent-continuous Sound Pressure Level

The equivalent-continuous sound pressure level is the principal acoustical quantity measured for long term noise impact assessment. This is a root-mean-squared average of the sound pressure over a period of time expressed as a sound pressure level. Equivalent sound pressure levels may represent the average level over a period of minutes, an hour, or some other interval.

The A-weighted equivalent sound pressure level is represented as LA_{eq} . The equivalent-continuous sound pressure level does not use exponential time weighting (see below).

5.1.4 Day Night Level

A variation of the A-weighted equivalent sound pressure level is the day night level (DNL or L_{dn}). This metric incorporates the increased sensitivity to noise at night by adding a 10 dBA adjustment to sound occurring between 10:00 pm and 7:00 am. DNL is the most common metric used for transportation noise and is often applied to other broadband continuous sound sources.

5.1.5 Percentiles

To gain more insight into the noise environment during a long term measurement, some statistical quantities may be employed. The quantities LA_{10} and LA_{90} represent the A-weighted sound pressure level exceeded during 10% and 90% of the time of the measurement. LA_{90} is often used as an indication of the minimum background noise level without the presence of single noise events. LA_{10} indicates the highest sustained levels.

5.1.6 Sound Exposure Level

The sound exposure level (SEL) is used to quantify single noise events. It is particularly useful when the duration of an impulsive sound is too short to be accurately measured with an equivalent-continuous or exponential time weighted sound pressure level measurement. The equivalent-continuous level represents the mean squared average sound pressure. It does not account for instantaneous peak pressures. Impulses with short durations tend to get averaged out although the peak pressure may be significant. This can sometimes lead to the mistaken conclusion that the impulse has no greater noise impact than the background noise.

The sound exposure level also allows single noise events to be extracted from the measurement so that adjustments for special characteristics can be applied to more accurately represent the community response.

5.1.7 Peak Sound Pressure Level

For impulsive sounds with rapid onset, the instantaneous peak sound pressure level may be important. This metric may be used to supplement the sound exposure level for highly impulsive noise events that do not occur frequently enough to accumulate a substantial amount of sound energy, but nevertheless do present a significant noise impact due to their high peak pressure levels.

It should be noted that peak sound pressure level alone does not necessarily differentiate between intrusive highly impulsive and regular impulsive sounds. Different impulsive sound sources with the same peak sound pressure may have different noise impacts. Noise impact assessment of impulsive sound is often multidimensional involving onset rate, frequency range, and impulse duration.

5.2 Acoustical Instrumentation

5.2.1 The Sound Level Meter

In the regulation of community noise, a sound level meter (SLM) meeting prescribed standards for accuracy and conformity is used. The meter consists of a microphone and a signal processing unit that performs frequency weighting (usually A and C) and time weighting functions. The sound pressure level is displayed on the meter. An SLM that can log sound pressure levels and compute an equivalent-continuous level is called an integrating SLM. Modern SLMs incorporate digital signal processing capable of logging many acoustical metrics at the same time and can save simultaneous calibrated audio recordings for source confirmation and further analysis.

Most professional acousticians use, and many noise regulations require, a meter meeting the ANSI S1.4 Type 1 standard. This is the highest accuracy used for field work. Type 2 meters meet a lower standard of accuracy and are allowed by OSHA and some municipal codes.

5.2.2 Exponential Time Weighting

When taking sound pressure level measurements in the field, the reading on the meter can fluctuate rapidly for some sound sources. Exponential time weighting is a method of stabilizing the reading by applying a smoothing filter to the sound pressure envelop. Professional sound level meters will typically have three exponential time weighting settings: fast, slow, and impulse. The slow setting has time constant of 1 second. The fast setting time constant is 0.125 seconds (1/8 of a second). For most measurements the fast setting is preferred with the exception of impulsive sounds with a rapid onset rate.

Impulse time weighting uses a 0.035 second time constant on the rise of the sound pressure envelop with a peak hold having a 1.5 second time constant on the decay. The purpose of this setting is to allow a faster response on the rise of the signal to reduce the attenuation of the maximum pressure of the impulse, but have a slow decay to hold the reading on the meter display so it can be read and recorded. This time weighting is, however, still much slower than the impulse produced by typical highly impulsive sound source such as a pickleball paddle impact.

5.2.3 Integrating Sound Level Meters

Integrating SLMs integrate the sound pressure over the time period of a measurement in order to calculate the equivalent-continuous sound pressure level (LAeq). An integrating meter is required for noise regulations that specify metrics based on equivalent-continuous sound pressure level such as the day night level (DNL) or hourly sound pressure level.

5.2.4 Frequency Band Analysis

Some sound level meters include filters for obtaining octave band and fractional octave band sound pressure levels. Frequency band data is needed for designing sound walls and other noise abatement treatments. Unweighted octave band sound pressure levels may also be used to assess low frequency sound in regard to acoustically induced vibration caused by air handling units or subwoofers.

5.2.5 Calibration

The calibration of the sound level meter should be recertified by a qualified, independent metrology laboratory at intervals recommended by the manufacturer of the meter, usually one year. The sound level meter shall be used as provided in the manufacturer's instructions.

It is standard practice when carrying out sound pressure level measurements to place a calibration device recommended by the meter manufacturer over the microphone before and after testing to verify that the sensitivity of the microphone has not changed and that the equipment has not been damaged prior to or during testing. The field calibrator should also be sent to a

qualified metrology laboratory to have the calibration certified at intervals specified by the equipment manufacturer. This period is usually one year.

5.3 Calculation Methods

5.3.1 Decibel Addition

When working with multiple sound sources, it may be necessary to understand how each individual source contributes to the total sound pressure level. Decibel levels do not add arithmetically, but must be combined logarithmically. Figure 5.3 shows a chart for adding two levels. First, calculate the difference in the levels. Next, find the level difference on the horizontal axis of Figure 5.3 and find the corresponding level addition of the vertical axis. Add this number to the highest of the two levels. For example, to add two levels, 50 and 56 dB, together, find the difference, 6 dB, on the chart. The addition is 1 dB. Therefore, the decibel sum of 50 and 56 dB is 57 dB. If the level difference is greater than 10 dB, the contribution of the lower level source is negligible.

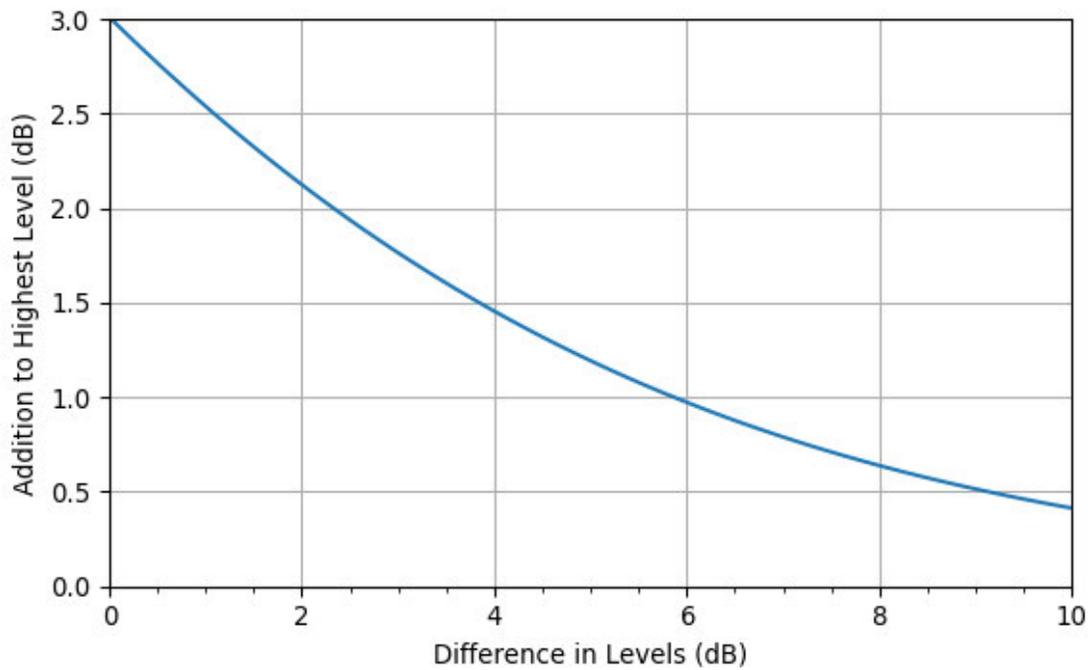


Figure 5.3. Decibel Addition

Equation 5.1 gives the direct calculation for the decibel sum, L_s , of levels, L_1 and L_2 .

$$L_S = 10 \log_{10} \left(10^{0.1L_1} + 10^{0.1L_2} \right) \quad (5.1.1)$$

5.3.2 Background Noise Correction

When assessing a noise issue it is common to measure the sound source of interest in the presence of other background sources. If the background noise level is within 10 dB of the ensemble noise level (see Section 4.4) a background noise correction should be applied to avoid overestimating the sound pressure level produced by the source of interest.

The corrected source level, L_{Source} , is found by the decibel subtraction of the background noise level, L_{bgn} , from the ensemble level, L_{ens} .

$$L_{Source} = 10 \log_{10} \left(10^{0.1L_{ens}} - 10^{0.1L_{bgn}} \right) \quad (5.2)$$

The background corrected sound pressure level of the source can also be found using Figure 5.4. Subtract the background sound pressure level from the ensemble level. Find this level difference on the horizontal axis of the figure and locate the corresponding decibel value on the vertical axis. Subtract this number from the ensemble sound pressure level to get the background corrected level of the source.

If the ensemble sound pressure level is within 3 dB of the background noise level, the source of interest is producing less sound pressure than the background sources and cannot be accurately assessed. When the conditions on the site prevent the background sound pressure level from being measured it should be noted in the measurement report.

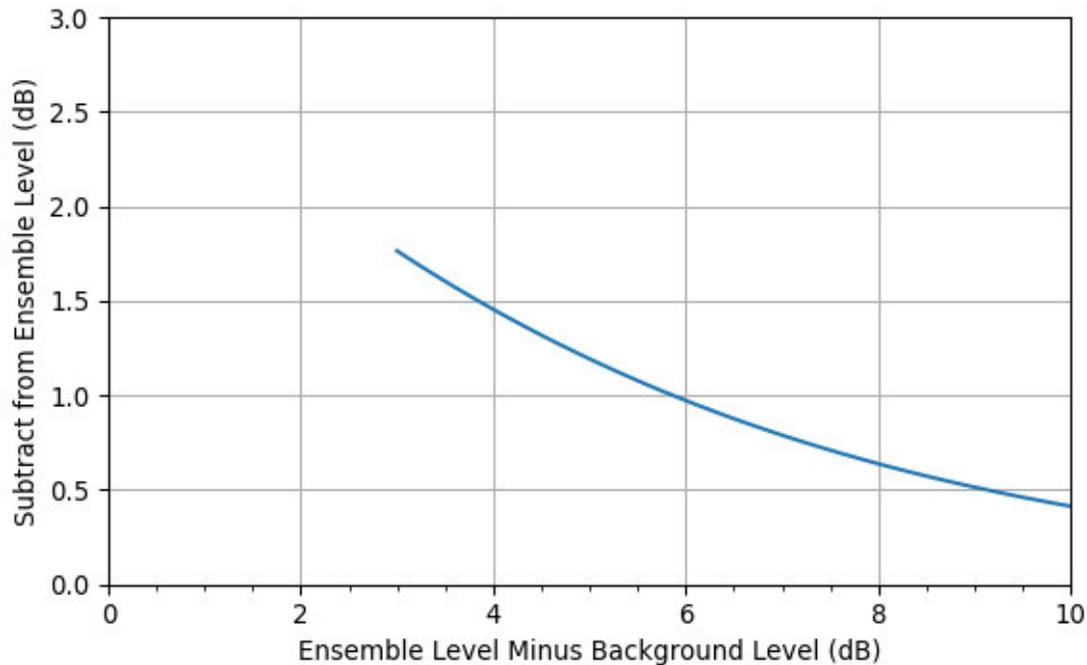


Figure 5.4. Background Noise Correction

Example:

An exhaust fan located on the exterior wall of a warehouse building runs continuously. A sound pressure level measurement taken at the nearest residential property line with the fan running reads 64 dBA. The fan is then shut off and the measurement repeated. The sound pressure level now reads 58 dBA due to a nearby roadway.

Subtracting the background noise level (58 dBA) from the ensemble level (64 dBA), which includes the fan and all other sound sources in the area, gives a difference of 6 dBA. From Figure 5.4, a 6 dB level difference on the horizontal axis corresponds to 1.0 dB on the vertical axis. Subtracting this number from the ensemble sound pressure level gives a result of 63 dBA for the sound pressure level of the exhaust fan by itself.

5.4 Measurement Procedures

5.4.1 Field Calibration

The calibration of the sound level meter shall be recorded before and after each series of measurements using a field calibrator or method recommended by the manufacturer of the meter.

5.4.2 Measurement Conditions

To the extent practical, all sound sources contributing to the ensemble sound pressure level at the point of measurement should be identified.

Measurements should not be performed when wind speeds exceed 10 knots (11 miles per hour, 5 meters per second), the SLM may become wet, or temperatures are outside the tolerance range of the SLM as specified by the manufacturer. A properly fitted windscreen shall be attached to the microphone.

Unless necessary, hourly or shorter duration measurements at distances greater than 100 feet (30 meters) should be performed on sunny days in order to avoid acoustic shadow zones formed by thermal inversions caused by ground heating. When the sun heats the ground, the relatively warm layer of air near the ground can cause sound to refract upward creating a complete or partial shadow. Measurements taken in the shadow zone can underestimate the sound pressure levels present at other times of the day.

5.4.3 Measurement Locations

The preferred noise assessment location is at the property line of the receiving property at the point most impacted by the sound source in question. More than one measurement location may be necessary for multiple sound sources or some noise sensitive areas.

In some situations the area most affected by the sound source of interest may be inside the boundaries of the receiving property. This is sometimes for the case, for example, if there is a wall blocking sound at the property line. Measuring the sound directly behind the wall may not be representative of the sound levels farther from the wall inside the receiving property or at the upper floors of a building located on the property.

5.4.4 Sound Level Meter Placement

The microphone of the sound level meter should be placed at a minimum height of 45 inches (1.1 meters) above ground level and a minimum distance of 12 feet (3.6 meters) from any other reflecting surface. The microphone should not be placed closer than 12 feet (3.6 meters) from any sound source.

Other microphone placements may be used as necessary to assess a specific noise sensitive area, but their acoustical characteristics must be specified.

5.4.5 One Hour Equivalent-continuous Sound Pressure Level Measurements

One hour equivalent-continuous sound pressure level measurements shall be conducted using an integrating sound level meter. For sound sources that do not change in level over time, a shorter measurement period may be used provided the sound pressure level measured is typical of the source in question, but not less than 2 minutes. If a sound source has a regular operating cycle, the time period of the operating cycle, including both time on and time off, may be used for the measurement.

5.5 Adjusted Sound Pressure Levels

Sound sources that have special characteristics including impulsiveness and tonality have been found to have a noise impact greater than that indicated by the equivalent-continuous level. To account for this a set of adjustments to the equivalent-continuous sound pressure level have been defined based on the recommendations of ANSI S12.9 Part 4. These adjustments apply to equivalent-continuous sound pressure level measurement such as one hour A-weighted sound pressure levels (LAeq) and octave band equivalent-continuous sound pressure levels.

5.5.1 Assessing Tonal Sounds

Sounds having tonal prominence receive a 5 dB adjustment. Tonal prominence is determined according to ANSI S12.9 Part 4 Annex C by comparing adjacent unweighted one-third octave band equivalent-continuous sound pressure levels to the one-third octave band containing the tonal frequency. If the adjacent band level differences are greater than 15 dB for the 25 to 125 Hz bands, 8 dB for the 160 to 400 Hz bands, or 5 dB for the 500 to 10,000 Hz bands, the tone has prominence and a tonal adjustment shall be applied to the one-third octave band containing the tonal component.

Tonal prominence may also be determined using the narrowband methods in ANSI S1.13-2005 Annex A. This method may be necessary for tones that are close to the separation between two one-third octave bands resulting in bleed over into both bands.

5.5.2 Assessing Impulsive Sounds

Two categories of impulsive sound are addressed in this document: regular impulsive and highly impulsive.

Regular impulsive sound includes speech and music. It receives a 5 dB adjustment.

Highly impulsive sounds receive a 12 dB adjustment. Highly impulsive sounds occurring at a rate greater than 20 per second are usually not perceived as distinct impulses and no impulse adjustment shall apply; however, if the repetitions are regular in time a tonal sound adjustment may be necessary.

