Bruce & Mary Swanson
2071 Fields Dr.
West Linn, Oregon

June 20, 2012

Dear Planning Commission:

Any residential property owner in West Linn could one day come home to a freshly poured concrete court area located at the property line with a court goal elevated directly aligned with their windows, and indoor and outdoor living areas. The adverse impacts of the location are currently unregulated including illumination, noise and thrown objects hitting adjacent property and potentially residents. We continue to suffer from this type of situation that occurred after we purchased and moved into our home within the City and its regulatory structures. To be clear, we love sports, play, coach and lead sports teams, have a basketball backboard and have lived well in homes with court areas appropriately sited with minimal impacts.

We are offering this information and a highlighted commentary included with the staff draft for discussion tonight, for your consideration, in a spirit of "working together toward resolution of such issues" for ourselves and others in West Linn. It could happen to anyone who owns a home in the City. We continue to experience the significant impacts of noise and projectile objects safety issues at our property limiting our ability to use our property for normal residential activities. These conditions are caused by the location and use of the adjacent neighbors sport courts area.

Over the years, we have gathered much information and history and seek today to provide you an overview of what is likely most helpful now. We are grateful for your service to the City and all of us who are residents and property owners in the City. We are willing to continue to work in any way helpful to regulation of the levels of light, noise and projectiles that adversely impact the livability of adjacent residences.

Brief Timeline: (Excerpts from longer journal)

June 2012	Letter to City Manager as per Mayor Kovash direction
May 2012	Mayor and Council member informed of new development at the city council meeting on May 14th.
April 2012	Sport court area moved close, adjacent and oriented toward neighboring property.
May 2011	Former Councilor and lawyer Mattis provides recommendations
January 2011	Council Retreat Packet provided at recommendation of Council member.
Sept 2010 to April 2012	Location of one backboard and court area oriented away from adjacent property and distant enough to reduce impacts and allow adjacent owner less restricted use of property.
Late September 2010	Press coverage. Staff reported opinions to press, Swansons referred press to the record (2 Council meeting dates), Adjacent property owner demonstrated new arrangement which was retained for

	another 1 and ½ years.
September 2010	Adjacent site changed to one backboard more distant and not oriented toward adjacent property
September 7, 2010	Council Work Session – Unanimous recommendation to staff – need to keep working toward resolution.
June 28 2010	Provided packet in response to Mayor and Council action and requests.
June 14 2010	Presentation to Council – request for enforcement, showed survey to document we are not asking for enforcement about typical basketball , showed 3 quick examples of typical impacts (not worst).
May 11, 2009	Packet to City Council – research results **including ordinance proposal** for setbacks as per City manager.
February 2009	Met with City Manager after repeated citizens requests
November 2008	Written testimony regarding noise ordinance revision proposal.
	Police chief visits site on quiet am (upon request of citizen), only staff ever to do so, informs us of upcoming unrelated noise ordinance change which will help enforcement in our case.
	Some staff interaction
September 2008	Letter to Jordan requesting city's help.
2007- 2008	Research, advice, measuring, logging.
2005-2007	Attempts to discuss met with aggressive responses. Free mediation arranged and declined by neighbor. City refuses to take any noise complaints involving basketball.

Materials Provided Today (Others are available upon request)

1. Letter to Jordan
2. Mattis E-mail of ideas
3. Council Retreat Packet from Swanson
4. Regulation through setback memo provided to staff (This has **setback calculations for use in an ordinance**
5. Other materials that may be particularly helpful to you and staff. .

We respectfully submit this info for your consideration for the livability of West Linn. We will continue to be available to help proceed toward resolution in any way we can.

Respectfully,

Mary Swanson (for Bruce)

Mary and Bruce Swanson

INCOMPLETE DRAFT IN PROGRESS

For Initial Discussion Purposes Only

(Citizen introductory modification ideas for consideration)

Outdoor Sport Courts

(Comment: This wording is an example for courts regulation inclusive of lighting, equipment and noise) *Outdoor sport courts use can reach off site areas and potentially adversely impact occupants of adjacent residences. More specifically, recent situations inclusive of impacts of illumination, projectile equipment and noise are sources of complaints in West Linn (At least "a few" related to illumination, a few more (at least 3) related to basketball noise, at least 3 related to projectiles impacts. Source: City Council meetings, Staff draft report, West Linn Tidings).*

Consequently, the City Council asked staff and Planning Commission to address the issue of illumination. Also recently the Mayor asked residents to submit an additional request to the City Manager to address the issues of noise and projectiles. The Council retreat in 2010 was expected at one point to address such issues and the City Council last addressed this in 2010? At a work session wherein the council declared unanimous support for elected and appointed officials of the City to continue working toward ordinance language, adoption and enforcement of regulations that resolve these long-standing issues. Staff approaches to regulatory language changes and enforcement had thus far failed to adequately protect residential properties from adverse impacts.

Staff reviewed the regulations of 32 jurisdictions in Oregon and Washington, many similar in demographics to West Linn, and found that only a few have residential lighting regulations. These are Wilsonville, Oregon City, Troutdale, and Corvallis, Oregon; and Redmond and Mercer Island, Washington. In addition, staff reviewed a couple of nationally recognized examples - a recent lighting ordinance from Homer Glen, Illinois and the Joint IDA – IES Model Lighting Ordinance (Dark Sky).

Citizens submitted reviews of regulatory approach recommended by the National American Planning Association, and the regulations of nearby cities (Salem, Portland, Lake Oswego, Tualatin, Wilsonville, Seattle and more (on file). In addition, citizens submitted draft language for consideration including measurable standards, informative issues and recommended approaches. In addition, citizens submitted projectile objects causing impacts, logs of measurable impacts, survey of residential land use for basketball within the City of West Linn, and video and audio examples of typical (not the worst) impacts. This all after citizens worked directly with the Clackamas County Dispute Resolution Services which offered mediation services for free which were denied by the offending property owner and similar services that were to be offered by the City were also unsuccessful.
(See packet for materials)

The following preliminary discussion draft reflects approaches used in these regulations.

CHAPTER 39 (new)
EXTERIOR/OUTDOOR SITING for SPORT COURT

Sections

39. 010 PURPOSES.
The purposes of this chapter are as follows:

A. To regulate outdoor sport courts in order to avoid excessive trespass of light, projectiles, and noise that otherwise could diminish the livability of adjacent properties or negatively impact adjacent land uses; and

B. To reduce unnecessary energy consumption.

C. To protect home based businesses from such excessive trespass that diminishes the viability of their licensed business..

D. To preserve landscaping that contributes to the City's sustainability goals

39.020 APPLICABILITY

This chapter applies to all new, existing and replacement outdoor sport courts lighting in the R -40, R-20, R-15, R-10, R-7, R-5, R-4.5, R-3, and R-2.1 districts, except as exempted by Section 39.025.

***(Option:** Consider expanding the scope of the chapter to include Neighborhood Commercial (NC), Office Business Center (OBC), the Willamette Neighborhood Mixed Use Transitional Zone and perhaps the General Commercial (GC) districts now or in a subsequent project phase).*

39. 025 EXEMPTIONS (Limited changes if any for sport courts amendment)

The follow are exempt from the requirements of this chapter:

A. Lighting within rights-of-ways and public access easements for the purpose of lighting the travel way or related facilities (e.g., transit stops, sidewalks and paths);

B. Portable lights temporarily used during road, utility or other permitted construction or repair, or for theatrical, musical and other performances, or for television production;

C. Temporary lighting used for holiday decoration;

D. Lighting used for temporary events approved by the City, such as block parties, fairs, and civic events;

E. Lighting used in emergency events such as, but not limited to, police and firefighting activities and declared emergencies;

F. Lighting of public monuments and statuary; (Joint IDA – IES Model Ordinance)

G. Lighting required by the Building Code;

H. Open flame gas lamps; (Joint IDA – IES Model Ordinance)

I. internal lighting for signs approved under Chapter 52; and (Joint IDA – IES Model Ordinance)

J. Underwater lighting in swimming pools and other water features. (Joint IDA – IES model Ordinance)

39.030 PROHIBITED OUTDOOR LIGHTING (these are factors knowable before permanent siting as are the added considerations)

The following are prohibited on properties subject to this chapter:

A. Mercury vapor, metal halide, quartz, and neon lights; and

B. Flickering, flashing, blinking, scrolling, or rotating lights and other lights that change intensity, not including motion sensor activated lighting.

39...PROHIBITED OUTDOOR LOCATIONS

The following are prohibited on properties subject to this chapter:

A. Locations in backyards and back side yards of sport courts with projectile objects including but not limited to basketball backboards, archery targets, lacrosse goals, etc

B. Locations of sport courts in front yards with projectile objects including basketball backboards, archery targets, lacrosse goals, baseball pitching equipment, that due to location and orientation and involvement of projectile objects that may reach adjacent property residential living spaces.

39...PROHIBITED OUTDOOR NOISE

The following are prohibited on properties subject to this chapter:

A. Sport courts that generate noise audible within the adjacent dwelling with the windows closed;

39.040 Nonconforming sport court conditions

A. All outdoor sport courts lawfully installed prior to the effective date of this chapter that do not conform to the provisions of this chapter are considered nonconforming. Such courts may continue to be operated, subject to sections B-E below.

B. Replacement light bulbs shall conform to Section 39.050 B and hours of operation shall conform to Section 39.050 E.

***(Option:** Consider requiring removal (amortization) of lawfully established lights that do not comply with the requirements of this chapter over a specified time period. The following approach for addressing existing lighting is adpated, largely, from the Homer Glen, Illinois lighting ordinance.)*

C. Noise analysis shall conform to "audible within the adjacent residential living areas with the windows closed".

D.