Equivalent-continuous sound pressure level alone is not sufficient to assess sounds characterized by impulsiveness. Highly impulsive and sporadic single events may produce a relatively small amount of energy compared to the background noise level. This does not necessarily mean they will not have a significant impact. Equivalent-continuous levels are often insensitive to short duration events even though the impulses may be clearly noticeable. In these instances the sound exposure method may be necessary to assess these events (see Section 5.5.3).

5.5.3 Applying Adjustments Using Sound Exposure Level

Impulsive sounds are usually spread out in time whereas background noise is continuous. The background noise will therefore often contribute more to an energy averaging metric like the equivalent-continuous sound pressure level than the impulses even though an observer on the site may report the impulses as the primary sound source due to their high peak sound pressures. In

cases like this a windowing method such the sound exposure must be used to separate the impulses from the background noise so that adjustments can be appropriately applied to the part of the ensemble sound containing the impulses.

One common use for the sound exposure level (SEL) is the comparison of two discrete sound events; however, in the context of applying adjustments to impulsive sound the SEL will be used to overcome the influence of the background noise by separating out the individual impulse events from the rest of the measurement data. The SEL of a single event, SEL_{event} , can be found from the background noise corrected equivalent-continuous sound pressure level over just the time of the event, $L_{eq,event}$,

$$SEL_{event} = L_{eq,event} + 10 \log_{10}(T_{event}/T_0) \quad (5.3)$$

where T_{event} is the duration of the event in seconds and T_0 is the reference time of 1 second. T_{event} should be inclusive of the entire event. In situations where the background noise level fluctuates it may be necessary to find the background noise level in the immediate vicinity of each impulse event in order to do the corrections.

The appropriate regular or highly impulsive adjustment can now be added directly to the SEL of the event. This process can be repeated for each impulse to obtain a set of SELs.

In order to compare the resulting sound exposures to the level limits in the regulations, the SELs must be converted to an equivalent-continuous level over the time period of the original measurement. The adjusted equivalent-continuous level of the impulses during the time of the measurement, $L_{eq,adj}$, is therefore the decibel sum of each event's background corrected sound exposure level, $SEL_{event,i}$, and its adjustment, K_i , minus the measurement time, T , in decibels.

$$L_{eq,adj} = \sum_i 10^{(0.1(SEL_{event,i} + K_i))} - 10 \log_{10}(T/T_0) \quad (5.4)$$

An alternative form of Eq. 5.4 is useful in when the mean SEL and the number of events over a period of time are known for an impulsive sound source.

$$L_{eq,adj} = SEL_{src} + K_{impulse} + 10 \log_{10}(N) - 10 \log_{10}(T/T_0) \quad (5.5)$$

Here $L_{eq,adj}$ is equal to the sum of the sound exposure level for one event occurrence, SEL_{src} , the adjustment for the type of impulse, $K_{impulse}$, the number of occurrences, N , in decibels, and total time period over which the impulses occur, T , in decibels.

$L_{eq,adj}$ can now be combined with the other adjusted sound source levels in the project using Eq.

5.1 to obtain the total adjusted equivalent-continuous sound pressure level. This level can then be compared to the level limits in the noise regulations.

For more information on sound exposure level see ANSI S12.9 Part 4 and Harris, Chapter 12.

5.5.4 Time of Day Adjustments

For noise impact assessment, the day is typically divided into three segments: day, evening, and night. For residential land uses, each of these time periods will have different noise sensitivities. During the daytime, usually defined as 7:00 am to 7:00 pm, many people are at work or busy with other activities away from home. In the evening, 7:00 pm to 10:00 pm, people tend to be at home and are more aware of noise in the area. Nighttime is the most noise sensitive time as people are sleeping. Weekends also have a higher noise sensitivity similar to evenings when people tend to be at home, but not sleeping.

For residential land uses, time of day adjustments include a 5 dB adjustment for the evening and a 10 dB adjustment for the nighttime hours. Weekend daytime hours also receive a 5 dB adjustment similar to evening hours.

5.6 Measurement Reports

After a set of field measurements have been completed, a report of the findings should be issued containing the following information:

1. Make, model, and serial number of each piece of measuring equipment
2. Date and location of the most recent laboratory calibrations
3. Site plan showing measurement locations
4. Statement of on-site calibration verification before and after each series of measurements
5. Name of the engineer conducting the tests

For each measurement location the following information should be noted:

1. Date and time of the measurement
2. Acoustical metrics measured
3. Time and frequency weighting used
4. Microphone location and height
5. Windscreen used
6. Description of the test location including the type of ground and any reflecting surfaces near the SLM or sound source being investigated
7. Primary and secondary sound sources contributing to the measurement

8. Background noise level if investigating a specific sound source
9. Weather conditions: temperature, humidity, wind speed and direction, cloud cover, and sun exposure
10. Photo image showing the sound level meter and intervening ground between the meter and the sound source of interest

5.7 Noise Impact Assessments

5.7.1 Purpose and Methods

A noise impact assessment provides a determination of the likely effects of introducing a new activity on the surrounding area. For new developments or modifications of existing developments involving on site activities that are likely to have a noise impact on the surrounding area, a noise impact assessment should be prepared by a qualified acoustical engineer. ISO 9613 and ANSI S12.62 provide a basic methodology for predictive acoustical site assessment; however, other methodologies may be used as appropriate for the area, conditions, and sound sources being evaluated. A noise impact assessment may be based on measurements of similar sound sources at a different location; however, differences in propagation paths that may affect the noise impact must be accounted for.

5.7.2 Present and Future Noise Exposure

With many sound sources, the noise impact may increase over time, e.g. roadways and other modes of transportation whose usage can be expected to increase in the future. In preparing noise impact assessments for proposed developments, future usage patterns should be included in the analysis.

5.8 Existing Noise Regulations

Best practices and current standards for noise assessment have been covered in Chapter 3. These criteria will be used here to evaluate noise regulations that apply within the City of Centennial.

5.8.1 City of Centennial Municipal Code, Chapter 10, Article 12

The City of Centennial does not currently have a land use noise regulation. Noise violations are defined in the Municipal Code. Two sections of the Code relate to noise assessment.

Sec. 10-12-10. - Legislative declaration.

It is hereby declared that protection and preservation of the home is of the highest importance; that unnecessary and excessive noise is a significant source of environmental pollution that threatens the public health, welfare, tranquility and good order of the community; and that the prohibitions and other protections set forth in this Article are enacted to secure and promote public peace, welfare, comfort and health.

Sec. 10-12-20. - General prohibition.

It shall be unlawful for any person to make, continue or cause to be made or continued any excessive or unusually loud noise which:

- (1) Disturbs, annoys or endangers the peace, repose, comfort, safety or health of others; or
- (2) Endangers or injures personal or real property.

These Code sections do not prescribe an objective measure of excessive noise, but state that “protection and preservation of the home is of the highest importance.” Section 10-12-20(1) prohibits sound that “disturbs, annoys or endangers the peace, repose, comfort, safety or health of others.” No guidance is given for compliance with the Code; however, ANSI S12.9 Part 4 is a standard for assessing annoyance in a community setting caused by noise and would be in alignment, as an objective assessment methodology, with the criteria in Section 10-12-20(1).

5.8.2 Colorado Revised Statutes 25-12-101

The Colorado Revised Statutes seeks to provide statewide minimum standards for noise levels.

25-12-101. Legislative declaration

The general assembly finds and declares that noise is a major source of environmental pollution which represents a threat to the serenity and quality of life in the state of Colorado. Excess noise often has an adverse physiological and psychological effect on human beings, thus contributing to an economic loss to the community. Accordingly, it is the policy of the general assembly to establish statewide standards for noise level limits for various time periods and areas. Noise in excess of the limits provided in this article constitutes a public nuisance.

C.R.S. 25-12-103(1) provides some objective maximum limits on permissible sound pressure levels. For residential land uses, the daytime limit is 55 dBA. Evening hours are not defined; however, nighttime hours are from 7:00 pm to 7:00 am. This includes hours that would normally be considered evening. The nighttime sound pressure level limit is 50 dBA which is more typical of a 5 dBA evening penalty than the more customary 10 dBA nighttime level limit reduction.

Acoustical measurements are to be made 25 feet inside the receiving property boundary. This is problematic for a number of reasons. First, it requires entering private property in order to assess the sound level. This makes assessment, monitoring, and enforcement more difficult. It also does not protect the entire receiving property. This can be especially impactful for residents on small lots or rental properties where the back patio may be within this distance.

While C.R.S. 25-12-103(3) does include provisions for impulsive sound,

Periodic, impulsive, or shrill noises shall be considered a public nuisance when such noises are at a sound level of five db(A) less than those listed in subsection (1) of this section.

with a 5 dBA reduction in the allowable sound pressure level, this approach is overly simplistic

and will underestimate the noise impact of highly impulsive sounds.

Overall, the noise assessment procedure in C.R.S. 25-12 appears to be a compromise between simplicity of noise assessment and completeness. While adequate for many sound sources, it will underestimate the noise impact some classifications of sound that include highly impulsive sound and sounds that occur during regular nighttime hours of 10:pm to 7:00 am when most residents are sleeping. The choice of noise assessment location 25 feet inside the receiving property increases the difficulty of monitoring and decreases the level of protection afforded to home owners for the use of their outdoor spaces.

6. Characteristics of Pickleball Sound

Spendiarian & Willis has prepared many noise assessments and abatement plans for pickleball courts. This chapter summarizes some of the knowledge gained over the years of working with this sound source.

The main concern in regard to noise from the pickleball courts is the sound produced by the impact of the hard plastic ball on the paddles. This sound is characterized by a sudden onset and brief duration, thus classifying it as impulsive sound. The spectral content of the paddle impact is narrowband with a center frequency typically between 1,000 and 2,000 Hertz. This is near the most sensitive frequency range of human hearing.

6.1 Comparison of Pickleball to Other Activities

There is a common misconception that pickleball is acoustically equivalent to tennis, volleyball, or many of the other activities typically found at outdoor recreation centers and parks. Numerous news articles covering disputes over pickleball noise, many of which originate when existing tennis courts are converted to pickleball, demonstrate that this is not the case:

- Cutler, Amy, “Rise of pickleball pitting neighbor against neighbor, leading to lawsuits,” Arizona's Family, Phoenix, Arizona. February 13, 2023. <https://www.azfamily.com/2023/02/13/rise-pickleball-pitting-neighbor-against-neighbor-leading-lawsuits/>
- Arden, Amanda, “Lake Oswego shuts down city pickleball courts indefinitely due to noise complaints.” KION 6 News, Portland, Oregon. January 23, 2023. <https://www.koin.com/local/lake-oswego-shuts-down-city-pickleball-courts-indefinitely-due-to-noise-complaints/>
- Columbo, Mike, “Pickleball plan pits Kirkwood residents against neighboring country club.” Fox 2 Now, Saint Louis, Missouri. January 26, 2023. <https://fox2now.com/news/contact-2/pickleball-plan-pits-kirkwood-residents-against-neighboring-country-club/>
- Sheets, Connor, “Pickleball noise is fueling neighborhood drama from coast to coast.” *Los Angeles Times*, Los Angeles, California. March 3, 2022. <https://www.latimes.com/california/story/2022-03-03/pickleball-noise-fueling-neighborhood-drama>
- Adler, Erin, “Apple Valley neighbors in a pickle over pickleball noise.” *Star Tribune*, Minneapolis, Minnesota. March 27, 2019. <http://www.startribune.com/apple-valley-neighbors-in-a-pickle-over-pickleball-noise/507726242/>
- Bartel, Mario, “Pickleball banished from Port Moody court after neighbours complain of

rising stress, anxiety.” The Tri-City News, Coquitlam, British Columbia, Canada. April 24, 2021. <<https://www.tricitynews.com/local-sports/these-games-are-loud-port-moody-pickleball-neighbours-revolt-against-rising-stress-anxiety-3662369>>

- City of Lakewood, “Green Mountain Courts Closure.” <https://www.lakewoodtogether.org/pickleball/news_feed/green-mountain-courts-update>
- Higgins, Sean, “No vote on residential pickleball until city adopts new land management code.” KPCW News, Park City, Utah. January 27, 2022. <<https://www.kpcw.org/park-city/2022-01-27/no-vote-on-residential-pickleball-until-city-adopts-new-land-management-code>>
- Maryniak, Paul, “Pickleball lights plan puts two HOAs at loggerheads.” Ahwatukee Foothills News, Tempe, Arizona. November 29, 2017. <https://www.ahwatukee.com/news/article_9056a946-d48e-11e7-9838-8b69fb2d50b2.html>
- Bottemiller, Kitty, “Too loud! Pickleball noise upsets neighbors.” Green Valley News, Green Valley, Arizona. August 28, 2013. <https://www.gvnews.com/news/local/too-loud-pickleball-noise-upsets-neighbors/article_542c2aac-0f91-11e3-acdc-0019bb2963f4.html>
- Clay, Joanna, “Woman sues Newport Beach over pickleball noise at park near her home.” Orange County Register, California. April 7, 2016. <<https://www.ocregister.com/2016/04/07/woman-sues-newport-beach-over-pickleball-noise-at-park-near-her-home/>>
- Wheatley, Mike, “Noisy pickleball courts cause upset with homeowners.” Realty Biz News. March 15, 2022. <<https://realtybiznews.com/noisy-pickleball-courts-cause-upset-with-homeowners/98768719/#:~:text=In one lawsuit in Newport Beach%2C Calif.%2C a,are causing them less enjoyment of their home.>>
- Lazaruk, Susan, “Pickleballers face off with residents over noise in Metro Vancouver.” Vancouver Sun, Toronto, Ontario, Canada. February 2, 2022. <<https://vancouversun.com/news/local-news/pickleballers-face-off-with-residents-over-noise-in-metro-vancouver>>
- Shanes, Alexis, “Village in a pickle: How Ridgewood plans to tone down the pickleball court noise.” northjersey.com, California. January 16, 2020. <<https://www.northjersey.com/story/news/bergen/ridgewood/2020/01/16/ridgewood-nj-pickleball-noise-reduction-measures/4480463002/>>
- Monterey Herald Staff, “Pickleball noise controversy goes before city leaders Pacific Grove neighbors object to game at nearby tennis courts.” The Mercury News, California. September 19, 2019. <<https://www.mercurynews.com/2019/09/19/pickleball-noise-controversy-goes-before-city-leaders/>>
- Fraser, Patrick and Rodriguez, Ambar, “What to do about constant pickleball noise?” WSVN 7 News Miami, Miami, Florida. March 27, 2019. <<https://wsvn.com/news/help-me-howard/what-to-do-about-constant-pickleball-noise/>>

- Sutphin, Daniel, “Nixing the noise: Sound fence construction underway at Gilchrist pickleball courts.” Port Charlotte Sun, Charlotte Harbor, Florida. May 20, 2019. <https://www.yoursun.com/charlotte/news/nixing-the-noise-sound-fence-construction-underway-at-gilchrist-pickleball/article_79a764de-7b1c-11e9-b4d4-6bcaa919f3f3.html>
- Corrigan, James, “York residents complain noise from pickleball club is hurting quality of life.” WMTW News 8, Portland, Maine. November 16, 2021. <<https://www.wmtw.com/article/york-residents-complain-noise-from-pickleball-club-is-hurting-quality-of-life/38271921>>

It should be clear from the above list of references that pickleball constitutes a significant change in the acoustic environment of the area surrounding the courts in comparison to tennis and must be planned for accordingly. In particular, the impulsive sound produced by the impact of the hard plastic ball on the paddle can cause significant noise impact for those living near the courts.

6.2 Effects of Impulsive Sound

Persistent impulsive sounds create annoyance because they are similar to sounds that contain important information about our environment such as footsteps, a door opening, a tap at the window, or speech. We are sensitive to these types of sounds because they alert us to events occurring nearby that we may need to respond to. Continuous false alarms such as the popping sound created by pickleball paddle impacts make it difficult to relax, concentrate, or sleep soundly without disturbance as each time a pop is heard it draws the attention, creating distraction.

6.3 Acoustical Characteristics

The sound produced by the impact between a pickleball and paddle is characterized by a rapid onset and brief duration, typically on the order of 2 to 10 milliseconds (0.002 to 0.010 seconds) for the direct path sound. This classifies it as impulsive sound. Figure 6.1 shows a time trace of a pickleball paddle impact measured near Phoenix, Arizona. The main part of the direct sound impulse can be seen to be less than two milliseconds followed by a rapid decay and some later reverberant arrivals.

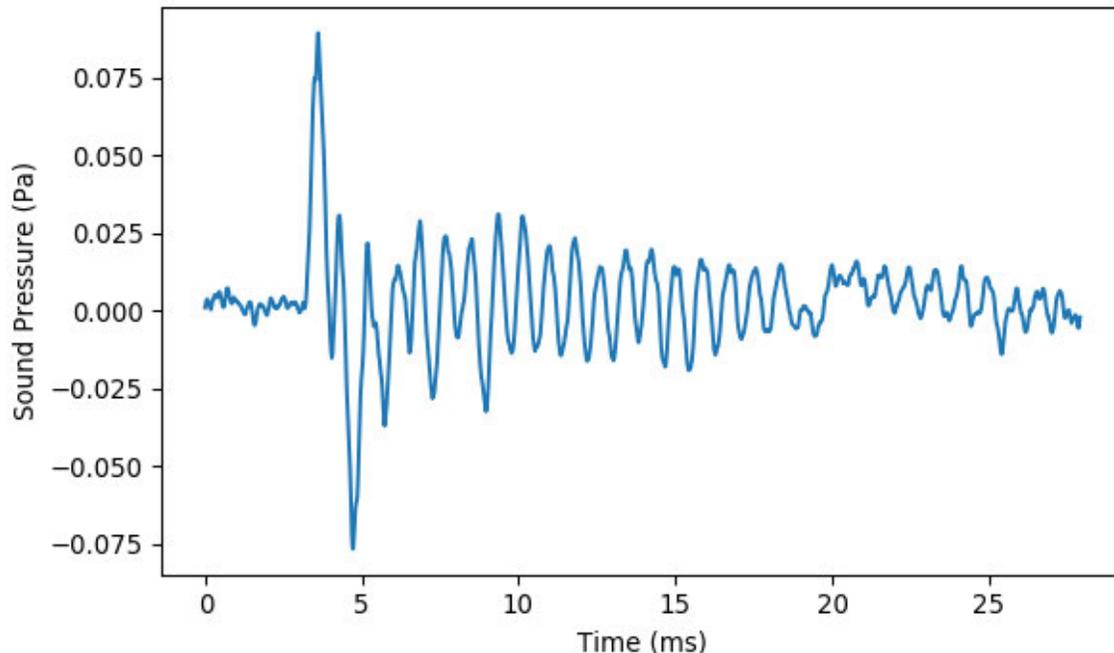


Figure 6.1. Pickleball Paddle and Ball Impact Sound Pressure Trace
 1 millisecond (ms) = 0.001 seconds.

The spectral content of the paddle impact is narrowband with a center frequency typically near 1,000 Hz (see Figure 6.2). Although it does not meet most guidelines for tonal prominence such as Annex C of ANSI S12.9 Part 4 or ANSI S1.13, it does impart a vague sensation of pitch similar to a wood block percussion musical instrument. The radiation pattern of the paddle is more or less a dipole, i.e. the sound from the front and back of the paddle is of opposite polarity and cancels itself in the plane of the paddle. Therefore, orienting the courts so that the direction of play faces away from noise sensitive areas can provide some attenuation.

The sound power spectrum of the pickleball and paddle impact has two basic shapes depending on how the ball is hit. Figure 6.2 and Figure 6.3 show the power spectra of a 'sharp' hit and a 'dull' hit. The curves are not calibrated for absolute level, but can be compared relatively.

The sharp hit spectrum shows a narrowband signature. The frequency of the peak typically varies between 1,000 and 2,000 Hz. The energy in the dull hit is more spread out, but still peaks between 1,000 and 2,000 Hz.

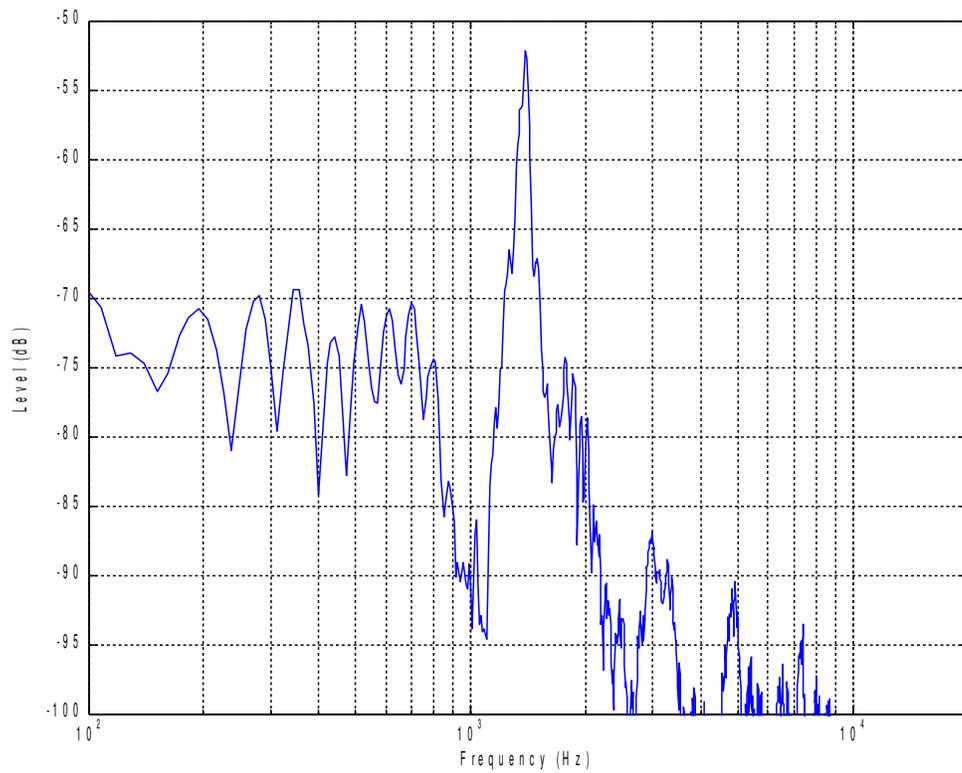


Figure 6.2. Spectral Response of a Sharp Hit

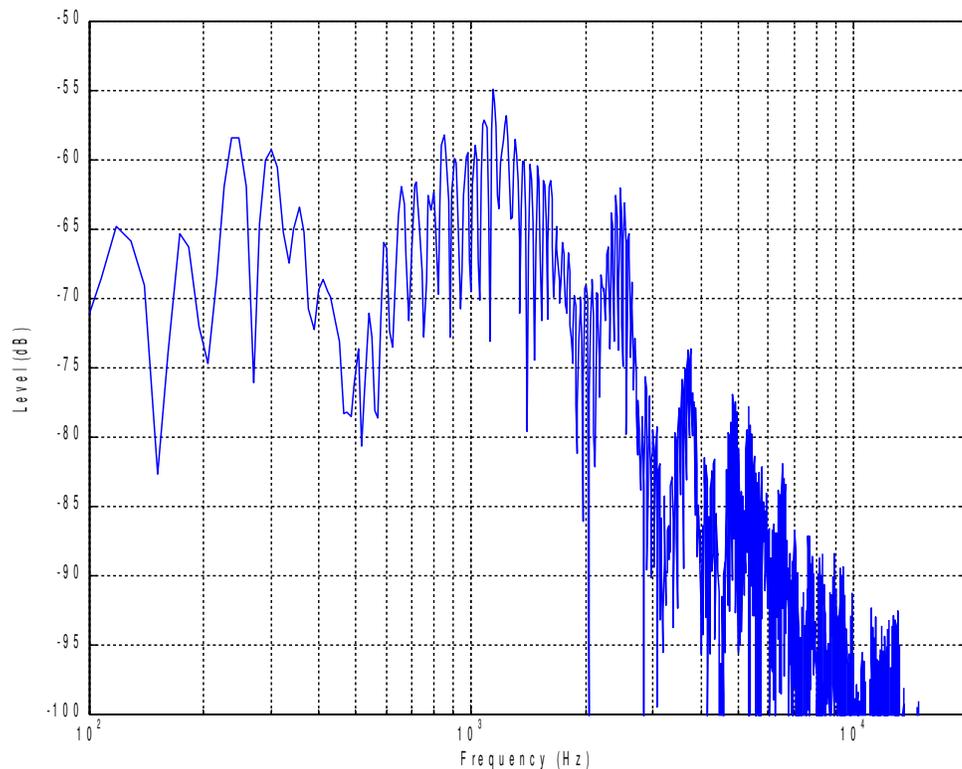


Figure 6.3. Spectral Response of a Dull Hit

A sound wall design will require effective attenuation in the 1,000 Hz octave band and above. In most applications, any material having a sound transmission class meeting STC 20 can be used to construct a sound wall or fence for pickleball provided best practices for sound barrier construction are followed.

6.4 Directivity of Pickleball Courts

The impulsive sound of the paddle impacts is radiated mainly by the large, flat paddle surface. Since both faces of the paddle are connected internally by a honeycomb structure and move together in vibration, one side of the paddle will produce a positive sound pressure while the other produces a negative sound pressure similar to a loudspeaker diaphragm that is not mounted in a cabinet. The result is that these two pressure waves having opposite polarity will cancel in the plane of the paddle where the path length from each face is the same to all receiver locations. This is known as a dipole or figure eight radiation pattern.

The positions of the paddles relative to the court change with each hit; however, the object of the game is to hit the ball to the opposite half of the court. Therefore, the dipole axis of each paddle impact will be in the general direction of play and not completely random. Measurements of

several pickleball facilities have shown that this results in a null depth of 4 to 5 dB. Figure 6.4 compares a typical pickleball court directivity pattern to a mathematical dipole where 0° and 180° are in the direction of play and the null is on the 90° and 270° bearings. Several decibels of attenuation can often be obtained simply by optimizing the orientation of the courts with respect to noise sensitive areas.

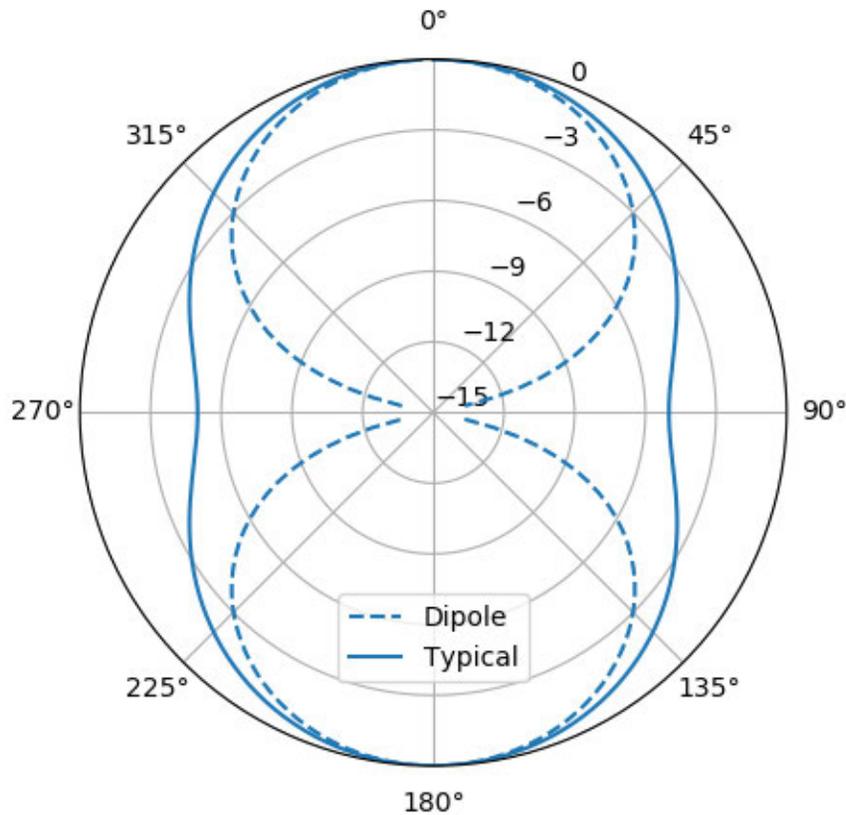


Figure 6.4. Typical Pickleball Court Directivity in Decibels

6.5 Noise Impact of Speech

In addition to the paddle impacts, speech is also a sound source on pickleball courts. While there are standards for speech sound power levels at various degrees of vocal effort such as ANSI S3.5, sound from speech emitted from pickleball courts can vary greatly with who is playing on the courts at a given time and be difficult to predict. In practice, noise abatement treatments sufficient to mitigate the paddle impacts should also be sufficient for speech from the courts as the paddle impacts typically have a greater noise impact.

Most noise objections regarding speech on pickleball courts are related to the content of the speech rather than the loudness. While the sound level of the speech can be reduced through abatement treatments, it cannot be made inaudible in most situations. A noise impact of this type must be addressed through court usage policy.

For tournament play, the overall speech pattern becomes more predictable. There are more sound sources that will approach a statistical average such as that described in ANSI S3.5. A total sound power level for the bleachers or spectator area can be calculated based on seating capacity or through direct measurement during a tournament.

7. Influence of Environmental Factors

7.1 Number and Arrangement of Pickleball Courts

Pickleball courts are usually placed on a rectangular concrete pad approximately 30 by 60 feet. This is one quarter the size of a typical tennis court pad such that a tennis court can be converted into four pickleball courts. An important factor influencing the amount of sound reaching neighboring properties will be the number of pickleball courts. A doubling of the number of courts will result in a doubling of the number of sound sources and therefore the sound power emitted. This corresponds to a 3 dB increase in sound power level. Pickleball courts are, however, not a single sound source, but a distribution of many sound sources spread over the area of the courts. For this reason, sound radiated from pickleball courts will not follow the inverse square law unless the distance from the center of the courts to the point of observation is large compared to the dimensions of the court or group of courts.

Figure 7.1 shows the ANSI S12.9 adjusted sound pressure level contours (see Section 8.3.3) at a height of 5 feet above grade for four courts, indicated by the red box, at the center of the main group of pickleball courts. For reference, the two groups of eight courts together have a width east to west of 136 feet and a length north to south of 268 feet. The oblong shape of the contours is not a result of the rectangular layout of the courts, but the directivity of the individual courts themselves (see Section 6.4).

The 55 dBA contour extends about 480 feet from the courts in the direction of play and 260 feet laterally. Figure 7.2 expands the number of pickleball courts to eight arranged in pairs end to end. The 55 dBA contour extends about 630 feet from the courts in the direction of play and 350 feet laterally. Figure 7.3 rearranges the eight courts into two rows side by side. The 55 dBA contour extends about 685 feet from the courts in the direction of play and 340 feet laterally. Doubling the number of courts causes the 55 dBA contour to move out 30% to 40% of the distance from the courts pad (red boxes) depending on how the courts are arranged.

The hypothetical examples above were created on level ground with a mixed ground type outside of the concrete pads for the courts (ISO 9613 ground factor, $G = 0.5$). In practice, noise complaints about pickleball courts at distances greater than 500 to 600 feet are rare. Real pickleball sites will usually have topographical features that hinder sound propagation at farther distances as well as structures that block or scatter sound. Pickleball courts across water may be an exception with the possibility of complaints occurring at distances approaching 800 to 1,000 feet.