Alternative :Noise analysis shall conform to "typical residentially restricted levels". In addition, duration will include all intermittently (repetitive, unpatterned) generated noises (could add number per hour if an hour was played – estimated like a heart rate target) and any such as typical for sport courts.

Noise shall be measured with typical noise decibel equipment with trained staff (see options materials for training or hiring trained professionals if and when needed in Council retreat packet attached)). Intermittent and repetitive pounding and impact sound is one of the most distressing sounds to the human body as we are naturally attuned to perceive danger in such sounds from birth. "It is called the "startle reflex" and it is well documented in scientific literature as a health concern).

E. Nonconforming light fixtures and supporting structures and other non conforming sports fixtures and structures must be brought into compliance with Sections 39.050 C and D within 30 days if any of the following occur:

F.

1. The height or location of the light is changed; or
2. The light fixture or supporting structure is replaced, except when of two or more identical fixtures or structures are located on the property (e.g., a series of parking lot lights);or
3. The use of the light is abandoned for 180 days or more; or
4. There is a change in use of the property (e.g., from residential to commercial)
5. The court equipment is portable
6. An alternative (even if not preferred or less ideal for the property owner) on site location is possible. Preference of the owner is not a criteria.
7. Parks and schools nearby provide suitable spaces for the activities

D. Nonconforming light fixtures and supporting structures shall achieve full compliance with this chapter or be removed within 30 days if any of the following occur:

1. A cumulative total of 25% or more of the light fixtures or supporting structures are changed, relocated or replaced after the effective date of this chapter (excluding routine bulb replacement); or ***(Staff comment**: this could be difficult to determine on residential properties).*

2. Cumulative additions of 25 percent or more, after the effective date of this chapter, of the principal structure on the lot, seating capacity, or parking spaces.

G. All nonconforming lights and supporting structures shall achieve full compliance with this chapter or be removed on or before_____ (a *time period of several years that allows amortization of the light fixture and supporting structure).*

H. All uses of the court that involves projectile objects and noise shall cease temporarily while this ordinance is under consideration and permanently upon adoption of the ordinance.

39.050 STANDARDS

The following standards apply to outdoor lighting on property subject to this chapter.

A. Lighting height. The maximum height for light fixtures and supporting structures, including any standard or base, is as follows:

1. Freestanding and building-mounted light fixtures: 20 feet. (***Staff comment:*** *the regulations staff reviewed allowed basic heights ranging from 16 to 20 feet).*
2. Athletic fields on public property: 50 feet.
3. Parking areas: 40 feet.

B. Light type. Lighting shall use color-corrected sodium lights, LED lights, CFL Light Bulbs, halogen bulbs, or .....

C. Prevention of off-site illumination.

1. Light emitted from outdoor lighting shall not cause the light level at any property line shared with a residential use to exceed 0.1 foot-candles, measured 5 feet above the ground.
2. All exterior lighting fixtures with an output exceeding 1100 lumens (e.g., approximately a 75 watt incandescent bulb or a 50 watt halogen bulb), or up to 2200 lumens for motion activated lights that remain on for no more than 10 minutes, shall be mounted, aimed, shielded or located so all directly emitted light is at or below horizontal.
3. All outdoor lights with an output exceeding 2200 lumens shall be shielded or the beam angle control shall be adjusted such that the light source is not visible from any adjoining property line shared with a residence.
4. No direct illumination shall be directed off site and, to the maximum extent feasible, potential for glare and unnecessary light diffusion on adjacent property shall be minimized. Full cut-off fixtures may be required. Compliance with this provision shall be demonstrated by ensuring that, when evaluated from point 5-feet above the ground (Corvallis uses 4 feet and Homer Glen uses 5 feet) bulbs of light fixtures are not visible from adjacent residential property.
5. All parking lot lighting shall have no light emitted above 90 degrees, unless the applicant demonstrates that compliance with subsections 1-4 above will be achieved.

D. Uplighting. Structures in residential districts shall not be illuminated by uplighting except as follows: uplighting of ground mounted signs, landscaping, and flags is permitted provided it has shielding, beam angle control, or is aimed such that such that it produces no

glare or spillover lighting beyond the site boundaries. Such lighting shall have a maximum inclination of 60% and a maximum light output of 1100 lumens. *(based on Homer Glen ordinance)*

E. Hours of operation. Flood lights, athletic field lights, and sport court lights that are visible from abutting residences [within 100 feet] shall be turned off at 10:00 PM, except:

1. This does not apply to motion sensor activated security lighting; and
2. Athletic field and park lighting may remain on for 30 minutes following the close of the event or facility.

F. Timers. Exterior lighting installations shall include timers, photo-cell controllers, photoelectric switches, a programmable lighting controllers, or other device that turns the light off when it is not needed (Redmond), except for the following:

1. Lighting under canopies; and
2. Lighting for tunnels, parking garages, garage entrances, and similar conditions. *(Joint IDA – IES Model Lighting Ordinance).*

G. Outdoor sport/recreation areas. In addition to the standards above, lighting levels for outdoor, sport and recreation facilities, and playfields, and performance areas shall not exceed by more than five percent the Illuminating Engineering Society of North America (IESNA) published standards for the proposed activity. *(Redmond)*

H. Outdoor sport/recreation areas. In addition to the standards above, noise levels for outdoor, sport and recreation facilities, and playfields, and performance areas shall not exceed standards of typical residential noise ordinances including prior West Linn of by

(45 to 55 db (day/eve day of week) as measured at the property line) including any repetitive impulse or pounding sounds that exceed measurable level.

I. Outdoor sport/recreation areas. In addition to the standards above, location of outdoor, sport and recreation facilities, and playfields, and performance areas shall not include goals (such as basketball backboards, archery targets, and lacrosse goals for projectile objects that may result in use of adjacent properties backyards, residential living areas when target is missed. This is measurable as per prior section language....

39.040 LIGHTING PLANS. ***(Staff comment:*** *We need to decide how to administer and enforce any regulations so is not an unreasonable burden on the property owner and not too time consuming for staff*).

Related amendments:

- Add new subsections to the R -40 , R-20, R-15, R-10, R-7 R-5 R-4.5R-3 R-2.1 under uses and development permitted under prescribed conditions referring to these regulations.

39.0...PROJECTILES PLAN :

Projectile analysis can be performed as per the memo from Swansons to City on May 11, 2009. This results in most cases (but not all) of basketball court sited are least 25 feet from adjacent property backyards and side yards. The projectile objects including overthrows and missed shots must be planned for full containment within the property of the owner. Any projectile objects found on adjacent property will result in immediate cessation of sport court activity (Easy to measure and enforce with objects as evidence). (Table can be made based on physical science of each sport that is a consistent, objective and measurable standard)

39.0...NOISE PLAN

A noise plan:

Noise impact evaluation and plan including measurements at site of proposed court activities and arrangement. Proposal must not be audible within neighboring houses with the windows closed (similar language was in prior West Linn Noise ordinance) ....

Measurements to be made with objects and full range of proposed use options, inclusive of missed shots and exuberant play, and orientation/height etc. arrangement. If oriented toward fence, or any other objects inclusion of noise impacts of objects hitting fence as well as target to be included.

Alternatively, burden of proof is on the property owner to establish sound plan, with notification and approval of neighbors within 50 feet, to prove sound impacts above audible or equipment measured threshold will be contained on site.

(Table can be made based on physical science of each sports measureable noise levels that is a consistent, objective and measurable standard)

Option: *An alternative approach is to set specific shielding requirements as is done in the table below. This specific approach has limitations given the vastly different lumen levels generated by different types of bulbs (See table B).*

TABLE A
SHIELDING REQUIREMENTS FOR WATTAGE LEVELS AND LIGHT TYPES *(from Troutdale)*

Lamp Type	Wattage					
	25	30	35	40-50	60-100	110 or more
Low Pressure Sodium	Unshielded	Directed Shield	Directed Shield	Directed Shield	Directed Shield	Directed Shield
High Pressure Sodium	Unshielded	Unshielded	Directed Shield	Directed Shield	Directed Shield	Directed Shield
Metal Halide	Unshielded	Unshielded	Directed Shield	Directed Shield	Directed Shield	Directed Shield
Fluorescent	Unshielded	Unshielded	Unshielded	Directed Shield	Directed Shield	Directed Shield
Quartz Halogen	Unshielded	Unshielded	Unshielded	Unshielded	Directed Shield	Directed Shield
Tungsten Halogen	Unshielded	Unshielded	Unshielded	Unshielded	Directed Shield	Directed Shield
Mercury Vapor	Unshielded	Unshielded	Unshielded	Unshielded	Directed Shield	Directed Shield
Incandescent	Unshielded	Unshielded	Unshielded	Unshielded	Unshielded	Directed Shield

Table B *(adapted from the Joint IDA – IES model lighting ordinance)*

COMPARISON OF EFFICACY BY POWER (120 Volt Incandescent lamps)			
Output (Lumens)	Power (Watts)		
	Incandescent	CFL	LED
500	40	8-10	9
850	60	13-18	6-7
1100-1,200	75 (approximately)	18-22	15
1,700	100	23-28	18
2200			

Bruce & Mary Swanson
2071 Fields Dr.
West Linn, Oregon

June 10, 2012

Mr. Chris Jordan
City Manager
22500 Salamo Road
City of West Linn
West Linn, OR 97068

Dear Mr. Jordan:

It is with regret that we inform you that the nuisance level noise and safety issues at our property have returned; which are caused by the location and use of the adjacent neighbors' basketball area. The portable basketball hoop on their backyard patio was recently moved and is again located closely adjacent to our house, (windows, living and home based business spaces), patio, and outdoor living space. We hoped the relocation would be temporary, but it has remained in this location for a number of weeks now. We have records and logs of these conditions. We need the city's help to resolve this issue.