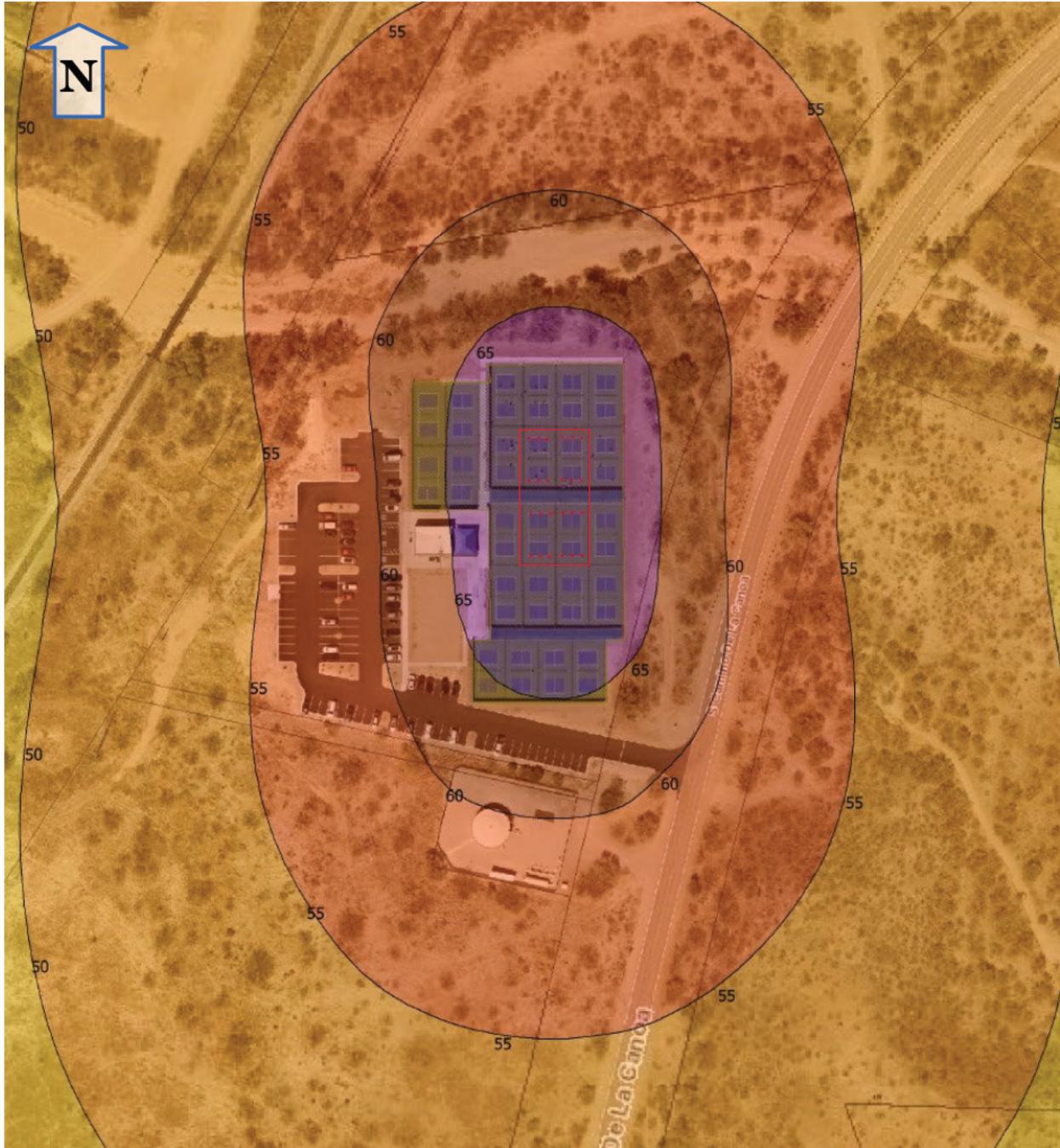


Figure 7.1. Adjusted Sound Pressure Level from Four Pickleball Courts

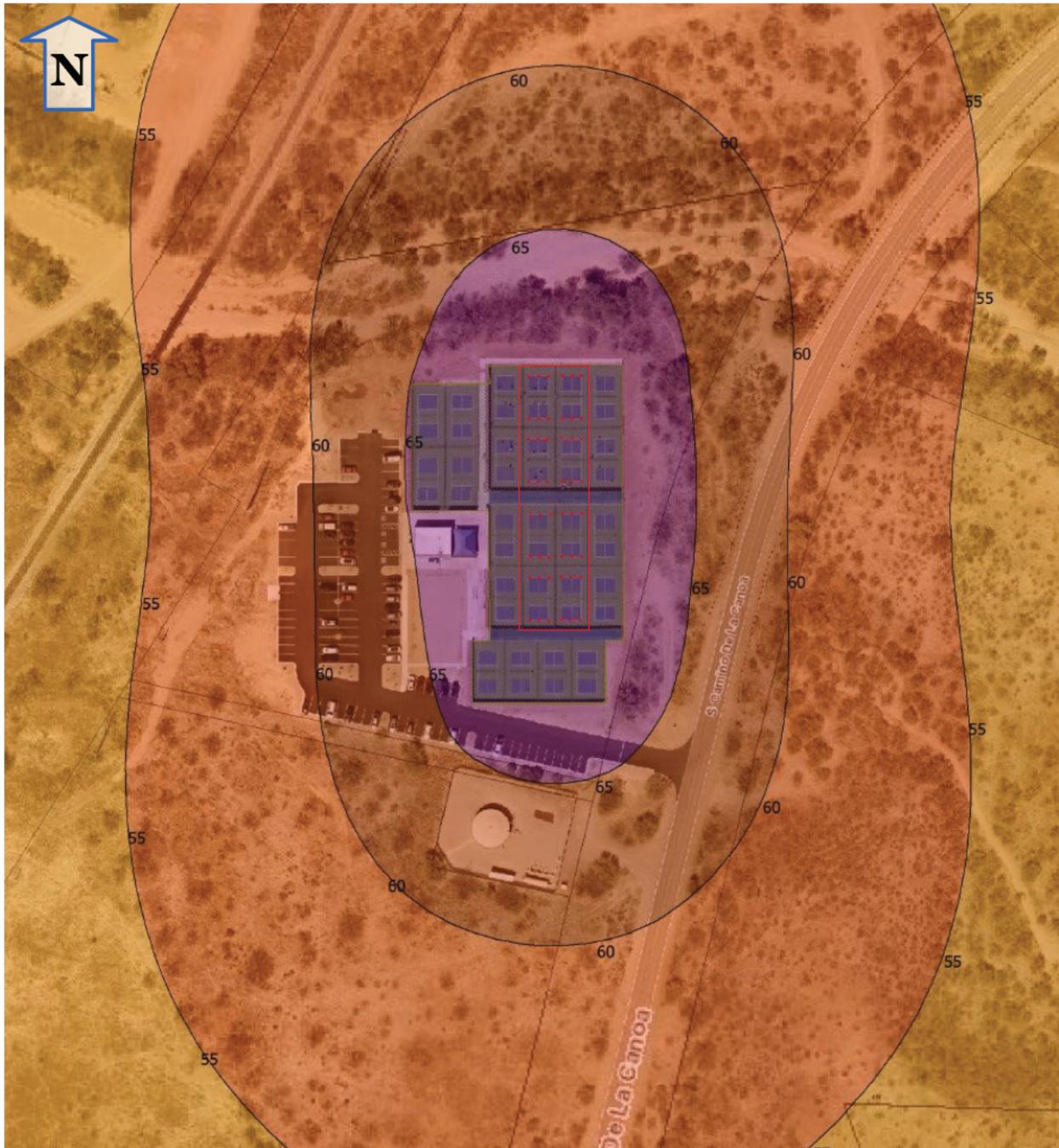


Figure 7.2. Adjusted Sound Pressure Level from Eight Pickleball Courts Aligned Longitudinally

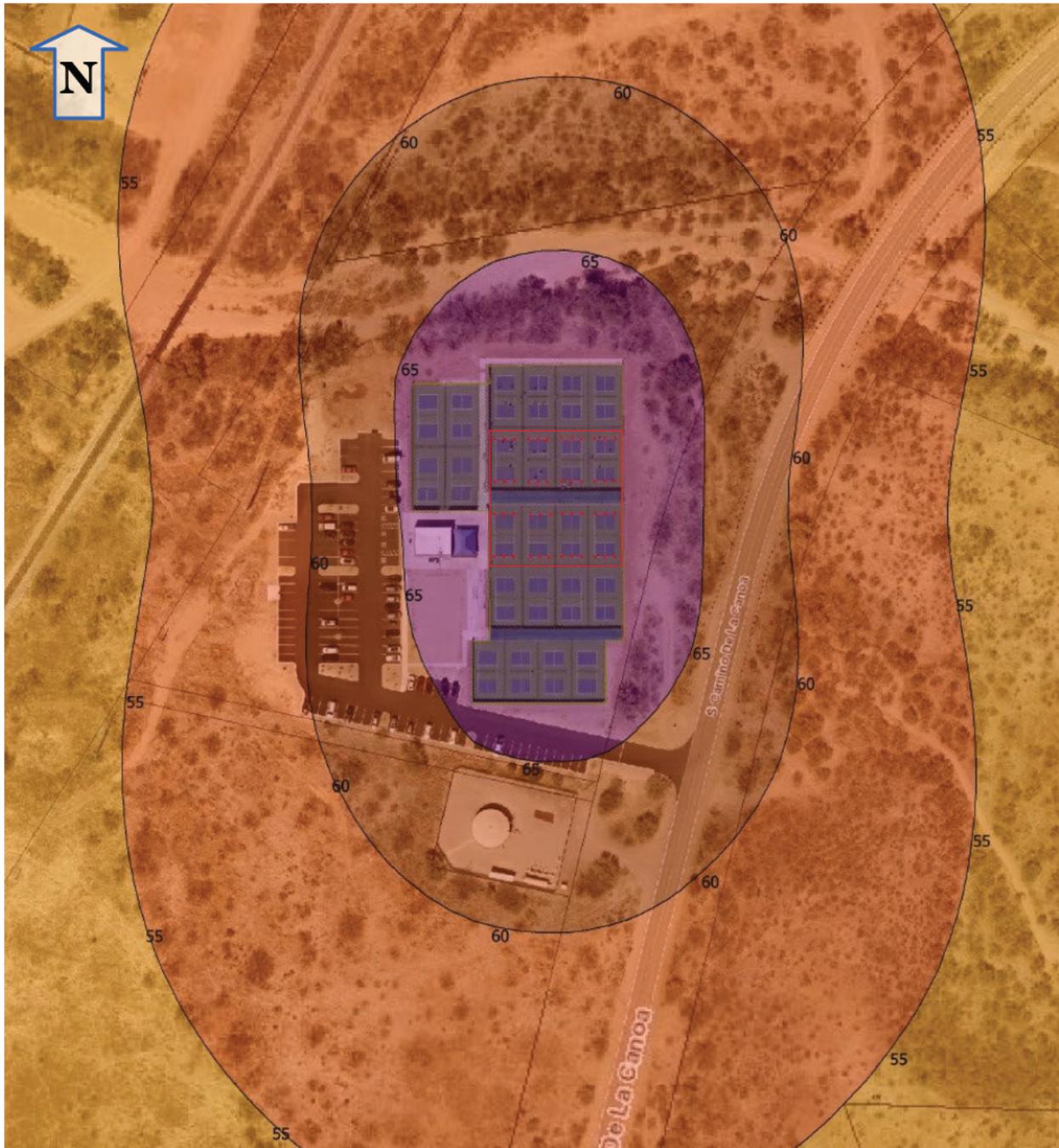


Figure 7.3. Adjusted Sound Pressure Level from Eight Pickleball Courts Aligned Laterally

7.2 Topography

7.2.1 Sight Lines

In order for a noise barrier to be effective, it must block the line of sight from the sound source to the point of observation. Homes sitting at an elevation higher than the proposed pickleball courts can be difficult to shield, particularly if they have more than one floor, balconies, or raised decks. Attention must be given to sight lines to determine whether a sound wall system can be a practical solution as a noise abatement treatment.

7.2.2 Noise Sensitive Locations Above Ground Level

In addition to elevation differences between the pickleball courts and surrounding properties, multistory housing can also result in sight line issues that lead to poor shielding. Figure 7.4 shows a mitigation example with four active pickleball courts in the southwest corner of the complex and a two story building to the south. A 10 foot sound wall (red line) has been placed along the south and west sides of the courts. The sound pressure level contours are at an elevation of 5 feet above grade. The 55 dBA contour does not reach the building.

In Figure 7.5, the elevation of the sound pressure level contours has been raised to 15 feet above grade, about the height of a second floor bedroom window or a person standing on a second floor balcony or raised deck. The 55 dBA contour can now be seen to contact the building. This shows the importance of checking all floors of nearby structures to ensure that acoustical design targets are being met.

It is important to note that, since the observation point on the second floor can overlook the sound wall, some paddle impacts will not be shielded. Although the partial shielding of the majority of the sound source locations is enough to lower the adjusted sound pressure level close to the target level of 55 dBA, peak sound pressures may not decrease as much as the adjusted level since some individual paddle impacts will not be shielded and may still have a significant noise impact.

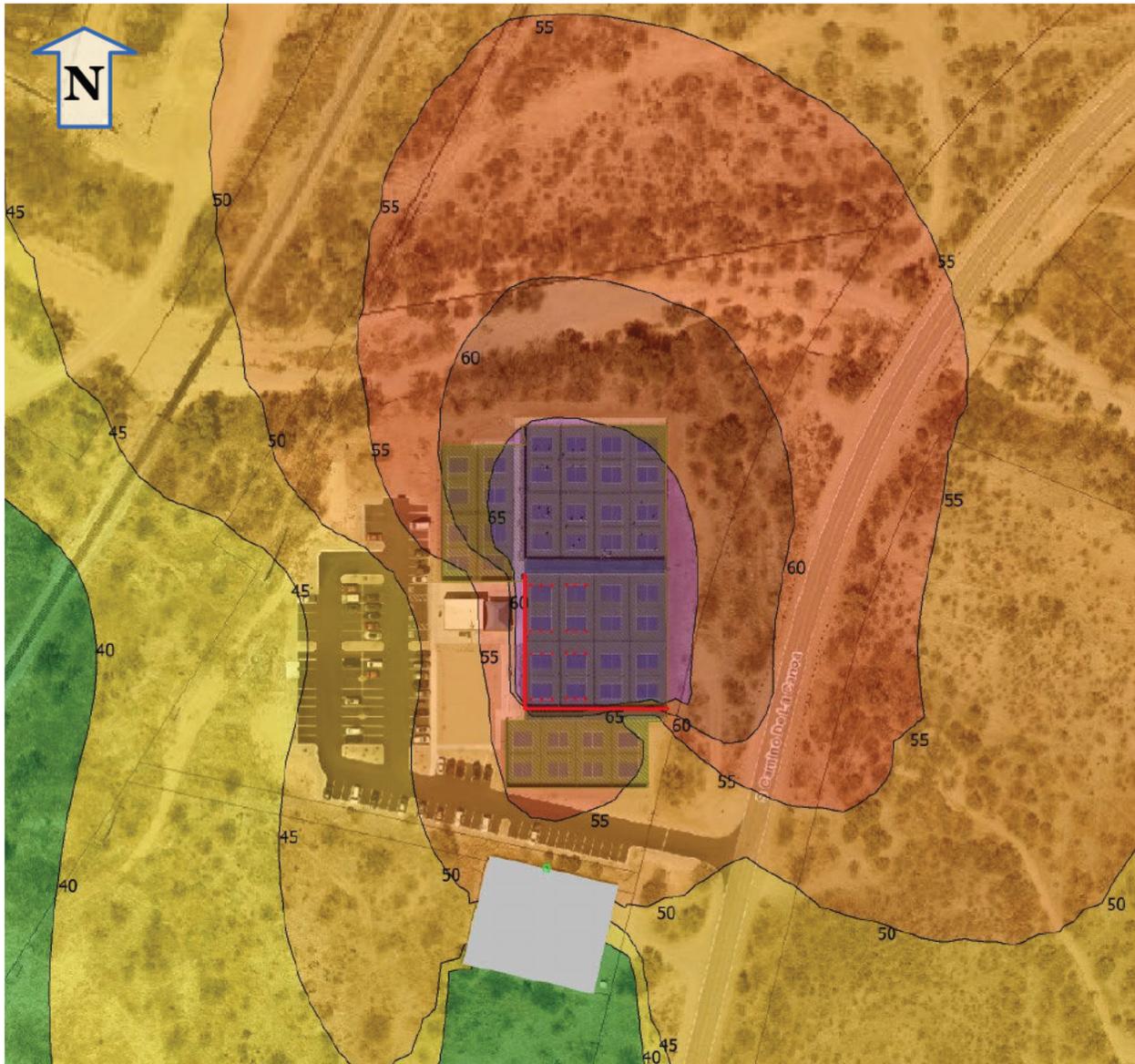


Figure 7.4. Adjusted Sound Pressure Level Contours, Four Courts, 10 Foot Wall, 5 Foot Elevation

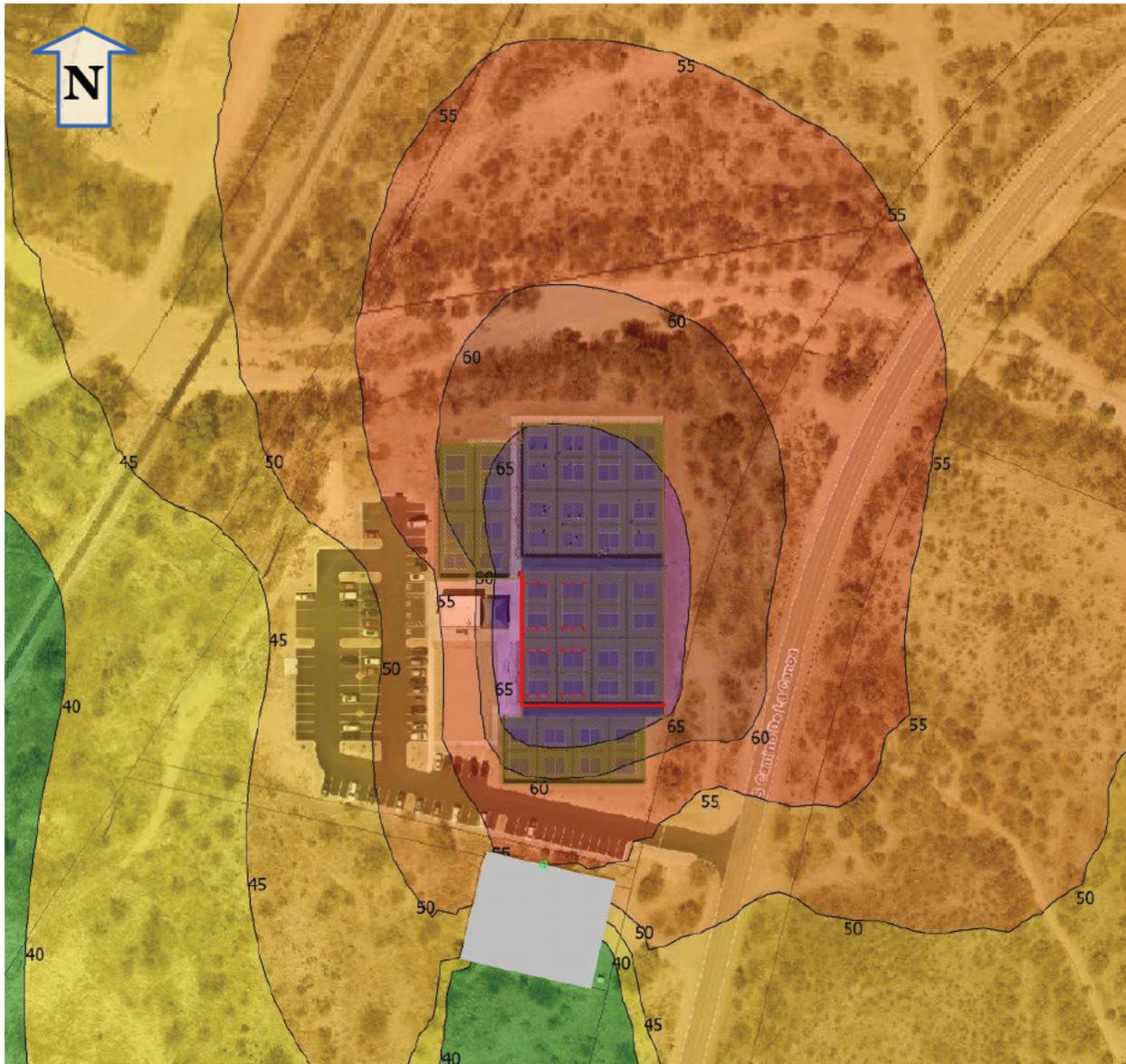


Figure 7.5. Adjusted Sound Pressure Level Contours, Four Courts, 10 Foot Wall, 15 Foot Elevation

7.3 Ground

7.3.1 Attenuation

Some amount of attenuation can occur for sound passing over porous ground. This will mostly include friable soil with vegetation growing on it. Hard surfaces like concrete and asphalt are reflective. Painted concrete surfaces like sports courts are very reflective.