Bruce informed the Mayor of this development at the city council meeting on May 14th. The mayor referred to at least one other similar issue in the city. They discussed the idea of following through with some new kind of usage ordinance based on the work we started with former councilor Jim Mattis.

Mayor Kovash directed us to contact you to get this work restarted. We last provided the city with a packet of information for use at the 2010 Council Retreat. Mr. Mattis provided some follow up information we have a copy of if you would like that as well. In addition, we have all the previous drafts and work we offered to the City regarding this issue to assist the City.

What is the process to resolve this issue through regulatory changes? Please consider this as an urgent issue; it significantly impacts our home based business, livability in our home and yard and we are sustaining increasingly significant property damage to our landscaping.

Please include information about who in the city we will work with on this issue and when.

Thanks for your attention on this matter.

Sincerely,

Mary and Bruce Swanson

Cc: Mayor John Kovash

From: Jim Mattis [mailto:mattisj@comcast.net]
Sent: Wednesday, May 11, 2011 7:33 PM
To: 'Mary Cook Swanson'
Subject: RE: backboards and city regulations

Mary - last week, the Mayor and Councilor Tan told me abut another family having concerns about backyard sporting activities giving off glaring lights . Recalling your concerns about basketballs and noise, they ask me to give them any thoughts I might have. Below is the essence of what I sent to them. This is about all I can offer. Jim

Out Door Living Space

While I came to the conclusion that the Swanson's may be more sensitive to noise and flying basketballs then perhaps many others, that just reflects that there is bound to be a range of opinions on what is reasonable. They and the folks who are bothered by the lights raise legitimate concerns, even more so since West Linn is home to an ever-increasing higher percentage of home based businesses.

One concept I played with was directed to the basketballs going astray and bouncing into a neighbor's windows. For example, a municipal provision that went something like this might be mulled over, debated and modified if found to be workable:

"Other than in a street access side of a residence, sport equipment to which an object is projected, such as a basketball hoop or an archery target, shall be placed so that the home or an extension of it, (e.g. a sufficiently high retaining wall) shall act as a backdrop for the equipment. However, no such equipment when in use shall be placed in a non street access side yard."

This language is for concept only – if viable, it would need more wordsmithing and tweaking.

Given the new issues your e-mail mentions, I do think that there is a bigger issue about neighbor friendly back yard sporting activities. In addition to large balls hitting windows, there can be noise and light concerns.

I thought the Swanson's did give the council a fairly thoughtful memo on their circumstance and suggestions for dealing with some of their issues and it is worthy of review. See their 1/27.2011 letter.

For most West Linn residences, the back yard is the outdoor living space that deserves some measure of privacy and quite. Most of us intuitively know this and are respectful of our neighbors' area. Where that is not the case, a number of things could be discussed, debated and decided upon.

First, except for the occasional and obvious loud party, the police should not be viewed as the main city element for enforcement. It is not really their job to police neighbor problems and they probably resent having to be involved given their larger policing obligations

Second, as West Linn and other cities do, making mediation available and somehow strongly encouraging its use should be the highest priority.

Third, as much as there is disagreement over the adequacy of objective measurable standards I would relook at the decibel measurement approach on noise and any other objective means for setting standards. For example, relative to the light issue, might our development code have any guidance about outdoor lights and their glare potential onto adjacent properties by commercial buildings or conditional uses (e.g. churches)? I am not suggesting imposing any such standards on residences, but if

they exist, might they suggest an approach to caring for the issue? Here is where an in-house city attorney would be most helpful to have. He or she could render the council great assistance by searching for resources (LOC, NLC, etc.) and analyzing available legal options.

If mediation cannot solve a problem, I would put some of the cost and energy of enforcing a municipal standard onto the complaining party. For example if a decibels standard were to be the measure on noise, have a cadre of city selected professionals (who have adequate expertise and equipment) available for hire by that party to undertake the chore of establishing evidence of the violation of the city standard.

Mary and Bruce Swanson
2071 Fields Drive
West Linn, OR 97068

January 27, 2011

Dear Mayor Kovash and Councilors Carson, Cummings, Tan, and Jones:

Thank you to Councilor Carson for suggesting to Bruce after Monday night's City Council meeting that we may submit materials to you for your consideration in advance of the Council Retreat. We understand the Council will consider the nuisance property impacts and regulations at the retreat. We plan for Bruce to be present for that portion of the meeting (Mary has a prior commitment).

This is a situation that needs addressing for the whole city. This letter is a "snapshot" of issues and related information; we also offer that more information is available as indicated on the references page.

Mayor Kovash asked us to work with former Councilor Jim Mattis to continue working toward resolution of the ongoing situation and issue of neighbor impacts regarding excessive noise and projectile objects hitting the property. We seek basketball on residential property that is "appropriately sited" so as to balance the safety and other needs of all adjacent property owners. All residents of West Linn will be protected with proper regulations. Any City resident could have this situation occur with the current regulatory framework and enforcement. Anywhere in the City a residential property owner can construct an active recreation space right up to the property line that involves projectile objects thrown directly toward and into adjacent property, and where the activity generates measurably excessive noise levels at the neighboring property due to its close location and orientation.

The situation can be regulated and the issues to be addressed have been described in the previous materials presented to Council; we are happy to provide any copies requested.

Background

Two regulatory approaches have been discussed, namely location and the noise nuisance law. At this time, either of the two regulatory approaches discussed thus far, location and noise, may sufficiently address the issue; however the combination of both regulations together would more fully address this unique situation while also providing the entire city with appropriate regulations to protect the use of their residential property.

A regulation concept and language to address the location of basketball backboards is being worked on with Jim Mattis and can be presented to Council for their consideration soon. This would include measurable and observable standards for easy enforcement.

Regulation of noise in residential areas can also resolve this situation. Noise ordinances usually address this and a broader range of situations. In fact, we suggest the Council consider continuing to review the noise ordinance, as the ordinance and its changes proclaim to be for certain stated purposes, however, some of the regulatory changes implemented appear to be inconsistent with some of the important stated purposes.

Proposed Draft Regulation Concepts for Consideration

Purpose:
Residential property owners may use their property for expected residential activities like conducting a home based business, eating family dinner on the patio in the summer, sleeping and resting, and entertaining inside the home. The noise and objects used in activities are reasonably contained on the property that is the source of the noise and objects.

Applicability:
The regulation is for residential property. The enforcement process can be complaint driven.

Community Standards
The basketball hoop location survey submitted to the Council in June 2010 shows that the community standard is for hoops to be located in front yards where street and driveway noise is part of the expected "ambient noise" of the environment. Standard neighborhood and residential design commonly provides a "buffer", usually the garage, between the noise and the "noise sensitive uses" of the residence. This front area also has more area for the sound to dissipate before entering the neighboring property's living areas.

Location
Appropriately located and used hobby/sports areas do not produce excessive noise impacts to neighbors and are in balance with the needs for various residential activities. The nature of the activity varies widely from an easy, side lay up to full court throws at high velocity directly toward the backboard (that can be expected to miss sometimes) and correspondingly the impacts vary.

The location of any sport area (court) where projectile objects are involved could be regulated. Basketball backboards could be regulated to be located in the front yard or driveway so objects do not hit "impact sensitive areas". A variance may be granted for back yards if agreed to by both owners of adjoining properties.

Residential property owners to be safe to occupy their property free from objects thrown directly toward them and their property, especially areas primarily used for rest and relaxation like bedrooms and patios. All residents are given the right to a safe place inside and outside the home free from objects being thrown in a way that could have dangerous impacts. "Reasonably" contained may mean that projectiles cannot be thrown with distance and arc that science calculations can predict will hit the adjacent property, especially "impact sensitive areas" like windows, patios, and house walls.

Noise
Activities that generate high levels of noise are located so that the noise dissipates sufficiently before impacting neighboring property. The level of noise should be regulated so it is at a level considered background noise. Oregon ordinances use 36 dB to 45 dB measurable at the property line with some as high as 55 dB during the day. Noise is measurable in decibels and the measurements are logarithmic with base 10 which means an increase from 40 dB to 50 dB is 10 times louder. This is a measurable standard. The standard of audible within the dwelling is also a factual standard used. More information is available about standards.

Possible issues and/or misperceptions and related information

Possible Issues and/or misperceptions	Considerations
Regulations are being requested for "typical basketball".	This is not typical due to its location (as shown by the survey)
The situational information shared with Council must be the worst case scenarios.	Care was taken to select normal or average occurrences rather than the most offensive.
Police have received many noise complaint calls about basketball from us.	We called in an initial basketball related noise complaint and inquiry. We have abided by the Jan. 2009 e-mail from the police submitted with our May 2009 comments.
This is a necessary activity that cannot be conducted in a more appropriate manner on site to balance with other residential necessities. There are no other options or alternatives.	On site alternatives exist. Nearby parks and schools are provided within walking distance for "active" recreational needs that are of timing or duration that elevate to nuisance level impacts to neighbors. (map and survey available)
The noise ordinance was originally changed for the Swanson property situation.	The initial ordinance was sufficient with objective decibel measurements; we measured and the noise exceeds those limits. We were informed that the initial ordinance was being changed for other reasons (in person and 2009 e-mail).
This is one case of people being overly sensitive to noise.	Each time we have presented information to the City, we have included decibel meter readings to show the level of noise. It exceeds the allowable ordinance level for our city (old ordinance) and other cities including but not limited to Salem and Portland. Someone called it "astonishingly loud" when it is so close with no place for the sound waves to go but into adjacent property.
The windows can be closed to sufficiently reduce the sound.	The location of the activity creates excessive noise (48 dB) inside our home with windows closed; 79.8 dB with windows open.
1. This is an occasional activity. 2. The activity occurs for short periods of time. 3. The activity does not occur after dark. 4. The activity does not occur in the rain. 5. Kids are in school all day.	1. This has been a high frequency activity. 2. It has regularly occurred for long periods of time. The City of Portland ordinance enforcement includes logs of the activity to demonstrate the active recreation use (for parks and other zones) as distinct from the regular residential activity that is for short periods and occasional and passive. 3. It does, as late at 11:30 pm. 4. It does, although it increases with good weather. 5. All WLWV schools are scheduled to be in session 160 days a year 9:15 to 2:10 pm.
This does not occur during dinner times.	It occurs during many dinner hours; it is measurably louder than conversations and we can not use our patio due to the noise interference and possible overthrows.
The balls only hit near the edge of the property.	Balls have hit well inside the property (17 to 30 feet).