This should be considered when placing a noise barrier on a particular ground type. The barrier will block the ground wave and remove the ground effect. This will affect the performance of the noise barrier. Blocking the ground wave over hard ground will enhance the insertion loss, the difference in before and after sound levels, of the barrier while blocking the ground wave over absorbing ground may cause the insertion loss of the barrier to be less than expected.

7.3.2 Refraction

Refraction caused by temperature gradients over certain ground can effectively cause sound to travel farther. Refraction is the bending of the path sound travels towards regions of lower sound speed, e.g. cooler air. This can be the result of temperature stratification of the atmosphere or wind. In low lying places where cool air tends to collect in the evenings or over irrigated ground where evaporative cooling can occur such as a golf course, a temperature lapse condition can develop with warm air above and cool air below. This will result in sound arcing down toward the ground. Refraction caused by a temperature lapse condition can result in sound arcing over obstacles on the ground that would normally impede its propagation thereby making it louder at farther distances.

7.3.3 Valleys

Parks located at the bottom of a valley can pose a particular challenge as they tend to experience temperature stratification conditions regularly. Further, the sides of the valley may trap sound and send it echoing back to locations on the opposite side. Valleys often require a detailed propagation study to understand how sound moves through the area at different times of the day.

7.3.4 Water

Bodies of water such as a pond or lake are a special type of ground that is highly reflective. It also tends to form a layer of cool air near its surface causing refraction effects similar to those described above. Sound propagation over water can be difficult to predict as its surface changes with wind and weather conditions. In calm conditions sound carries long distances over the surface of water. If a significant portion of the ground between a sound source and receiving property is water a detailed propagation study may be needed to determine the ground attenuation.

7.4 Reflective Surfaces

Surfaces that reflect sound that are close to the pickleball courts can redirect sound in undesirable directions. These surfaces can be building facades, retaining walls, or even noise barriers. Mass-loaded vinyl (MLV) fence covers are particularly reflective and may not be appropriate in some applications. Unpainted masonry walls retain some porosity and will absorb a small amount of sound, but should be considered reflective for the purposes of outdoor sound propagation.

Reflected sound from a single surface may increase the total sound pressure level as much as 3 dB over the level of the sound coming directly from the source. (Due to the short duration of the impulse produced by a paddle impact and its short wavelength it is difficult to get the reflected

sound to sum coherently with the direct sound) The positions of noise barriers must be planned strategically to prevent sound from going in unwanted directions and creating a new noise issue.

Parallel reflective surfaces can severely degrade the performance of a noise barrier. See Section 9.2.3 for more information on this design issue.

8. Noise Assessment Procedures for Pickleball Sound

8.1 Inaccuracies of Simple Averaging Techniques

8.1.1 Equivalent-continuous Sound Pressure Level

The equivalent-continuous level (L_{eq}) is a type of average sound pressure level over the entire period of a measurement. It represents a sound pressure level that has the same total energy as a measured sound pressure level that may vary over the time of the measurement.

While the equivalent-continuous sound pressure level includes all acoustical events and background noise that occur during the time of a measurement, including short impulsive events such as pickleball paddle impacts, it only gives an indication of the average level. It is not strongly influenced by peak sound pressure levels. For example, four pickleball courts may produce 50 to 60 paddle impacts each minute. That is one impact about every second. Equivalent-continuous averaging will therefore spread the energy of each paddle impact over a period of about one second. The result is that the paddle impacts will usually be indistinguishable from the background noise due to their very short duration. This, however, will not be what is reported by observers near the courts.

The main issue with using equivalent-continuous sound pressure level with pickleball is that it cannot be used to assess impulsive sound. This is the primary concern of neighbors living close to pickleball courts. A different metric that can account for the noise impact of the paddle impacts must be found.

8.1.2 Exponential Time Weighting

Sound level meters will typically have two smoothing filters called fast and slow time weighting having time constants of 0.125 and 1.0 second respectively. These are first order lowpass filters applied to the square of the sound pressure and are known as exponential time weighting. Some meters will also have an impulse peak hold filter with a 35 millisecond time constant on the rise of the sound pressure level and a slow 1.5 second decay to assist in reading the maximum level.

Fast exponential time weighting is often recommended for assessing impulsive sound. For highly impulsive sounds having short durations this metric does not work well. When the averaging time of the time weighting is longer than the duration of the impulse, the impulse is in the stopband of the lowpass filter. In other words, the time weighting is filtering out the impulsive sound source being measured. That is the purpose of a smoothing filter.

Figure 8.1 demonstrates the filter response to a burst of sound just long enough to achieve a reasonably accurate reading within 0.5 dB of the true sound pressure level. The red curve represents the envelop of a burst of sound 0.277 seconds in duration. This is the time required for

the output of the fast exponential time averaging filter (blue curve) to rise to within 0.5 dB of the actual sound pressure level of the sound burst. When the sound burst ends, the output of the exponential time averaging filter begins to decay. The peak value in the output of the fast exponential time averaging filter, after being converted to sound pressure level, is known as the L_{max} level.

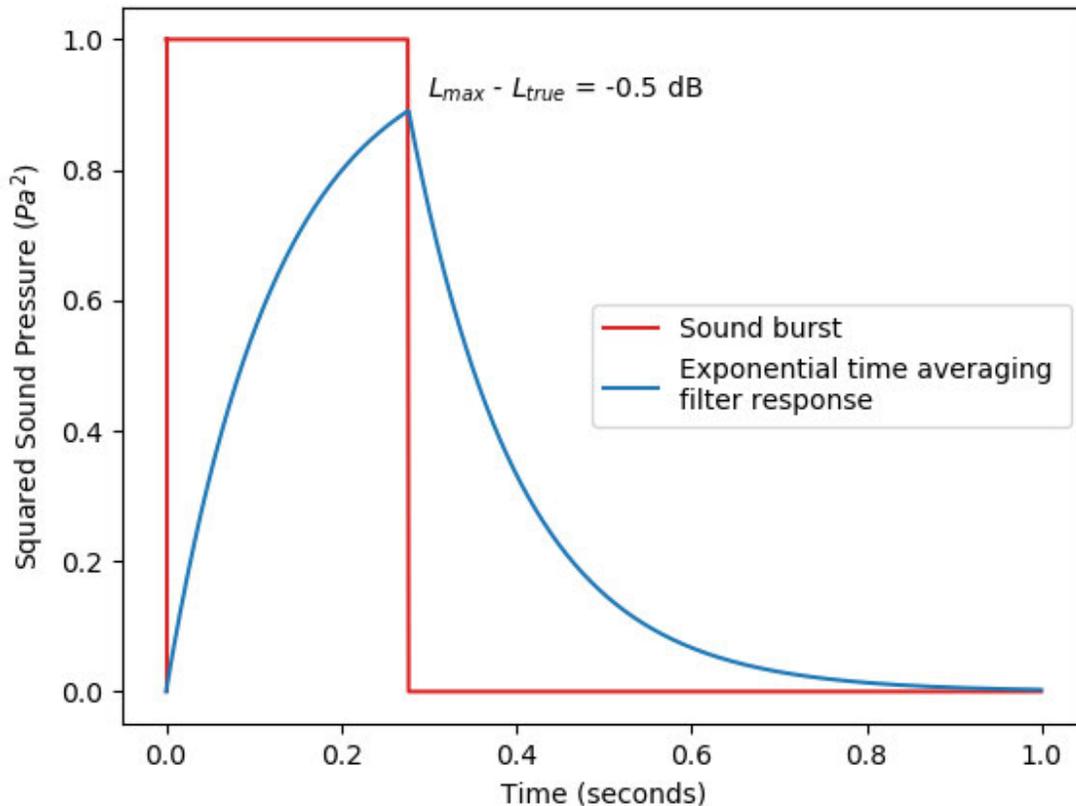


Figure 8.1. Fast Time Averaging Filter Response to a 0.277 Second Sound Burst

Figure 8.1 shows the behavior of the fast exponential time averaging filter and L_{max} when used properly. Figure 8.2 illustrates how the fast exponential time averaging filter responds to a typical pickleball paddle impact. Note that the time scale has been reduced for clarity. At the end of the 0.002 second impulse, the fast exponential time averaging filter has only had time to rise to a level that is 18 dB below the true sound pressure level of the impulse. The pickleball paddle impulse is so much shorter than the time constant of the averaging filter that the exponential

curvature of the filter response is not even visible. It is clear that fast exponential time weighting, much less slow exponential time weighting, cannot be used to assess the noise impact of pickleball paddle impacts.

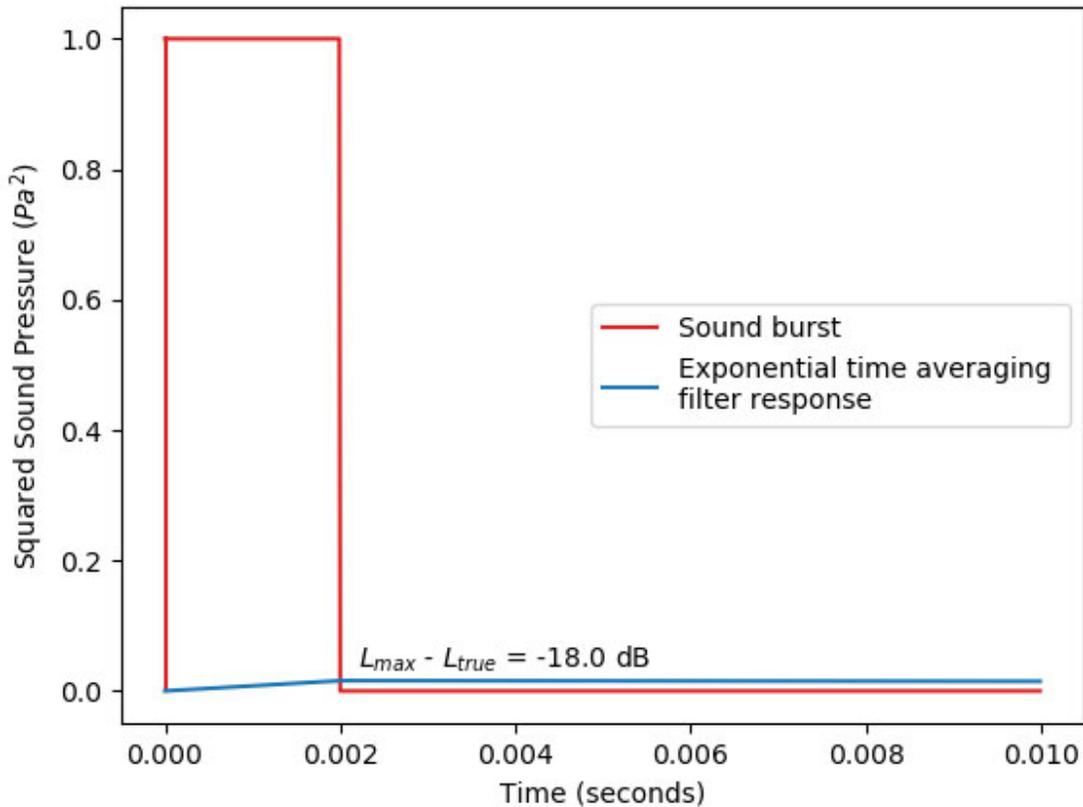


Figure 8.2. Fast Time Averaging Filter Response to a Typical Pickleball Paddle Impact

8.1.3 Percentile Sound Pressure Levels

Another common method of analyzing sound pressure level over time is to rank the levels by the percentage of time that a given level is exceeded. Percentile sound pressure level is described in Section 5.1.5. For impulsive sound, percentile levels suffer from the issues of both equivalent-continuous and exponential time weighted levels.

The majority of the energy in pickleball paddle impacts constitutes a very small percentage of the total measurement time. Even very low percentile levels like LA_{01} , the sound pressure level

exceeded 1% of the time, are little influenced. Further, percentile levels are usually calculated from the fast exponential time weighted level, a metric that already strongly attenuates the short duration impulses of the paddle impacts. Like the previous averaging methods, percentile sound pressure levels do not distinguish paddle impacts well from background noise and correlate poorly with the community response to this type of sound source.

8.2 Best Practices for Assessment of Impulsive Sound

Assessment of impulsive sound is multi-dimensional. In addition to loudness, other characteristics like onset rate, duration, and frequency range need to be considered as well to gauge the true noise impact. Due to the short duration of paddle impacts, averaging sound pressure level metrics such as equivalent-continuous level (LAeq), maximum fast exponential time weighted level (LAm_{ax}), and impulse time weighting (LAI) fail to accurately represent the perceived loudness and annoyance of the paddle impacts and impact processes in general. To get a better correlation with the actual response of the surrounding community to this type of sound metrics with a shorter time scale are needed.

The paddle impact sound pressure level is better represented by a combination of peak sound pressure level and sound exposure level (SEL). Using the sound exposure level involves windowing the measured sound pressure in time to include only the paddle impact and reflections from nearby surfaces as seen in Figure 6.1. The equivalent-continuous sound pressure level of the windowed impact is then normalized to the length of the window giving a representation of the energy in the impact alone. Appropriate adjustments for impulsive sounds can then be applied to the impacts as described next.

Most acoustical standards for sound pressure levels with regard to compatible land use provide adjustment factors for different types of sound, e.g. impulsive, tonal, time of day, etc. Each of these categories of sound produces different levels of community impact and annoyance due to their temporal or spectral characteristics in comparison to a broadband sound that does not vary in level or frequency content with time. The purpose of the adjustment factors is to normalize these types of sound to a neutral broadband sound pressure level so that they can be reasonably compared to a defined sound pressure level limit.

ANSI S12.9 Part 4 and ISO 1996 Part 1 give criteria for assigning adjustment factors to a variety of sound classifications. Sounds produced by impact processes are typically classified as ‘highly impulsive’ due to their high onset rates and intrusiveness and assigned a 12 dB adjustment. Experience has shown that pickleball paddle impacts should be adjusted as highly impulsive sounds in order to set appropriate performance goals for abatement treatments. Inadequate abatement treatment may lead to ongoing complaints, strained relations with neighbors, legal action, the need for continued involvement on the part of authorities, retrofitting, and possibly demolition costs to improve the abatement later.

8.3 Measurement Procedures for Highly Impulsive Sound

8.3.1 Measuring the Paddle Impacts

General procedures for conducting and reporting acoustical measurements have been covered in Chapter 5. For pickleball, the sound level meter should be set up to record continuous audio. This will be needed for assessing the impulses produced by the paddle impacts. The audio should be written to an uncompressed file format such as WAV with the following properties.