The activity is not dangerous.	Balls are thrown at high velocity directly aligned with our windows and patio table. They have hit our windows and the patio where we would like to sit and have our outdoor glass table. Safety in the bedroom is threatened with high velocity throws directly aligned with the windows.
Neighbors should engage in civil behaviors and come to a mutual agreement.	Free mediation services have been offered and refused by the neighbor whose tone has rarely, if ever, been civil.
Appropriately sited and conducted recreation is a normal part of suburban property use.	The City of Portland noise ordinance enforcement differentiates between the passive recreation typical of residential backyards and the active recreation that is of intensity more typical for parks, schools, clubs or arenas. Appropriately sited and conducted basketball activity is the goal, the standard in the survey, and what we have experienced with prior neighboring properties.
Is this a problem unique to our City or one situation?	Many cities have enforced regulations that curtail excessively noisy activities in residential areas. Examples of regulations for sport courts and specifically for basketball hoops are available. Interviewed cities shared details and the City of Portland shared sample enforcement materials. State level help may be available when local regulators need such.
The original noise ordinance was more difficult to enforce than other noise ordinances.	Sound consultants (certified local and national professionals), officials in other jurisdictions, training providers, and mediation experts all describe the original West Linn ordinance as an enforceable, well crafted and defensible ordinance that was a model for other cities and was also modeled on Seattle and Portland's successful ordinances.
The noise ordinance is only for "large, out-of-control gatherings" as per police e-mail.	Not what the ordinance says and not what we heard/saw Council stated as its intentions.
It is prohibitively expensive to train an enforcement person to use noise measuring equipment.	Training is offered in Oregon through multiple venues including the City of Portland Noise official and equipment suppliers such as Quest Technologies (720) 201-7656. Training at renowned Rutgers Noise Technical Assistance Center is $405 for initial certification and $205 for recertification (not annual).
Multiple people would need to be trained with expensive equipment.	One meter could be taken only when needed to the area of repeated violation. One staff member, consultants interviewed, or even a trained citizen could conduct the measurements and present the report to the City. The City could have a list of pre-approved firms (like Port of Portland and City of Portland).

Provision and revision of ordinances are expensive.	Well crafted ordinances reduce revision costs. Examples are on file. Donated professional assistance is available. Draft ordinance language, planning materials, examples, surveys, and research are donated by an experienced, nationally certified, master degreed professional planner.
The City staff does not have the needed expertise or time.	Livability and ability to conduct home based business are of importance city wide. Jim Mattis and a professional planner have draft materials crafted that they can finalize and present to the City Council at no cost. City staff time can be supplemented with others' time and professional skills.

Conclusion

Regulations are the work of the legislative body which is empowered and funded by the public to provide for a well functioning community. We respectfully request your assistance as residents of the City.

We respectfully request that the City Council consider creating a new ordinance regarding siting of backboards/courts. We suggest the first step could be taken soon with the first draft concept and language being presented to Council for their consideration, donated by citizens.

In addition, we respectfully request the Council reconsider its actions with respect to the two recent noise ordinance revisions and consider a thorough and detailed reconsideration of the original ordinance (revised 10/04).

This situation could occur any time and any place with any property owners in the City. It will benefit the entire City of West Linn to have clear and enforced regulations that uphold community standards.

Thank you for your public service and consideration of these important matters.

Sincerely,

Mary & Bruce Swanson

References:

This letter includes information from:

1 Rutgers Noise Center, 14 College Farm Road, New Brunswick, NJ 08901-8551
2 Quest Technologies 1060 Corporate Center Drive Oconomowoc, WI 53066 (800) 245-0779
3 City of Portland, Oregon
4 Acoustical Engineers – (see additional page) Interviewed A Acoustics, Daley-Standlee and Associates, Inc.
5 City of Salem, Oregon
6 American Planning Association – numerous studies, examples and references
7 City of West Linn Home Based Business Group
8 City of Seattle, Washington

Previously submitted surveys include additional references and ordinances from other cities surveyed and can also be made available. Additional information and reference material can be made available.

May 11, 2009

Dear West Linn Mayor and City Councilors:

We respectfully ask for your assistance in addressing the ongoing safety and noise issues at our property caused by objects thrown by our adjacent neighbor. After we met with Mayor Galle about this issue on April 13, she suggested delivering this to you tonight for your consideration, and to make ourselves available for a council work session. At a work session we could answer questions and show you videotape of the issue and bring a decibel meter to give you some sense of the noise impacts. This packet is intended to assist the council in addressing regulation of thrown objects and noise impacts at our property. The packet includes:

1. Research of other nearby jurisdictions' noise ordinances and enforcement, a summary table with sound level measurements on our property, and a summary log of the ongoing impacts as Mayor Galle requested for your use.
2. A copy of the materials provided to Mayor Galle, including research and proposals the City Manager asked us to perform in February (this was also shared with Chris Jordan via the Mayor).
    a. Some proposed language that could be adapted or adopted into a new land use ordinance to protect a property from the objects being used on an adjoining property, and physics research/explanations of projectile objects (like basketballs).
    b. A letter summarizing our meeting with Chris Jordan in February, 2009.
3. The letter of September 2008, requesting the City's help, through the City Manager as per the noise and other nuisance ordinances. The situation regarding the basketballs described in that letter to Chris Jordan, remains the same today.
4. A copy of our letter to the City Council in November, 2008, regarding the noise ordinance.
5. A copy of a summary of a police visit to the neighbor, and a letter from police of intent not to enforce the noise ordinance for basketball.

<u>The Issue</u>

The issue is the **location** of a neighboring basketball hoop that creates impacts on our property. It is located so that balls hit our property and very loud noise is directed to have great impact on our property. The use and the impacts are not reasonably contained on their property.

It seems there are at least 3 solutions:

1. Enforce the new noise ordinance as per its stated intent and provisions for one person noise generation (review video of Council session of November 24, 2008 for intent).
2. Revise the noise ordinance so it is not biased as to noise source and impacts are equitably regulated.
3. Create a new land use ordinance that allows the activity and requires a measurable standard for the location of targets for projectile objects.

The American Planning Association (APA), Clackamas County Dispute Resolution Center staff, and other experts recommended that we ask for the noise ordinances to be enforced to cover this unusual situation; which is why we started with that. The APA also stated a land use provision could remedy the situation while still allowing the activity and the West Linn city planner (Soppee, 2006) and the City Manager (Jordan 2009) also suggested this as an option.

West Linn police Sergeant Hennelly described the hoop's location as similar to a snare drum pointed right at our living space. In fact, we have regularly measured decibel sound levels that surpass construction noise. The amount of noise is high enough to be heard inside our house with the windows closed and with a television or stereo playing. This is because the majority of the sound created by the ball hitting the hoop/backboard resonates in our direction and a much smaller amount reflects back in their direction. Councilors or city personnel are invited to schedule a meeting with us on our property to experience this issue and its impacts. If that is not possible, we have some videotape from our patio that gives an idea of what it is like and with the decibel meter set, gives some sense of the sound impact.

We are committed to resolve this issue in a civil manner. This impacts our lives daily, our home based business, and the value of our home. Regulating basketball isn't any different from regulating fences or dogs barking or shed building. Unfortunately the bias about a ball being the object is a problem. The object is of less importance than the impacts. It is not that any of those things are objectionable, but how they are conducted or their location can be problematic, so they are regulated.

The current situation is noisy, startling, measureable, unhealthy, chronic, unnecessary, and unsafe. We are not against the neighbors playing basketball on their property, but they need to do it in a location that does not "take" our use of our property. There are other options on their property to locate a hoop that would likely not cause high noise levels inside our home and danger to residential living spaces.

We like basketball and other sports; but "play" regardless of the harm and danger done to others is not reflective of our values and we hope do not reflect our community's values. We realize there is a bias as to the source of the noise vs. the impact of the noise. Dangerous and harmful activities should be stopped, regardless of the source.

We respectfully request that the Council use their regulatory authority to provide the quality of life most residents of West Linn expect and are indicated as the intent throughout the nuisance and land use ordinances of the City. Please let us know if we can be of any assistance.

Sincerely,

Bruce Swanson Mary Swanson

Bruce and Mary Swanson
2071 Fields Drive, West Linn

View from our bedroom window. (that has been hit)

View from sidewalk showing our windows behind the hoop.

3.5’

9’

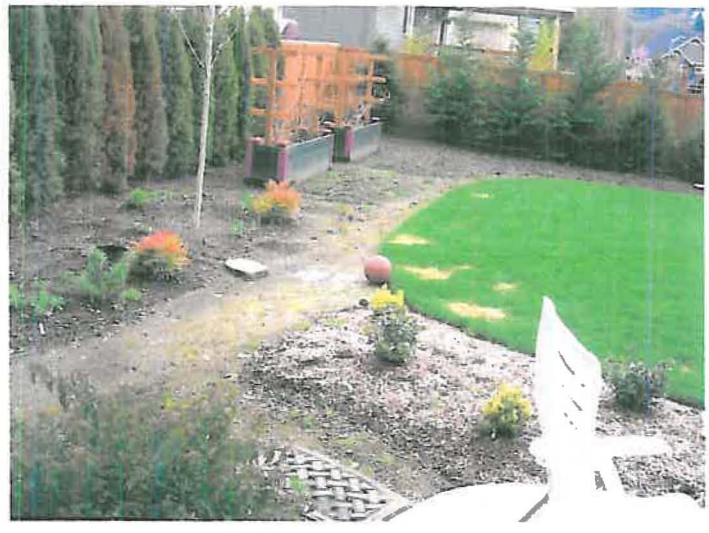
Balls found on our property and the distance from the property line.