- Encoding: linear PCM WAV file format or other suitable lossless audio file format
- Sampling rate: 48 kHz (minimum)
- Resolution: 24 bit (minimum)

Audio recordings of the field calibration tone should be made as well and the Leq noted for future reference.

Logged data should be sampled at no more than one second intervals and include for each log interval,

- Peak sound pressure levels
 - LApk (A-weighted peak level)
 - LZpk (unweighted peak level)
- For speech assessment
 - LAm_{ax} (maximum A-weighted fast exponential time weighted level)
- For background level
 - LA_{eq} (A-weighted equivalent-continuous level)
 - LA_F (A-weighted fast exponential time weighted level)
 - LA_S (A-weighted slow exponential time weighted level)

8.3.2 Measuring Background Levels

Background noise level measurements should be made without pickleball activity at each measurement location. In practice it has been found that background levels should be performed either before or after the pickleball courts are in use so as not to disrupt the rhythm of play by starting and stopping or otherwise interfering with the use of the courts. For noise monitoring situations where the sound level meter is left to run all day it may be necessary to find a time in the recorded data where the pickleball courts were not being used in order to assess the background noise level at different times of day.

8.3.3 Data Analysis

Analysis of the measured data is performed on the sound exposure levels of the individual, A-weighted paddle impacts. A minimum of 30 paddle impacts should be obtained at each test location.

Sound Exposure Level

Some analysis and reporting software packages that work with a particular sound level meter may be able to do sound exposure analysis; however, they must be able to work on time scales less than one second. While the main part of the acoustical energy occurs within about a 10 millisecond window, later reflection and reverberation must also be included in the sound exposure window. The sound exposure should include all of the initial impulse and reverberant decay tail. See Sections 5.1.6 and 5.5.3 for more information on calculating sound exposure level.

Background Noise Correction

A background correction should be applied to each paddle impact. Since these are short impulses, only a small sample of the background noise immediately before, or if necessary after, the paddle impact is needed. This will give a more accurate correction in areas of high activity where the background noise level is fluctuating between paddle impacts. The procedure for background noise correction is explained in Section 5.3.2. It should be carried out on the equivalent-continuous level of the individual paddle impact, not on the sound exposure level directly. The background corrected equivalent-continuous level of the paddle impact is then converted to a sound exposure level for further analysis.

Adjusted Sound Pressure Level

There are two adjustments that will normally apply to pickleball paddle impacts, highly impulsive and day of week. The highly impulsive adjustment is 12 dB.

Noise assessment should be performed for the most impactful use case. A 5 dB adjust is therefore applied to account for the additional noise sensitivity during times when neighbors tend to be at home such as weekends and evenings.

This brings the total adjustment to 17 dB. The adjustment can be applied directly to the calculated sound exposure levels.

Now that the sound exposure levels have been adjusted, the adjusted sound pressure level can be calculated. This procedure is explained in Section 5.5.3. The adjusted sound pressure level can now be compared to applicable maximum permitted sound levels.

8.4 Noise Assessment of Spectator Speech

For larger crowds of people such as found at a tournament, ANSI S3.5 provides standard speech power levels for different vocal efforts. The loud vocal effort may be most appropriate for most events.

Sound pressure level measurements of spectators at a tournament would be a better estimate where possible. Differences in the number of spectators present during the measurement and the number expected at the proposed venue should be taken into account.

8.5 Site Simulation

An ISO 9613 or other suitable outdoor sound propagation standard can be used to calculate sound pressure levels at neighboring properties. Other more detailed environmental noise simulation methods exist and are also acceptable; however, ISO 9613 is simple and widely used with reasonable accuracy in most situations. There are many software packages available that implement this standard propagation model such as SoundPlan and iNoise.

8.5.1 Modeling Distributed Sound Sources

Figure 8.3 shows the dimensions of a pickleball court. Most paddle impacts occur between the baseline and no volley zone on each half of the court; however, serves are required to be made from behind the baseline.

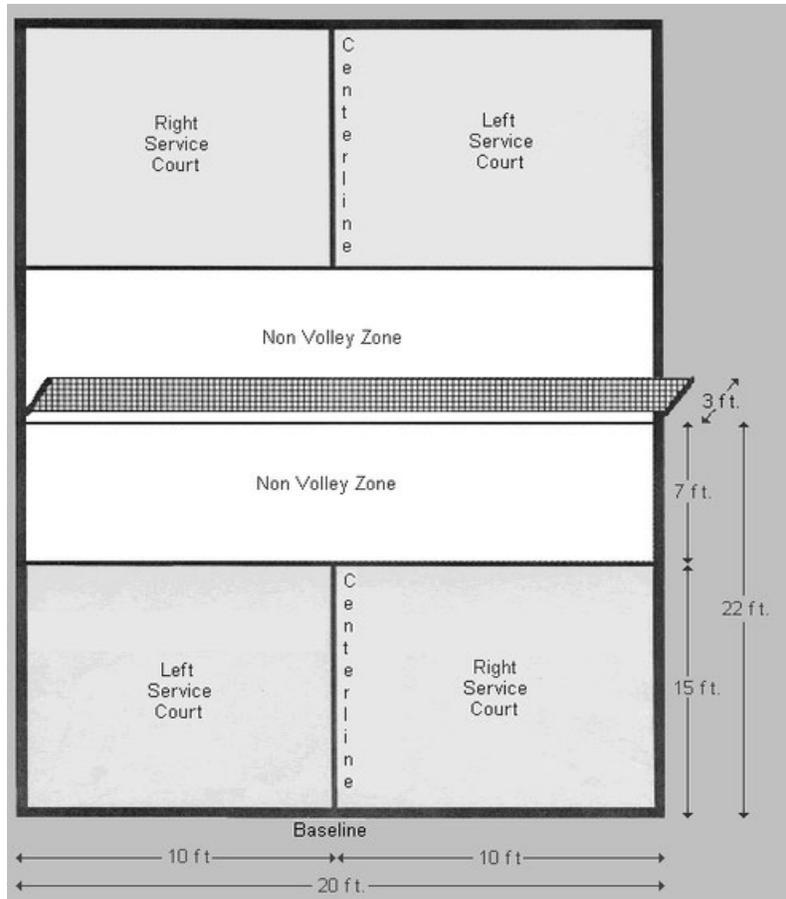


Figure 8.3. Pickleball Court Dimensions

Sound radiated from pickleball courts will not follow the inverse square law until the distance to the point of observation is large compared to the dimensions of the court or group of courts. The inverse square law states that sound radiated from a point source will decrease in level at a rate of 6 dB for every doubling in distance. As seen in Figure 8.4, this does not hold true for distributions of sound sources at close range. The figure compares two sound sources at the opposite baselines of a pickleball court to a single source approximation located at the center of the court. The vertical dashed green lines represent the edges of the concrete pad. The lower graph is the difference between the two curves in the graph above. The point of observation must be almost three court lengths before the level difference is within 0.5 dB.

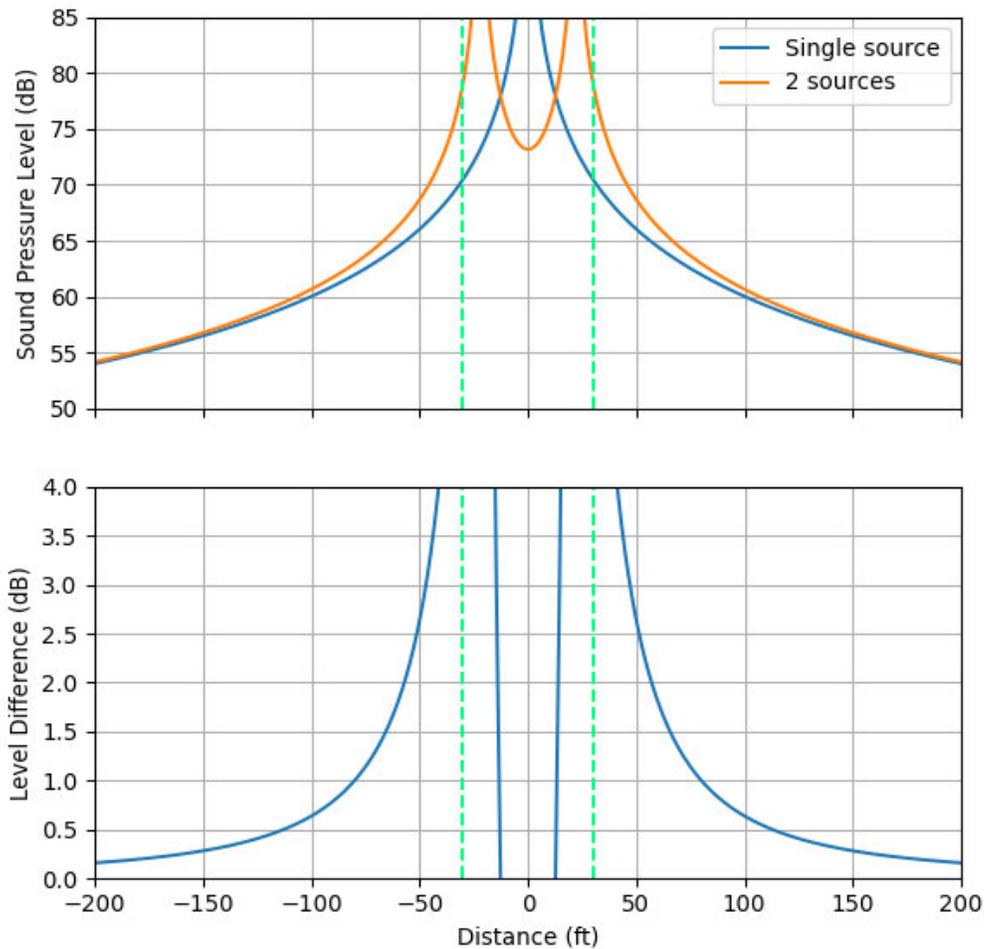


Figure 8.4. Sound Pressure Level at Distance from Court Center for One and Two Sources

For this reason, it is recommended to use multiple sound sources on each pickleball court when constructing an acoustical model of the courts. A vertical area source, i.e. a distribution of sound sources on a vertical plane located at the baseline at each end of each court extending the width of the baseline and from the playing surface to a height of 8 feet, is recommended. This arrangement is chosen for simplicity and to better ensure that the extents of noise barriers are not underestimated in the noise abatement planning stage.

8.5.2 Pickleball Court Directivity

As described in Section 6.4, pickleball courts have a directivity pattern that is bidirectional. Measurements at numerous pickleball courts have shown that the directivity pattern can be

approximated as shown in Table 8.1 or by using Eq. 8.1 where θ is the angle of the receiver with respect to the direction of play and D is the attenuation in decibels from the directivity.

$$D = 20 \log_{10}(\sqrt{(\cos^2(\theta) + 10^{(-5.5/10)} \sin^2(\theta))}) \quad (8.1)$$

Angle (deg)	Attenuation (dB)
0	0.0
10	-0.1
20	-0.4
30	-0.8
40	-1.4
50	-2.2
60	-3.1
70	-4.0
80	-4.7
90	-5.0
100	-4.7
110	-4.0
120	-3.1
130	-2.2
140	-1.4
150	-0.8
160	-0.4
170	-0.1
180	0.0

Table 8.1. Pickleball Court Directivity Pattern

9. Noise Abatement Methods

When a noise impact assessment indicates that activities planned for a site exceed the limits set in the noise regulations, a noise abatement plan to bring the site into compliance should be prepared by a qualified acoustical engineer.

9.1 Setbacks

A noise abatement plan begins with sufficient setback to noise sensitive areas to make abatement treatments effective. Any given noise abatement treatment will produce a limited amount insert loss or attenuation. A noise abatement plan for a site generally consists of a number of different treatments that work together to achieve an acceptable sound level in the surrounding area. Any deficit in the amount noise reduction achievable through mitigation treatments must be made up for in setback. In short, the setback is what makes the rest of the noise abatement plan possible.

One approach to setbacks is to simply prescribe a minimum setback with regard to all residential land uses. This has been done recently by Park City, Utah. Under their new pickleball code amendment [Park City], proposed pickleball courts within 600 feet of residential properties must have a noise abatement plan prepared. Pickleball courts within 150 feet of residential properties are not permitted.

This approach has the advantage of being easy to understand and apply; however, there are some situations where it may not be possible to create an effective noise abatement plan at 150 feet due to elevation differences or multi-story housing that make sufficient shielding by a sound wall impractical or impossible. In some special cases it may be possible to mitigate pickleball courts closer than 150 feet. Thus a 150 foot setback requirement would be overly restrictive in these applications.

Pickleball courts within 100 feet of residential land uses have proven to be problematic resulting in lawsuits, strict limitations on usage, and court closures. Courts within 150 feet of residential land uses require careful noise abatement planning using modern methods of noise assessment for highly impulsive sound such as ANSI S12.9 Part 4 described in previous chapters and strict adherence to design specifications.

9.2 Noise Barriers

9.2.1 Performance Requirements

Sound walls and fence covers are the main noise abatement treatments utilized for pickleball noise control. Sound walls are a more permanent and aesthetic solution while fence covers have lower material and installation costs. Both types of barriers can have reflective or sound absorbing surfaces.

There are a variety of materials and products available that are acceptable for pickleball mitigation. It is important that they meet a few minimum requirements.

Sound must not be able to penetrate through the barrier material. For pickleball, this means the barrier material must have a minimum sound transmission class (STC) of 20. This is not difficult to achieve with many solid materials that can include many options from mass-loaded vinyl (MLV) fence covers to masonry walls. Materials such as wind screens attached to court fencing and vegetation in the form of a hedges provide a level of visual privacy, but should not be considered noise abatement treatments.

In order to maintain the integrity of the barrier transmission loss, penetrations in the barrier surfaces cannot exceed 1% of the surface area. There can be no gaps between the bottom of the barrier and the ground or between barrier sections. Fence covers must be installed with the manufacturer's recommended amount of panel overlap.

9.2.2 Fence Cover Safety Notice

IMPORTANT

Standard chain link court fencing may not be rated for wind loading with a solid material attached. This can pose a danger of fence collapse in high winds. Many fence manufacturers produce reinforcement kits to stabilize fencing for this type of loading. It is important to consult with the fence manufacturer or a structural engineer prior to attaching MLV, sound blankets, or anything other solid material to an existing open link fence.

9.2.3 Parallel Surfaces

A common problem encountered when designing a noise barrier system for pickleball courts is the need to shield homes on opposite sides of the courts. Arranging reflective noise barriers so that they have parallel faces creates a situation where the sound is trapped between the interior surfaces and cannot dissipate. It has nowhere to go but over the noise barrier. This will significantly degrade its acoustical performance. If this layout cannot be avoided by changing the relative positions of the two walls, sound absorption will be needed on the interior surfaces to control acoustical energy buildup.

Figure 9.1 shows a performance comparison of several surface materials on opposite sides of two pickleball courts arranged end to end. Carsonite is a sound wall system with integrated sound absorption. It is commonly used for noise mitigation along roadways and absorbs well at 1,000 Hz, the critical frequency for pickleball paddle impacts. AudioSeal is an outdoor sound absorbing blanket material that can be attached to a fence. It does not absorb as well as the Carsonite at higher frequencies, but still performs adequately. The MLV curve is notably higher than the AudioSeal and Carsonite curves due to its high reflectivity at 1,000 Hz.