5’

13’

15’

Balls found on our property and the distance from the property line.



15’

One alternate hoop location.

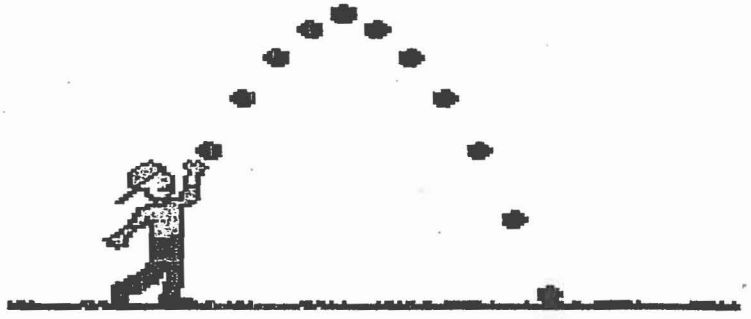
The following table is a summary of sound level decibel readings with an Extech Instruments sound level meter. These readings were taken by us on our property to gauge how much noise was measureable on our property due to the list of noise sources in the first column. When evaluating these numbers, it is important to know that the decibel readings are done on a logarithmic scale.

Noise source	Decibel reading (Logarithmic)	Location of reading
Major construction one property away on Ostman	51-52	Our patio
Cement truck in high operation one property away on Ostman	62	Patio. Truck close enough to smell exhaust fumes
Dog next door Barking (other neighbor)	45-58	Patio
Hammering on our site	56	Patio
Sawing on our site (small saw)	41	Patio
Very loud airplane directly overhead	52-67	Patio
Leaf Blower (Other neighbor)	50-52	Patio
Basketballs noise from adjoining property	**65.9**	Patio (18 feet inside our property)
Basketballs noise from adjoining property	**48-77.2 lower readings are ball bounces and higher ranges are the ball hitting the backboard**	Patio
Basketballs noise from adjoining property	**40-48db**	**Inside** home. Windows all closed
Basketballs noise from adjoining property	**65.6, 67.4**	**Inside** home window open
Basketballs noise from adjoining property	**79.8**	**Inside** bedroom, window open
Basketballs noise from adjoining property	**51- 53.1**	**Inside** bonus room

Projectile Motion

Because of gravity, an object thrown, shot, or projected will follow a parabolic path or trajectory. The equations to calculate the time and distance traveled can be found in physics books and on the Internet. Please refer to the reference section below for details and equations.

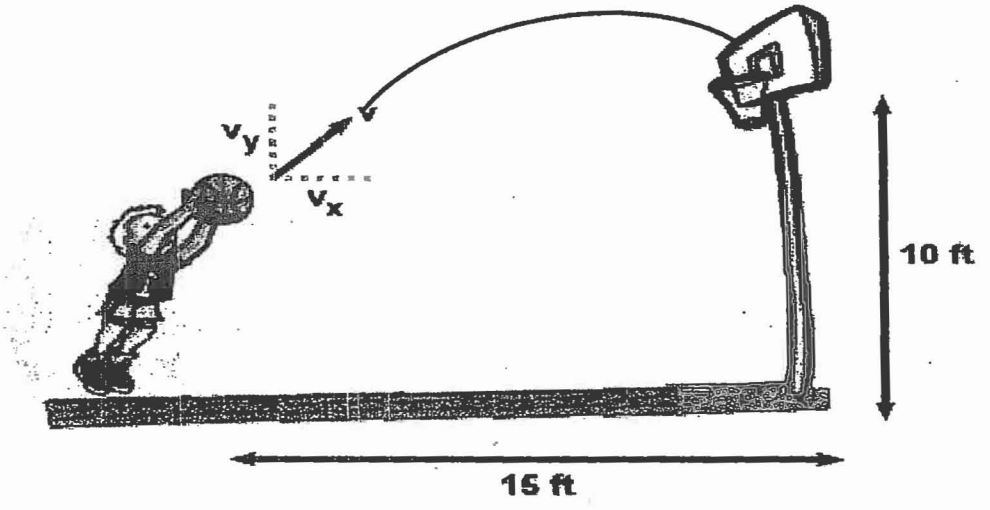
The path, distance, and time of flight is based on the initial velocity and the angle at which the projectile is launched. The initial height of the projectile is also a factor. A projectile launched at a 45 degree angle will travel the farthest.



A projectile often moves horizontally as it moves upward and/or downward.

As an example, if an arrow is shot from a bow, it can travel a long distance in a short amount of time because of the initial velocity being high. This is true even for launch angles that are pretty low or even horizontal as shown here. (angle = 0 degrees)

Another example is for a child trying to shoot basketballs at a tall target (10 foot hoop) as shown below. The angle of the projectile (ball) in this case is often around 45 degrees.

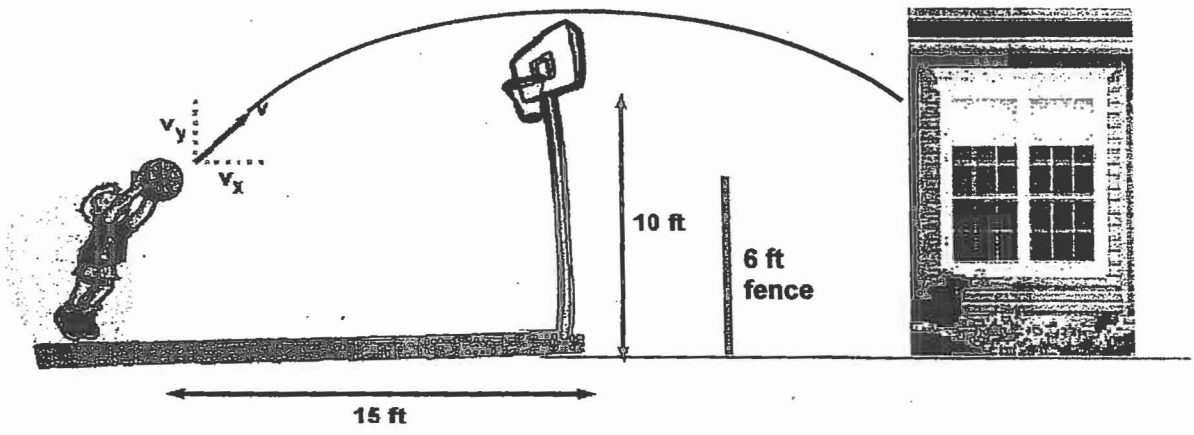


Using the website available at reference 3, or using the Excel spreadsheet available from that same site, it is easy to calculate the distance traveled as the velocity is changed. For example, at a 45 degree angle, a ball thrown at 6.0 m/s will travel a distance of 16 feet; which is about the distance of the free throw line to the hoop (15 feet). Here is a small table showing the distances of travel at increasing velocities with a 45 degree angle:

Velocity (m/s)	6	7	8	9	10	11	12	13
Distance (ft)	16.0	20.6	25.8	31.6	38.1	45.2	52.9	61.3

It is common for basketball players of all ages to attempt long shots, like those at or beyond the NBA 3-point line, which is 23.75 feet from the basket. Some people throw or heave the ball with one hand at such distances, which can lengthen the distance covered, but likely decreases the accuracy of the "shot". If the ball misses the target when thrown at this higher velocity, it travels well past the hoop location and can even clear a six foot fence and land on the adjacent property.

This is the situation we have at our property. The neighbors have located their hoop in such a way that our windows, house, and patio are located where the ball can land when they miss the hoop and backboard. Balls have in fact hit our patio, house, landscaping, and windows a number of times. This is a safety issue on our property and restricts the use of our property.



Some useful references:

1. Halliday and Resnick, "Fundamentals of Physics", second edition published by John Wiley & Sons, Inc., 1981, pp. 42-47.

2. http://en.wikipedia.org/wiki/Trajectory
http://en.wikipedia.org/wiki/Trajectory_of_a_projectile
Good overview and all the physics equations of trajectories.

3. http://formularium.org/en/10.html?go=88.114
Contains fill in numbers to calculate the distance traveled and time.
Also, an Excel spreadsheet that includes the calculations for distance and time is available for download.

4. http://hyperphysics.phy-astr.gsu.edu/Hbase/traj.html

5. http://www.wooster.edu/physics/jrIS/Files/Satti.pdf
A college physics research paper on shooting a basketball.

6. http://www.mste.uiuc.edu/courses/ci301fall98/petraitis/EXINTRO.html
Mathematical investigation to investigate the motion of a basketball.

Research based ordinance

Projectile object physics
-basketball example

acceleration due to gravity g	9.81	m/s²				
angle at which the projectile is launched [roh]	45	degree	0.78539816			
velocity at which the projectile is launched v[sub]0[/sub]	8	m/s				
initial height of the projectile y[sub]0[/sub]	1.5	m				
horizontal distance traveled d	7.78	m	25.52	feet		
Time of flight t	1.38	s				
Formularium:Trajectory of a projectile						
In physics, the ballistic trajectory of a projectile is the path that a thrown object will take under the action of gravity, neglecting all other forces, such as friction from air resistance, or propulsion. This article provides a list of methods for calculating the trajectory of a projectile under the influence of Earth\'s gravity.						
URL:	http://en.wikipedia.org/wiki/Trajectory_of_a_projectile					
Quelle:	Trajectory of a projectile. (2006, October 13). In Wikipedia, The Free Encyclopedia. Retrieved 17:50, November 30, 2006, from http://en.wikipedia.org/w/index.php?title=Trajectory_of_a_projectile&oldid=81164746					
Exportiert am 09.03.2009 um 02:16:29 Uhr von http://formularium.org?go=88.114						
Bitte beachten Sie das keine Gewähr für die Richtigkeit der Formel übernommen wird.						
Bei Fragen oder Hinweisen senden Sie bitte eine E-Mail an info@formularium.org.						

Example from Excel spreadsheet at http://formulariam.org

The Perfect Basketball Shot

Saleh Satti

Physics Department, The College of Wooster, Wooster, Ohio 44691

May 6, 2004

A basketball was shot several times at a rim 10 feet above the ground. It was found that air resistance and spin played little role in the trajectory of the ball and that the ball moved as a point particle projectile. Two shots were also compared, a missed shot as well as a made shot, and it was found that no single factor is responsible for determining a good shot, but it was the right combination of both the angle and the velocity, provided the horizontal and vertical distances remain constant.

INTRODUCTION AND THEORY

In basketball the art of an overhand throw in basketball is called a "shot"; however, there are many types of shots: hook shot, jump shot etc. The shot analyzed in this experiment is the two-hand push shot, which can vary with the shooter. The two handed push shot gives the ball two different motions: the motion of the center of mass that the ball exhibits, and the rotation of the ball about its center of mass. In this experiment this rotational motion is treated separately at first. The perfect shot is a shot that does not hit any part of the rim as it goes through.

In order to analyze the projectile motion of the ball, it is first important to break down the parabolic motion into two basic components, the horizontal motion and the vertical motion. If the ball experiences no force in the horizontal (or x direction), then the acceleration is zero in that direction and the ball moves with a constant velocity. The horizontal velocity of the ball is the x component of the initial velocity u_x(equation 1). The only component of velocity that varies in a parabolic motion is the vertical velocity because it experiences an acceleration due to gravity. When the acceleration in the x direction is zero,

$s_x = u_x t$ where $u_x = u_o \cos\theta$ (1)

where, s_x is the range (or horizontal distance) at time t, u is the ball's velocity , θ is the angle of projection, u_o is the initial velocity and t is the time elapsed from when the object was released.

For the vertical distance, the acceleration is assumed to be that of gravity.

$$s_y = u_{oy} t - \frac{gt^2}{2}, \qquad (2) \qquad u_{oy} = u_o \sin\theta,$$

It is possible to write an equation in terms of s_y and s_x. Using $\frac{s_x}{u_x} = t$, from equation 1 into equation 2.

$$s_y = \tan\theta - \frac{g s_x^{\,2}}{2u^2 \cos^2\theta} \qquad (3)$$

These three equations (1, 2 and 3) basically dictate the parabolic motion of a particle through a drag free medium and with only gravity acting on it. In this experiment, however there are external forces acting on the particle moving (in this case the smooth basketball). These external forces are air resistance and the force due to the spinning motion of the ball.

The error needed to make a shot is the maximum distance from the center of mass of the ball to the center of the hoop for the shot to be perfect[5].

$$\frac{P}{2} = \frac{D_r}{2} - \frac{D_b}{2\sin\phi} = \text{Error needed to make a shot}$$

Spin Factor

The Spin factor of the ball is important simply because how fast the ball spins could determine whether there are any additional forces that are acting on the ball apart from the gravitational force. It is these additional forces caused by the rapid rotation of the ball that would allow the path of ball to be altered, as seen by a bend in the path of a baseball when a curve ball is thrown or a curl in a cross or free-kick when a soccer ball is kicked. The equation that represents the lift brought about by the spinning of the ball in flight is[2]:

$$F_L = \frac{1}{2} C_L \rho v^2 A, \qquad (4)$$

where F_L = Lift force
v= velocity of the ball
A = cross-sectional area of the ball = 0.045 m^2
C_L= Co-efficient of Lift (related to spin factor)
ρ = density of medium =1.29kg/m^3

Air Resistance

Air Resistance is the force brought about by the ball moving through the viscous air, it opposes the direction of motion of the ball and should affect the motion of the ball by lowering the speed of the ball.

In this experiment the effects of drag can be analyzed through the horizontal motion of the ball. If there is no acceleration in the horizontal direction, the constant velocity should not decrease[12].

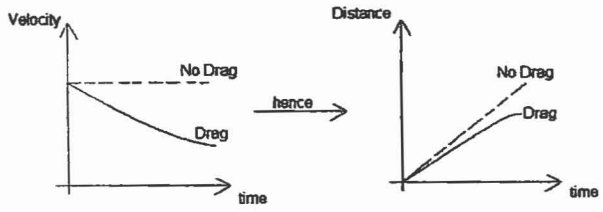


Figure 1: Shows the effects of drag on a velocity-time and distance-time graph.

EXPERIMENT AND METHOD

The Canon ZR10 Digital Camcorder with a 15 frame per second shutter speed, was placed in such a manner so as to achieve the best perspective of the ball's motion. The camera should be far enough from the ball so as to record the full trajectory of the ball; however, it must be close enough to be able to record the spin of the ball. The camera was placed 50 inches off the floor, the horizontal distance of the camera from the trajectory of the ball was measured to be 32ft 2inches, +/- 6 inches.

Initial images were made of a 4 meter rule (two, 2 meter sticks taped together), placed vertically at the point the shooter stood when the balls were thrown. The shooter then stood at the free throw line, that was a horizontal 14.5ft from the center of the rim, the shooter was then filmed taking a number of shots. The movie was then downloaded from the camcorder onto the computer using QuickTime version 6.5. After reviewing the tape, only the perfectly "made" shots were selected, (along with one missed shot) and these shots were finally downloaded onto Video Point Version 2.5 to be analyzed further. First the scale was set, since the number of pixels per meter is to remain constant throughout the experiment (100.5 pixels per meter in this experiment). The data was analyzed frame by frame by clicking at the center of the ball giving the ball's position in x-pixels and y-pixels. These values when divided by 100.5 pixels per meter gave the value of the range and height in meters.

As a check to see whether the camera gave the correct perspective, the pixel co ordinate from the shooter's foot was compared to the pixel co-ordinate of the rim. The height of the pixels was then converted to meters, the difference gave the height of the rim. The height of the rim was found to be 3.005m +/-0.013m which is close to the regulation height of 10 feet, 3.05m). Hence this verified that the perspective caught by the camera was valid to 2%.

RESULTS

All the shots taken in this experiment were taken in an indoor gym. Four of the five shots analyzed were perfect shots, however one was a bad shot.

Since the ball rotates slowly in this experiment, and the velocity keeps varying, the lift force is not constant. However, since the rotationary velocity of the ball is so low, (the ball was estimated to rotate about 1.25 times during a flight time of approximately 1 second), as compared to velocity of the ball, the basketball would have a ratio of rotational velocity to velocity of the ball close to that of $\frac{\pi D\omega}{u} = 1.3$, which gives a relatively low co-efficient of lift value of C_L= 0.3 Ns/kg[11].

Using equation 4, the lift force was calculated to be 0.14 N, which is 2% of the weight, and is too small to significantly affect the motion of the ball over such a small time interval.

The results of the data taken were compiled into two distinct graphs, the height (s_y) versus time graph (Figure 2) and the range (s_x) versus time graph (Figure 3). In order to show that the motion of the ball mimicked the trajectory of a body exhibiting projectile motion, the co-efficient of t^2 in the height as a function time equation, ($y = at^2 + bt + c$) should equal 4.9m/s^2. The projectile motion in figure 4 starts from approximately 2.2 –2.4 m off the ground, because the path of the ball traced was from the point the

ball left the tips of shooter's fingers to the point of the ball's entrance into the hoop.

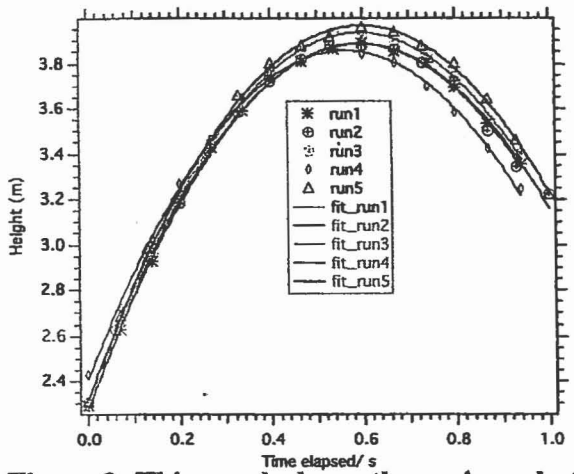


Figure 2: This graph shows the various shots taken plotted in a height versus time graph, the outline for run 4 is a missed shot, all other shots were made.

Table 1 shows the missed shot. Unlike most of the shots, it has the lowest set of angles and the lowest velocity. Such small values only affirm the notion that the shot missed by falling short of the rim.

Table 1 compare the different vector values (where s_{ox} is the horizontal postion at time $t = 0$, s_{oy} is the vertical distance at time t=0, u_o is the velocity at t=0 or the velocity ball was projected with) determined by analyzing the missed shot (run4) and the made shots. The values are extremely similar. However, it is evident that that the ball in the made shots were an average of over $53^0 = \theta$ as compared to about 52^0 for the missed shot and with a larger velocity of at least 6.5 m/s, for all the made shots as compared to 6.43 m/s +/-0.70m/s for the missed shot, this means that the made shots reached a higher height, and were carried further than run 4. It is evident that run3 and run5 had the largest angles, (an average of over 54^0 for each shot) but they also had the largest velocities and hence, a more "arcing" shot.)