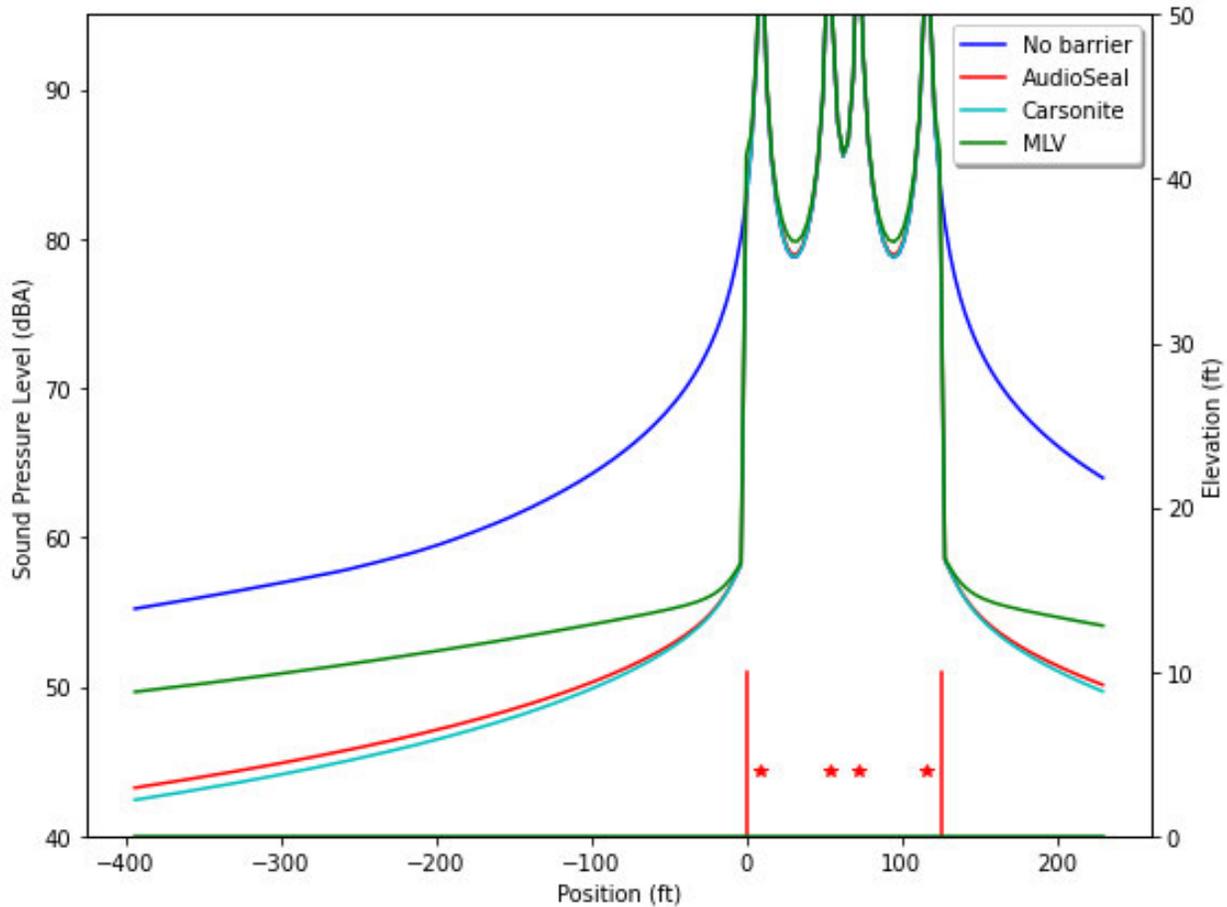


Figure 9.1. Performance Comparison of Interior Parallel Surfaces of Noise Barriers

It should also be noted that the slopes of the AudioSeal and Carsonite curves are almost identical to the slope of the curve for no noise barrier. The MLV curve has a notably shallower slope that trends toward the no barrier use case at distances farther from the noise barrier. This is the result of the large number of high amplitude image sources produced by reflective interior surfaces of the MLV.

Note: The ISO 9613 standard contains provisions for only one reflection. Acoustical simulation software implementing this standard will not calculate the case of parallel walls accurately. The above figure was created using multiple image sources and 40th order reflections for the MLV surfaces in order to get convergence on a solution.

9.2.4 Lowering Pickleball Courts

One approach to free standing sound walls is to lower the elevation of the pickleball courts by excavating the soil at the location of the courts and using it to create a berm next to the courts. While this can have some acoustical benefits in some situations, it is more of a cost saving design choice. By constructing the sound wall on top of the berm, a lower wall height will be

required and the wall will be less expensive to build.

9.2.5 Ventilation and Air Flow

In summer, pickleball courts, like any outdoor sport played on a hard court, can become hot. Sound walls and fence covers will impede the air flow over the courts and make the courts feel even warmer. It may be possible to alleviate this to a degree by using overlapping wall sections that allow some breeze to pass through. This usually requires an overlap of at least four times the width of the gap between the wall sections. Sound absorbing material may also be needed in the gap to control flutter reflections that allow sound from the pickleball courts to work its way through the overlap. There must be no line of sight to players on the courts possible through the gap. If necessary, add a wall extension to shield the outside opening of the overlap. This wall layout can also be used as a passageway for ingress and egress.



Figure 9.2. Sound Wall Overlap

9.3 Court Orientation

From the examples of pickleball court directivity in Section 7.1, it is apparent that the orientation of pickleball courts can be used as a noise mitigation measure. By turning the courts so that a noise sensitive area is to the side of the courts, sound levels in that direction can be reduced 3 to 5 dBA.

This may not be an ideal solution in some situations. It is preferable to have the direction of play roughly north-south to reduce glare from the sun during play. It is, however, worth the effort to take advantage of this characteristic of pickleball paddle radiation when it will not interfere with the use of the courts.

9.4 Sound Masking

9.4.1 Masking Requirements

Masking of a sound source refers to changing the threshold of hearing by introducing another

sound source such that the first sound source can no longer be heard. This is difficult to achieve with impulsive sounds because of their high peak sound pressure levels. Since impulsive sound is by nature intermittent and of limited duration, a masking source would have to operate continuously at a high amplitude in order to mask the impulse. This will often create a new noise issue.

Pickleball paddle impacts produce sound mostly in the 1,000 Hz octave band. The masking source must therefore also produce sufficient sound in the 1,000 Hz octave band to cover the sound of the paddle impacts.

9.4.2 Roadways

Roadways are a broadband, continuous sound source. In general, even busy highways are not able to mask pickleball courts due to the high peak sound pressures of the paddle impacts. Traffic noise tends to be mostly low to mid frequency sound and does not have sufficient energy in the 1,000 Hz octave band to effectively mask pickleball.

It appears to be a common perception that placing pickleball courts in neighborhoods located close to main arteries or interstates will prevent noise issues due to the sound from the roadway. In practice, this has not proven to be the case as seen at Glenhaven Park in La Cañada Flintridge, California [La Cañada Flintridge]. This neighborhood park is located adjacent to Interstate 210 on the north side of Los Angeles.

9.4.3 Fountains

There is some evidence that water fountains can be beneficial under certain conditions. As discussed above, a masking source must produce sufficient sound in the 1,000 Hz octave band and operate at all times in order to mask pickleball. Water falling on water can produce significant sound in the 1,000 Hz octave band.

Fountains located close to a noise sensitive area such as a back patio that is several hundred feet from pickleball courts may produce partial masking of paddle impacts from the courts. It may be possible to reduce this distance with a sound wall system at the pickleball courts.

For noise sensitive areas close to pickleball courts this is not likely to be an effective noise abatement treatment. Larger noise sensitive areas or larger numbers of homes will require multiple fountains in order to keep the distance from the fountains to the individual homes relatively small compared to the distance to the pickleball courts.

9.5 Full Enclosure of Pickleball Courts

For outdoor pickleball courts that cannot be mitigated because of insufficient available setback, topography, elevation features of the surrounding structures, or some other reason, the only remaining noise abatement option may be a full enclosure to contain the sound. Any penetrations in the building shell will need to be analyzed for sound leakage including doors, windows, ventilation, exhaust fans, etc. Vestibule doors may be necessary in some applications where ingress and egress face noise sensitive areas.

Indoor courts with bay doors opening away from noise sensitive areas can also work in some instances. In this use case, a room analysis of the reverberant field will need to be done and the amount of sound power exiting through the bay doors calculated from the direct and reverberant sound fields. Buildings can be much higher than free standing wall and provide a better performing noise barrier.

9.6 Noise Control Policy

9.6.1 Hours of Operation

Limiting the hours of operation of the pickleball courts to certain times of the day or days of the week can sometimes be an effective noise control strategy. These arrangements are often negotiated with neighbors.

9.6.2 Restrict Players Allowed to Use Courts

In some cases, restricting court usage to, for example, club members and their accompanied guests can increase accountability for how the courts are used. While this may also reduce the amount of players that use the courts, noise abatement planning should assume the courts will be used at full capacity.

9.6.3 Speech

A pickleball court properly mitigated for paddle impacts will generally not have noise issues related to the loudness of speech on the courts. Noise issues with speech are for the most part related to content rather than sound level. If this is the case, a prohibit on swearing and other offensive speech may be necessary.

9.6.4 Restrictions on Equipment

Quieter Equipment

In practice, the enforcement of the use of specific types of pickleball equipment, paddles and balls, has proven to be difficult to manage for home owners associations, country clubs, parks, and most other types of pickleball facility. In order for this to be considered a noise abatement measure, there must be a clear policy in place and personnel dedicated to monitoring activity on the courts to ensure unsanctioned equipment is not in use.

Paddles

There has been an effort in the pickleball paddle industry to move to quieter designs and most players are already using this “green list” equipment as it is referred to. Measurements by Spendiarian & Willis at a number of pickleball facilities have found that the mean sound exposure level of paddle impacts, when normalized to distance and ground type, is very consistent. This indicates that, in aggregate, most players are either using essentially the same equipment or that there is not a significant acoustical difference in the equipment used. During

testing where the make and model of the paddles in use have been recorded, it has been found that most players were using green list paddles. At the present time green list paddles should not be considered a noise control measure since most players are already using this equipment anyway.

Foam Balls

Measurements by Spendiarian & Willis comparing foam pickleballs to common regulation balls has shown that the foam balls can be 8 to 9 dB quieter than regulation balls. While the use of foam balls is an effective noise abatement measure, it is undesirable for pickleball players as the foam balls play very differently from the regulation balls and cannot be used in tournaments or to train for them.

10. Site Planning Considerations for Pickleball

10.1 When a Noise Impact Assessment Is Needed

Courts located within 350 feet of residential properties in most cases require noise abatement. Pickleball court sites within 500 to 600 feet of noise sensitive areas should be reviewed by a qualified acoustical engineer in the site selection phase of the project. In the case that the ground between the pickleball courts and receiving property is water this distance may extend 800 to 1,000 feet in some cases. Courts located within 150 feet of homes require careful and often extensive noise abatement design to avoid complaints. Placing open air pickleball courts within 100 feet of residential properties is not recommended.

10.2 Site Selection

10.2.1 Available Setbacks

The most important factor to consider in selecting a site for pickleball courts is the distance to adjacent residential land uses. While a noise barrier such as a sound wall or mass-loaded vinyl fence cover can be effective in reducing noise impact, it can only provide a limited amount of insertion loss, usually between 8 and 12 dB depending on the ground it is installed on, flanking paths, reflecting surfaces, and other factors. The rest of the noise reduction required to meet acceptable sound levels must mostly be gained through distance. It is important to ensure that there is enough buffer so that noise abatement installed can be adequately effective. Other site conditions that may increase the setback required are discussed in the following subsections.

10.2.2 Proximity to Multi-story Residential Structures

In order for a noise barrier to be effective it must be able to block the line of sight from the sound source to the receiving land use. Pickleball paddle impacts can occur from near the elevation of the playing surface to a height of about 8 feet above it. Multi-story housing located close to the proposed pickleball courts may not be adequately shielded a wall system. This can affect upper level windows, balconies, raised decks, other amenities located above ground level. These need to be included in the noise impact assessment of the proposed pickleball courts.

10.2.3 Topography

Similar to housing with floors above ground level, homes sitting at an elevation higher than the proposed pickleball courts can also be difficult to shield with a noise barrier.

In addition, refraction caused by temperature gradients over certain ground can effectively cause sound to travel farther. Refraction is the bending of the path sound travels towards regions of

lower sound speed, e.g cooler air. This can be the result of temperature stratification of the atmosphere or wind. In low lying places where cool air tends to collect in the evenings or over irrigated ground where evaporative cooling can occur such as a golf course, a temperature lapse condition can develop with warm air above and cool air below. This will result in sound arcing down toward the ground. Refraction caused by a temperature lapse condition can result in sound arcing over obstacles on the ground that would normally impede its propagation thereby making it louder at farther distances.

Parks located at the bottom of a valley can pose a particular challenge as they tend to experience these conditions regularly. Further, the sides of the valley may trap sound and send it echoing back to locations on the opposite side. Valleys often require a detailed propagation study to understand how sound moves through the area at different times of the day.

10.3 Tournaments

The main difference in sound from pickleball courts during tournaments will be spectators. The noise assessment and abatement planning should include a speech analysis based on the number and location of spectators. This has been described in Section 8.4.

If a PA system is to be used for announcements, limits on the system gain should be established to ensure sound levels reaching the surrounding properties remain acceptable. Noise monitoring may also be employed at the property boundaries. This involves placing one or more microphones near noise sensitive areas so that the sound system operator can monitor sound levels in real time and make any necessary adjustments.

11. Conclusions

11.1 Best Practices in Noise Assessment and Regulation

Basic methodologies and best practices for community noise assessment, environmental acoustics measurements, and noise regulation documents have been discussed. The group of ANSI standards in S12.9 represents the current best practices in community noise assessment. The measurement methodology and sound classifications in Part 4 of the standard (harmonized with International Organization for Standardization standard ISO 1996) have been implemented under European Union Directive 2002/49 and in a number of Asian countries. ANSI S12.9 Parts 4 and 5 have been used as the basis for the recommendations in this document.

11.2 Characteristics of Pickleball Sound

The most notable sounds from pickleball courts are the popping sound produced when a pickleball contacts a paddle and speech. It is the popping sound of the paddle impacts that produces the greatest number of noise complaints. This sound has been classified as highly impulsive for the purpose of noise assessment under ANSI S12.9 Part 4.

11.3 Noise Impact Assessment of Pickleball

It has been shown that averaging techniques such as equivalent-continuous and maximum fast exponential time weighted sound pressure levels (L_{Aeq} and L_{Amax}) are not well suited for assessment of short duration impulsive sound like that produced by the impact of a pickleball on a paddle. These metrics can be expected to substantially underestimate the community response to this type of sound. Measurement procedures based on the adjusted sound exposure level according to ANSI S12.9 Part 4 have been described as a more accurate methodology for noise impact assessment of pickleball.

11.4 Noise Abatement Planning

Setbacks are an important first step in mitigating pickleball courts. A noise abatement plan usually consists of a number of treatments that each contribute a certain amount of noise reduction. Any difference between the total noise reduction of the abatement treatments and that required to meet target sound levels must be made for with setbacks.

Topography and multistory structures near the courts will also influence the amount of setback required. In order for a noise barrier to be effective it must block the line of sight from the sound source to the point of observation. Upper level bedroom windows and decks that are able to overlook the noise barrier will not be shielded and will likely experience a greater noise impact than at ground level.

Testing at numerous pickleball courts has found that the sound radiated from the paddles is directional. More sound goes in the direction of play than to the sides of the court. This characteristic can be used as a noise abatement measure by orienting pickleball courts so that the direction of play is not directed toward noise sensitive areas.

Sound masking in the form of water fountains has been found to be somewhat helpful in certain situations. This is mainly where the masking sound source is much closer to the noise sensitive area than the pickleball courts and the noise sensitive area is not too close to the pickleball courts. Roadways have not been found to be effective masking sources for pickleball.

In most cases, the noise abatement installed for the paddle impacts will be sufficient for speech from the courts as well. Noise complaints about speech on pickleball courts are most often related to content rather than sound level. This is best addressed through policy.

11.5 Site Planning

Site review and feasibility analysis for pickleball begins by looking at available setbacks and sight lines. This will determine what noise abatement treatments may be needed and whether they can be effective on a particular site. Topography and the presence of nearby multistory housing are also important considerations that may affect required setbacks. The noise impact assessment of impulsive sound is a complex task that should be done using modern standards and best practices by an acoustical engineer with experience in psychological acoustics and signal analysis.

References

ANSI S1.4-1983, *Specification for Sound Level Meters*, American National Standards Institute, 1983.

ANSI S1.4-2014, *Electroacoustics – Sound Level Meters – Part 1: Specifications*, American National Standards Institute, 2014.

ANSI S1.11-2004, *Specification For Octave-Band and Fractional-Octave-Band Analog and Digital Filters*, American National Standards Institute, 2004.

ANSI S1.13-2005, *Measurement of Sound Pressure Levels in Air*, American National Standards Institute, 2005.

ANSI S1.42-2001, *Design Response Of Weighting Networks For Acoustical Measurements*, American National Standards Institute, 2001.

ANSI S1.43-1997, *Specifications For Integrating-Averaging Sound Level Meters*, American National Standards Institute, 1997.

ANSI S3.5-1997, *Methods of Calculation of the Speech Intelligibility Index*, American National Standards Institute, 1997.

ANSI S12.9-2013, *Quantities and Procedures for Description and Measurement of Environmental Sound – Part 3: Short-term Measurements with an Observer Present*, American National Standards Institute, 2013.

ANSI S12.9-2021, *Quantities and Procedures for Description and Measurement of Environmental Sound – Part 4: Noise Assessment and Prediction of Long Term Community Response*, American National Standards Institute, 2021.

ANSI S12.9-2007, *Quantities and Procedures for Description and Measurement of Environmental Sound – Part 5: Sound Level Descriptors for Determination of Compatible Land Use*, American National Standards Institute, 2007.

ANSI S12.62-2012, *Attenuation of sound during propagation outdoors – Part 2: General method of calculation*, Nationally Adopted International Standards, Acoustical Society of America (ASA), 2012.

Buchta, Edmund, "A field survey on annoyance caused by sounds from small firearms," *Journal of the Acoustical Society of America*, vol. 88 (3), September 1990. p. 1459.