The values of the acceleration due to gravity determined from the two graphs (s vs t and s_y vs s_x) were low: approximately 9.10 m/s^2, as compared to the accepted value of 9.8 m/s^2.

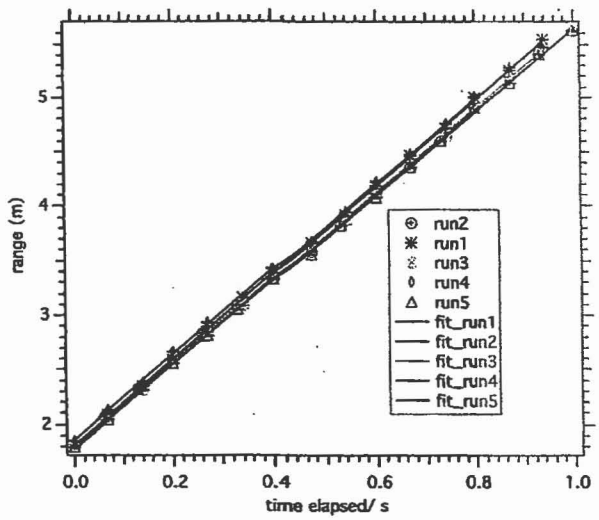


Figure 3: This graph shows the various shots taken plotted in a range versus time graph

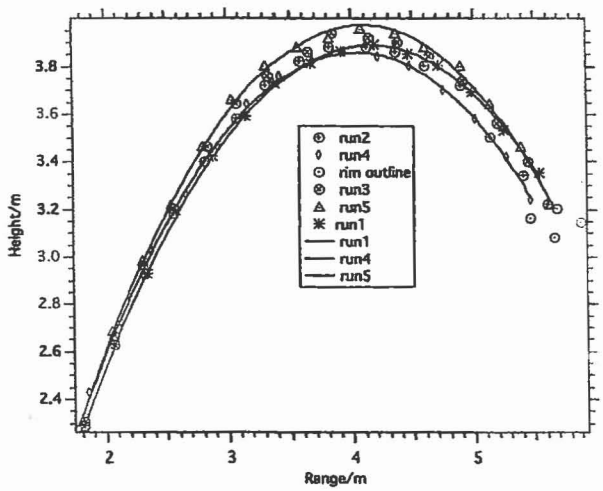


Figure 4: This graph shows the various shots taken plotted in a height versus range graph

The results of all the shots analyzed in a height against range are shown in figure 4. The missed shot (run4) can be seen to fall a little short of the target and ends up hitting the front iron of the rim. As Table 3 shows, the missed shot has a slightly larger error needed to make the shot and has a fairly large angle of entrance as it approaches the rim, which is even larger than runs 1, 3 and 5. The projected velocity for the missed shot was too low, this made the shot "short" as it hit the front iron of the rim. A perfect shot can only be made with a right range of combinations of angle and velocity, a large velocity would cause the ball to overshoot, a small velocity would cause the ball to come up short (as seen in shot 4). Similarly a large angle would cause the ball to

come up short whilst a low angle may cause the ball to be overshot.

	graph	u_{ox}/ (m/s)	u_{oy}/(m/s)	u_o/(m/s)	θ	g/(m/s^2)
run1	s vs t	3.97+/-0.01	5.41+/-0.04	6.71+/-0.19	53.7°+/-2.3°	9.10+/-0.08
	s vs s	-	-	-	53.5°+/-0.2°	9.14+/-0.26
run2	s vs t	3.81+/-0.02	5.27+/-0.08	6.50+/-0.19	54.1°+/-2.0°	9.10+/-0.08
	s_y vs s_x	-	-		51.3°+/-0.2°	9.00+/-0.26
run3	s vs t	3.89+/-0.01	5.52+/-0.04	6.80+/-0.19	53.7°+/-1.9°	9.28+/-0.08
	s_y vs s_x	-	-		54.7°+/-0.4°	9.09+/-0.26
run4 (missed shot)	s vs t	3.90+/-0.02	5.12+/-0.04	6.43+/-0.70	52.8°+/-8.5°	9.28+/-0.08
	s_y vs s_x	-	-		52.0°+/-0.2°	9.13+/-0.26
run5	s vs t	3.86+/-0.01	5.49+/-0.04	6.71+/-0.19	53.7°+/-1.9°	9.10+/-0.08
	s_y vs s_x	-	-	-	54.8°+/-0.2°	9.23+/-0.26

Table 1: This table shows the values determined from all the runs.

Horizontal **Vertical**

	intercept	slope	a	b	c
Run 1	1.80 +/-0.01	3.97 +/-0.01	-4.55+/-0.04	5.41+/-0.04	2.28+/-0.01
Run 2	1.82 +/-0.01	3.81 +/-0.02	-4.42+/-0.08	5.27+/-0.08	2.32+/-0.02
Run 3	1.79 +/-0.01	3.89 +/-0.02	-4.64+/-0.05	5.52+/-0.05	2.29+/-0.01
Run 4	1.86 +/-0.01	3.90 +/-0.02	-4.64+/-0.06	5.12+/-0.06	2.41+/-0.01
Run 5	1.78 +/-0.01	3.86 +/-0.01	-4.58+/-0.05	5.49+/-0.05	2.32+/-0.01

Table 2: Shows the intercept and the slope determined from figure 3, as well as the co-efficients of the equation that defines figure 2.

The angle ϕ (angle of entrance) was determined by finding the tan inverse of the gradient at the last point closest to the rim.

CONCLUSION

The following conclusions could be reached by analyzing the shots taken:
1) The ball shot in an indoor gym displays a trajectory that is equivalent to that of a point projectile, where air resistance and the spin factor of the ball have no measurable effect on the motion of the ball.
2) The shots that are made or missed do not depend on one given factor, but a set of factors. There is no one projection angle that would yield a perfect shot, however it is the combination of both the initial launch velocity, the angle of projection, the diameter of the ball as well as the rim (if they are varied). Each factor is more or less dependant on each other to get a perfect shot.

An improvement in this experiment could come by analyzing more shots with a camcorder that has a higher frequency and better resolution. Another improvement could come analyzing the technique of actually shooting the ball, and seeing how that affects the trajectory of the ball, as well as a shooter shooting at different distances and analyzing how the shot changes, and whether air resistance plays a larger role, especially as the shots get longer.

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City of West Linn
City Manager
22500 Salamo Road
West Linn, OR 97068

March 25, 2009

Dear Mr. Jordan,

Thank you again for meeting with us Friday, February 13th to discuss the ongoing safety and noise nuisance issues on our property. Because the cause of the problems is atypical, it was good to be able to dialog about the issues and exchange ideas and information. We learned quite a bit of information and hope you now better understand our situation too.

We apologize for our delay in thanking you; we have had family illnesses.

We provide the following summary notes for clarity of communication We will continue to work toward a resolution. We learned that the City will not enforce the new noise ordinance in this case because there is not a known precedence set to successfully prosecute the noise violation when a basketball is involved. As we discussed, we will further research and analyze other jurisdictions' noise ordinances, enforcement in similar situations, prosecution information and provide any pertinent results. In the meantime, as we discussed we will also try using background noise on our property to try to reduce the noise impacts.

While we do that work, we remain aware that it is not their recreational activity but where it is done that creates such negative impacts to our property. Because of the location of their recreation activity it significantly reduces our use or our property both inside and outside for normal residential purposes like recreation, work and rest. We will continue to keep records of the impacts. As we agreed, the bright orange fence that violates the ordinance will remain for now because it serves to slightly reduce the safety hazards; although it does not resolve the issue of balls hitting our windows and property. We learned that the nuisance ordinance as relates to non-noise issues will not be applied. We will research and provide some proposed ordinance language that addresses land use regulations as relates to locating activity areas that include throwing items directly onto another's property. Thank you for the opportunity to help resolve this type of situation for all City residents.

We appreciate that you will find out how the suggested mediation offer was made to the Faheys and consider providing that in writing to them if that has not yet been done. We would like to know their response since the mediators encouraged us to ask for the City to request they consider participation. We remain interested in mediation. We understand that the police will not respond to calls about nuisances caused by basketballs. We understand from our conversation that the police will respond in the future if we need to call for other issues that may arise with the Faheys. The police will respond as for any other citizen, this is important for us to clarify because as indicated in conversations and in their e-mail there is a potential for violence.

Although we are disappointed that this difficult situation persists, we will continue to do what we can to resolve the issues so we can use our property for our rest and recreation and appreciate any help the City can provide. Since our intent is to clearly communicate and constructively work to resolve this issue,

please let us know if this summary of our meeting is inaccurate. We will proceed with the actions outlined, I'm sure we will all be glad when these impacts are resolved.

Sincerely,

Mary and Bruce Swanson

Mary Cook Swanson

From: Schwartz, Ron [rschwartz@westlinnoregon.gov]
Sent: Friday, January 16, 2009 2:52 PM
To: Mary Swanson
Cc: Jordan, Chris; Timeus, Terry; Wyatt, Kirsten; Cleary, Amy
Subject: Neighborhood Dispute

Mr. and Mrs. Swanson,

I do not believe we have actually met but let me introduce myself. I am Captain Ron Schwartz of the West Linn Police Department; the Patrol Operations Division Commander, and supervise Sergeant Neil Hennelly whom you have met on several occasions. I have been closely monitoring your problem since you first emailed us last summer.

Yesterday, I met with the City Manager, Municipal Court Prosecutor, Chief of Police, and Kirsten Wyatt to discuss your situation. As you are well aware we have been trying to assist you in finding a solution for your problem that works for both families. At the time you first brought this to our attention we did not believe this was a situation requiring criminal intervention.

After our discussion today I still strongly believe that this is not the case. I know you are aware of the new noise ordinance. This ordinance was not created specifically for your situation and in fact, the ordinance was undergoing changes months prior to your first communication with the City.