City of La Cañada Flintridge, "Pickleball Program at Glenhaven Park to End October 28," <<https://cityoflcf.org/pickleball-program-at-glenhaven-park-to-end-october-28/>>, October 27th, 2022.

Dittrich, Kerstin and Oberfeld, Daniel, "A comparison of the temporal weighting of annoyance

and loudness," *Journal of the Acoustical Society of America*, vol. 126 (6), December 2009. p. 3168.

Harris, Cyril M. (Ed.), *Handbook of Acoustical Measurements and Noise Control, 3rd Edition*, Acoustical Society of America, 1998.

ISO 226-2003, *Acoustics - Normal equal-loudness-level contours*, International Organization for Standardization (ISO), 2003.

ISO 1996-1, *Acoustics - Description, measurement and assessment of environmental noise - Part 1: Basic quantities and assessment procedures*, International Organization for Standardization (ISO), 2016.

ISO 9613 Part 2, *Acoustics - Attenuation of Sound During Propagation Outdoors - Part 2: General Method of Calculation*, International Organization for Standardization (ISO), 1996.

Park Cty, Utah, Municipal Code 15-4-22 Outdoor Pickleball Courts In Residential Areas. Adopted April, 2022.

Schultz, T. J., "Synthesis of Social Surveys on Noise Annoyance," *Journal of the Acoustical Society of America* v. 64, pp. 377-405, 1978.

Smoorenburg, G. F., Vos, J., "Rating of impulse noise, in particular shooting noise, with regard to annoyance," *Journal of the Acoustical Society of America*, suppl 1, vol. 73, Spring 1983. p. S48.

Vos, Joos, "On the annoyance caused by impulse sounds produced by small, medium-large, and large firearms," *Journal of the Acoustical Society of America*, vol. 109 (1), January 2001. p. 244-253.

Vos, Joos and Houben, Mark M. J., "Enhanced awakening probability of repetitive impulse sounds," *Journal of the Acoustical Society of America*, vol. 134 (3), September 2013. p. 2011.

Vos, Joos and Smoorenburg, Guido F., "Penalty for impulse noise, derived from annoyance for impulse and road-traffic sounds," *Journal of the Acoustical Society of America*, vol. 77 (1), January 1985. p. 193.

World Health Organization (WHO), *Night Noise Guidelines for Europe*, <http://www.euro.who.int>, 2009.

Zwicker, E. and Fastl, H., *Psychoacoustics Facts and Models, 2nd Edition*, Springer, 1999.

[REDACTED]

From: Ken Bernstein [REDACTED]

Sent: Friday, July 12, 2024 12:03 PM

To: Eleanor Manzano <Eleanor.Manzano@redondo.org>; James Light <james.light@redondo.org>; Scott Behrendt <Scott.Behrendt@redondo.org>; Nils Nehrenheim Council Member Redondo Beach <nils@voteformils.org>; Todd Loewenstein <Todd.Loewenstein@redondo.org>; Paige Kaluderovic <Paige.Kaluderovic@redondo.org>; Zein Obagi <Zein.Obagi@redondo.org>; Eleanor Manzano <Eleanor.Manzano@redondo.org>

Cc: Mike Witzansky <Mike.Witzansky@redondo.org>; Michael Webb <Michael.Webb@redondo.org>; Cameron Harding <Cameron.Harding@redondo.org>

Subject: Blue Folder 5 July 16 City Council Meeting Agenda # N1

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Hi Ms. Manzano,

Can you please put in blue folder for July 16 City Council Meeting Agenda # N1 Alta Vista Pickleball.

Thanks.

Ken Bernstein

Denver suburb lifts ban on new outdoor pickleball courts, but will new rules squelch noise impacts?

- John Aguilar
- PUBLISHED: September 20, 2023 at 1:57 p.m. | UPDATED: September 20, 2023 at 5:31 p.m.
- Categories: [Colorado News](#), [Environment](#), [Health](#), [Latest Headlines](#), [News](#), [Politics](#)

Members of the Homestead in the Willows neighborhood gathered at tennis courts they hoped to turn into pickleball courts this spring, on April 5, 2023, in Centennial. On Tuesday, city leaders passed a new set of rules to ensure noise from the game does not disturb homeowners. (Photo by RJ Sangosti/The Denver Post)

Pour the concrete, paint the lines and stand up the nets.

Centennial lifted its [six-month ban on the construction of outdoor pickleball courts](#) shortly before midnight Tuesday after the City Council passed new rules and regulations for a sport that has [exploded in popularity across the country](#) in recent years. It also has generated a spate of noise complaints nationwide and resulted in [court closures and lawsuits](#).

The vote to end the March moratorium on new court construction was 9-0 during the four-hour meeting. But several council members noted that this is not the end of the discussion about the potential impacts of pickleball play.

We do need to get something on the books, at least a line in the sand right here,” Councilman Richard Holt said. “It’s not going to be perfect — this is the first shot we’re doing. Denver metro is looking at us, (so is) Colorado, maybe even nationwide. I think we’re one of the first municipalities to tackle this issue. And version 1.0 probably won’t be perfect.”

Centennial’s new ordinance forbids any permanent outdoor pickleball courts within 250 feet of a home’s property line. Between 250 feet and 600 feet from a home, the city will require a permit before a court can be built, and the sound of play from that court cannot exceed 47 decibels as measured at the nearest property. That is a noise level roughly equivalent to the sound of a refrigerator, according to a [Yale University decibel chart](#).

Before a court can be established, an acoustical analysis will have to be conducted to determine the noise level in that zone. Noise mitigation measures, such as sound walls, can be incorporated into the design to comply with the noise requirements.

Beyond 600 feet from a home, the city won't require a permit to build a pickleball court.

The ordinance also restricts play to between the hours of 8 a.m. and 8 p.m. Court lighting must be turned off by 8 p.m. Temporary pickleball courts, where people lay down tape to mark the court boundaries and pop up a portable net, are not allowed within 350 feet of a home.

Councilman Don Sheehan said the city could tweak the buffers once it gets feedback from residents but noted the urgency to act now.

“We need to pass this because we have no other choice,” Sheehan said. “We have a moratorium that is expiring and we have nothing on the books that do anything to stop the noise that’s going to impact our citizens.”

Those noise impacts in Centennial have been more speculative than actual, given the scarcity of outdoor pickleball courts in the city now. But a number of residents [registered strong disapproval of the city’s moratorium](#) in the weeks after it was passed, saying Centennial was draping a wet blanket over a sport that promotes fitness among an increasingly overweight population.

Meanwhile, the fight over pickleball noise has been very real in other places, including in Denver, which [closed courts in Congress Park](#) in the spring in response to noise complaints from neighbors.

Spendiarian & Willis, an acoustic engineering firm [hired by Centennial](#), said what makes pickleball strikes so uniquely nettlesome is that they produce quick “impulsive” sounds, which are akin to “sounds that contain important information about our environment such as footsteps, a door opening, a tap at the window, or speech.”

“Continuous false alarms such as the popping sound created by pickleball paddle impacts make it difficult to relax, concentrate, or sleep soundly without disturbance as each time a pop is heard it draws the attention, creating distraction,” the firm’s report states.

It’s critical to soften those impacts for quality of life in this suburban city of 107,000, Councilman Mike Sutherland said. At Tuesday’s meeting, he said he was “a firm

believer in protecting the home” and ensuring that people don’t have to do battle with the repetitive pop-pop-pop of a pickleball match.

“Many of us have invested a lot of money to live in our homes,” he said. “I’m in favor of that — neighborhoods and homes are what make Centennial valuable.”

[REDACTED]

From: Ken Bernstein [REDACTED]
Sent: Monday, July 15, 2024 12:49 PM
To: James Light <james.light@redondo.org>; Scott Behrendt <Scott.Behrendt@redondo.org>; Nils Nehrenheim Council Member Redondo Beach <nils@voteformils.org>; Todd Loewenstein <Todd.Loewenstein@redondo.org>; Paige Kaluderovic <Paige.Kaluderovic@redondo.org>; Zein Obagi <Zein.Obagi@redondo.org>; Eleanor Manzano <Eleanor.Manzano@redondo.org>
Cc: Mike Witzansky <Mike.Witzansky@redondo.org>; Eleanor Manzano <Eleanor.Manzano@redondo.org>; Michael Webb <Michael.Webb@redondo.org>; Cameron Harding <Cameron.Harding@redondo.org>
Subject: RE: Blue Folder 6 July 16 City Council Meeting Agenda # N1 - Noise Measurement Test Video

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Hi Ms. Manzano,

Can you please put in blue folder for July 16 City Council Meeting Agenda # N1 Alta Vista Pickleball.

Please note this video shows the type of actual play that took place for the basis of the noise measurement test. It has been verified / witnessed that this level of play (more warm up or lite play then real match play) was consistent throughout the entire test period on court 8.

Thanks.

Ken Bernstein

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]



From: Susan Higgins [REDACTED]
Sent: Sunday, July 14, 2024 9:43 PM
To: Zein Obagi <Zein.Obagi@redondo.org>
Cc: Scott Behrendt <Scott.Behrendt@redondo.org>; Elizabeth Hause <Elizabeth.Hause@redondo.org>; James Light <james.light@redondo.org>; Todd Loewenstein <Todd.Loewenstein@redondo.org>; Nils Nehrenheim <Nils.Nehrenheim@redondo.org>; Paige Kaluderovic <Paige.Kaluderovic@redondo.org>
Subject: Re: Comments about Agenda Item N.1 and the Administrative Report for RB CC Meeting on 7/16/2024

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Good. I'm glad we are on the same page.
Thank you
Sent from my iPhone

On Jul 14, 2024, at 5:43 PM, Zein Obagi <zein.Obagi@redondo.org> wrote:

Ok that's fine re Pickleball for Pickleball hours. Thought you meant v basketball.

Zein E. Obagi, Jr.
Council Member, District 4
City of Redondo Beach | City Council
[415 Diamond Street | Redondo Beach, CA 90277](https://www.redondo.org)
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From: Susan Higgins [REDACTED]
Sent: Saturday, July 13, 2024 9:29:19 PM
To: Zein Obagi <Zein.Obagi@redondo.org>
Cc: Scott Behrendt <Scott.Behrendt@redondo.org>; Kelly Orta <Kelly.Orta@redondo.org>; Elizabeth Hause <Elizabeth.Hause@redondo.org>; Paige Kaluderovic <Paige.Kaluderovic@redondo.org>; Todd Loewenstein <Todd.Loewenstein@redondo.org>; Nils Nehrenheim <Nils.Nehrenheim@redondo.org>; James Light <james.light@redondo.org>
Subject: Re: Comments about Agenda Item N.1 and the Administrative Report for RB CC Meeting on 7/16/2024

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Zein, I'm not sure I understand your reasoning in this response. The First Come/First Serve has to do with pickleball players playing during the designated pickleball play hours and nothing to do with the Basketball designated play hours. It's what pickleball players have been playing at Perry Park since the courts were striped. Again, I strongly believe that you do not understand what these play terms mean. It is not an intent to change any of the designated hours and days for pickleball versus basketball. Clearly, there is a misunderstanding on what these terms mean. Happy to chat with you directly to explain. Very sorry you misunderstood the intent.

Sincerely,
Susan Higgins

Sent from my iPhone

On Jul 13, 2024, at 8:52 PM, Zein Obagi <zein.Obagi@redondo.org> wrote:

Absolutely not first come first serve Ms Higgins for reasons expressed in my last community email.

<https://conta.cc/3zCJrEP>

Zein E. Obagi, Jr.
Council Member, District 4
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From: Susan Higgins [REDACTED]
Sent: Saturday, July 13, 2024 12:49:58 PM
To: James Light <james.light@redondo.org>; Nils Nehrenheim <Nils.Nehrenheim@redondo.org>; Todd Loewenstein <Todd.Loewenstein@redondo.org>; Paige Kaluderovic <Paige.Kaluderovic@redondo.org>; Zein Obagi <Zein.Obagi@redondo.org>; Scott Behrendt <Scott.Behrendt@redondo.org>
Cc: Elizabeth Hause <Elizabeth.Hause@redondo.org>; Kelly Orta <Kelly.Orta@redondo.org>
Subject: Fwd: Comments about Agenda Item N.1 and the Administrative Report for RB CC Meeting on 7/16/2024

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before opening attachments or links.

To Mayor Light, D1CM Nehrenheim, D2 CM Loewenstein, D3 CM Kaluderovic, D4 CM Obagi, D5 CM Behrendt,

As time is short until the Tuesday, July 16 City Council meeting, I'm forwarding this email I sent to Kelly Orta in Community Services with a copy to Crystal Deckman in the Recreation and Parks Commission, to all of you with my comments regarding both topics under Agenda Item N.1. These comments are pertinent to both topics and I hope you will take them under consideration.

Thank you,
Susan Higgins
Redondo Beach Residents Pickleball Players Group Lead
34 Year Redondo Beach Resident

Begin forwarded message:

From: SUSAN HIGGINS [REDACTED]
Subject: Comments about Agenda Item N.1 and the Administrative Report for RB CC Meeting on 7/16/2024
Date: July 12, 2024 at 3:41:53 PM PDT
To: Kelly Orta <Kelly.Orta@redondo.org>
Cc: Crystal Deckman [REDACTED]

Hi Kelly,
Today I had the opportunity to read the Agenda for the Redondo City Council 7-16-2024 meeting which includes Agenda Item **N.1 "Discussion and Possible Action Regarding Pickleball Play and Court Management in the City."** This first topic provides the two proposed signs for Perry Park and Franklin Park. I note that the Perry Park sign is the previous version showing Open Play. I was hoping there would be some discussion based on my emails to you and my email exchanges with Crystal Deckman to change Perry Park to First Come/First Serve. Please clarify. I also see that the Franklin Park sign is now correct! Thank you!

With respect to the second topic of Agenda Item N.1 **"Discussion and Possible Action Regarding the Installation of Pickleball Court Lines on One or Two of the Tennis Courts Located at Alta Vista Park,"** I am not weighing in on this topic but I did note (and not surprising to me) that if the City moves out to stripe one or two tennis courts with

pickleball courts, then these pickleball courts would be available by reservation only. See paragraph below:

Recommended Pickleball Court Use Hours & Projected Revenue

Following review of the tennis court usage data, there are no clear patterns throughout the year that

would allow for regular use of tennis court(s) for pickleball play without impacting existing tennis use.

Should the City Council approve installation of the pickleball court lines on one or two tennis courts at

Alta Vista, staff would develop designated court use times for pickleball play while attempting to

impact tennis play as little as possible. Use of the courts would be available by reservation only,

consistent with current use policies for the tennis courts.

I then reviewed the Cost Estimate for striping the one or two tennis courts (\$2,560 or \$5,120, respectively). Clearly these cost estimates do NOT include the cost of purchasing either 4 or 8 portable pickleball nets which would need to be provided to the pickleball players given that the City requires the use of these courts on a reservation only basis. Hermosa Beach has dedicated pickleball courts for reservations, Manhattan Beach has a combination of 3 dedicated pickleball courts and 4 striped courts with City-provided pickleball nets for reservations, El Segundo has 8 dedicated pickleball courts and two striped pickleball courts with City-provided pickleball nets for reservations. Decent portable pickleball nets can run from \$200+ at the low end to \$500+ at mid range. Top of the line portable net systems run into the thousands (\$3,000+, \$4,000+). Examples of decent, quality nets are:

- Deluxe PickleNet Portable Net System \$459.95 before tax.
- Swift 2.1 Portable Pickleball Net System \$369.99 before tax. I have this one.
- PickleNet Portable Pickleball Net System (Oval Design)

\$189.95 before tax. This is one of the original portable nets and it's very heavy. I know because I have one.

Relative to **the Fiscal Impact in the Administrative Report:** I believe it would be prudent to disclose all costs to the City Council to avoid any confusion should they vote to move forward with striping pickleball courts at Alta Vista.

Additionally, if the City moves forward with striping one or two tennis courts at Alta Vista to be used by reservation only, there is no need for a Paddle Saddle as there is no court rotation. It will be only private groups reserving the courts. Paddle Saddles are needed for Open Play or Drop In Play only and not First Come/First Serve or Court Reservations.

One more comment relative to the statement on page 4 of the Administrative Report - "At the March 5, 2024 meeting, the City Council considered alternate locations for additional pickleball courts, including a parking lot north of the Aviation track that is privately owned by Northrop Grumman.

Unfortunately, Northrop Grumman was uninterested in leasing this space to the City for the installation of pickleball courts." This not exactly correct. The parking lot discussion was held almost 2 years ago. And, this parking lot is privately owned by an individual and NOT Northrop Grumman. Northrop leases this lot from this individual.

Northrop had contacted this individual and he stated he was not interested in leasing for pickleball courts.

Hopefully, this July 16, 2024 City Council meeting will have a positive outcome.

As always, if you have any questions or need further information, please reach out to me.

Best regards,
Susan Higgins

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