We do not believe any section of this new ordinance applies to your circumstance. Yes, in a theoretical sense you could broadly define the actions of the Fahey family to be in violation of the noise ordinance (or for that matter, hundreds of families in West Linn using their backyards for social, recreational, and family purposes).

The intent of the noise ordinance is not to penalize children playing basketball in their own backyard. The noise ordinance is a tool for officers to deal with large, out-of-control gatherings. In short the City of West Linn and the West Linn Police Department will not arrest children or their families for playing basketball in their own backyard. This is not negotiable.

So where does that leave us. Again, this is a neighborhood problem that would best be solved with mediation. This was a possible solution early on and I encourage you to pursue this option again. If you choose to pursue mediation you need to understand however that mediation is a give and take situation. If you are unwilling to compromise and learn from the Fahey's then there is no reason to even consider mediation.

You still have the option of attempting of seeking advice through your HOA (Home Owners Association), or as a last resort
you may attempt to seek some advice through a civil procedure.

In 28 years of police service I have dealt with many neighborhood issues, and many have been resolved successfully through mediation. Criminal intervention and prosecution rarely solves the problem, leaves both sides bitter, often make the
situation worse, (and in rare instances end in some sort of violence). Mediation with your neighbor is really the only viable option in this situation and our recommendation.

I am hoping mediation is still possible. The West Linn Police Department cannot be a referee for your neighborhood dispute.

Sincerely,

Captain Ronald H. Schwartz
Patrol Operations
West Linn Police Department
(503) 655-6214

Mary Cook Swanson

From: Hennelly, Neil [NHennelly@westlinnoregon.gov]
Sent: Monday, January 12, 2009 12:24 AM
To: Mary Cook Swanson
Cc: Schwartz, Ron; Timeus, Terry
Subject: RE: Noise and the Fahey's

Hello Bruce and Mary,

I stopped by the Fahey's Sunday afternoon (Jan. 11)and dropped off the new noise ordinance and outlined the areas of concerns that you have. I met with Mrs. Fahey; Mr. Fahey was not at home. We went into the backyard, and I explained how changing the position of the hoop should eliminate much of the noise you experience in your yard. Mrs. Fahey seemed very interested in that solution. I left them with my card if in case they had any questions.

Sgt. Neil P. Hennelly
Public Information Officer
West Linn Police Dept.
22825 Willamette Dr.
West Linn, OR 97068
503-655-6214*4498

Re: Agenda bill 08-11-05 for City Council consideration on 11/24/08

November 22, 2008

Dear City Councilors,

Due to an on-going noise nuisance issue in our neighborhood, we've done some careful review and research into Section 5.487 of the West Linn Municipal Code addressing sound levels and noise. While trying to work through our issue to a resolution, we've been in contact with the City Manager's office and the police department. That is how we have come to understand that the current code provisions regarding noise are basically un-enforceable.

In agenda bill 08-11-05 regarding ordinance number 1582 to amend the municipal code regarding the regulation of noise, you have an opportunity to help fix this difficulty in enforcement. We have carefully reviewed the proposed noise ordinance changes and for the most part think they are good and helpful. However, we are not able to find anything in the new proposal that can be applied to our situation and others like it that are current, or may arise in the city in the future.

Our situation of noise nuisance is unusual because it is not the activity, but rather the location of the activity that is the problem. Our neighbors like to play basketball, a lot. We also enjoy basketball occasionally and think it is a good and healthy activity. The problem is that our neighbors have located their portable basketball hoop on their back patio that is adjacent to our living space. This creates a noise nuisance to us and the use of our property since most of the sound created by this activity comes in our direction. The amount of noise is high enough to be heard inside our house with the windows closed and with a television or stereo playing. We also have a big safety concern because their basketballs come over the fence and hit our windows, patio, and landscaping.

Our attempts to talk to the neighbor about this on-going issue have gone poorly and they are not interested in making any changes even though they have other hoop location options on their property that would likely eliminate the noise nuisance. We have even offered free mediation services to them to discuss the issues, which they declined.

While we are in favor of making changes to Section 5.487 of the West Linn Municipal Code to address the current difficulties of using it to regulate noise and sound levels, we want to make sure that nuisance situations like ours are covered by those changes before that are adopted. We urge the council to consider not adopting the noise and sound ordinance changes until they clearly include all possible noise nuisances, regardless of the source of the noise.

To be clear, we don't want to say our neighbors cannot play basketball or use their property in other ways, but we need an ordinance to protect our rights to work, rest, and play on our property too. In fact, that is in the stated purpose of Section 5.487. If you and the police department think that our situation is covered in the proposed code

changes and can be enforced to remedy our noise nuisance issue, then go ahead and approve the changes. If not, we'd be happy to work with city staff to help add any needed changes before adoption of the bill.

Regretfully, we have a prior commitment and so we are unable to attend the City Council meeting on 11/24/08 to discuss this in person. Thank you for considering our concerns on this matter. Please contact us if more information or help is required.

Respectfully,

Bruce and Mary Swanson
2071 Fields Dr.
West Linn, OR 97068

Chris Jordan
City of West Linn, City Manager
22500 Salamo Road
West Linn, OR 97068

September 10, 2008

Dear Mr. Jordan and Staff:

We need your help to alleviate a very stressful nuisance issue that affects the use of our home and yard daily. We live at 2071 Fields Drive in West Linn, in a newer neighborhood with ¼ acre lots. We, and the adjacent property owners, are original owners in the neighborhood.

2 ½ years ago, the adjacent owners located a basketball hoop very close to our bedroom windows, back garden, and patio. We informed them of our safety concerns, specifically that the balls will break the windows and the resulting shards of glass will hurt us, maybe permanently They throw balls directly toward our property and the balls regularly trespass onto our property creating safety issues. The balls that concern us hit the windows, the house, and the patio with our furniture. In addition to the safety issue, the noise is very loud and measures in excess of allowable limits and is a nuisance to us.

The property owner is fully informed of the safety concerns and the trespassing of the balls. For 2 ½ years, we have tried to communicate with them and remedy the situation, but nothing we have done yet has helped. Their property is slightly upslope and with the location and orientation of the hoop it is a unique situation for our property. We have kept a partial log of the problem to help. It is important to understand that this is truly only a partial record of the intensity and chronic nature of the problem. We have tried:

- to converse with that neighbor with no success,
- to write to the neighbor two years ago (see attached) ,
- to get police help, by placing two calls (we've never done that before in life),
- consulting attorneys (we hope to avoid a civil case) and
- having the Clackamas County Dispute Resolution Center invite the Fahey's to meet. The Faheys have refused to meet with us alone and/or with a mediator.

So we feel it is time for some help from the City. We believe, after looking at the ordinances and talking with mediators, lawyers and the national planning association, that this is something the City can help with. There are two issues – most important is the safe use of our property. We have large glass windows directly behind the hoop and they have been hit with the basketball a number of times and may shatter upon impact. Two police officers and the window company have agreed this presents a danger and shards of glass could easily spray throughout our bedroom if hit. They all concurred that the hoop should be moved for safety. The police officers said they would ask the Faheys to move the hoop but could not require the hoop be moved because it is not a criminal issue.

We feel responsible to not put ourselves and our children in harm's way. We have had a City staff person suggest that, unfortunately, we will probably have to get hurt before the problem is solved. This is unacceptable to us. I explained our responsible choice is to get out of the way! We would not let a child sleep in our bedroom because it is dangerous Would you place you or your child in your bedroom with windows while people are throwing things that hit the windows?

We therefore live with this "threat" that is often present and have to "listen" to hear if the ball is being thrown our direction so we can get out of the way ---at our own home. We cannot rest in our bedroom or private yard spaces of our home. In addition, the ball is regularly hitting our plants, flowers, and patio with glass dining table. Therefore, we cannot use our bedroom or any of those outdoor areas when the ball is being thrown as any one throw may be "the one that causes severe damage to our property or our selves" We suggest the nuisance ordinance applies because the adjacent property owner is creating an "offensive" condition and creates a hazard on our property which restricts the use of our home for normal residential purpose.

Also, the adjacent property owner regularly produces loud and frequent noise that is highly audible on our property both inside and outside and hinders our ability to use our property for normal residential pursuits. The noise is chronic and significantly disruptive in the privacy of our home with the windows closed as well as open. It is also impossible to hold a normal dinner table conversation on our patio when the ball is in play, so we no longer can eat outside. Due to the location, when the ball is in play, we hear it in our bedroom, office, bonus room, family room and kitchen above any stereo or television noise with the windows closed. It is quite disruptive.

We purchased a decibel meter to record the noise and it regularly measures higher than allowed and it is louder than the heavy construction noise generated very close to us.

Under the "Unnecessary Noise "Chapter 5.485, it states that "low and moderate ambient noise level are a significant City amenity" They find further that the level of noise that exists in a community directly affects the livability of the community and the health, comfort and welfare of its residents." Furthermore, the private parts of our home would be a "noise sensitive use" as described in 5:17. Nearby parks can also be used for more noisy recreational options one wishes to pursue.

Adjacent property has added a fence extension above 6 feet which does not eliminate the hazard (balls still come over) and is ugly orange construction zone material and attached to their side of a shared fence. It may violate the ordinance as applied to fences.

So that we are not misperceived as intolerant, we are not at this time requiring that they address other issues like the fact that they:

- Regularly block the public sidewalk with their boat and trailer,.
- Let their dog run unrestrained , poop in our yard, sit on our driveway and porch, and bark in the early morning.
- Regularly have light weight balls including wiffle balls, and tennis balls trespass and we have kindly tossed them back over more than a hundred times.

- Instigate other objectionable noise like late construction on July 3, 2007 that began about 10 pm to put up gazebo , or the loud music, hammering, yelling and dragging of stuff in early mornings.
- Shout abusive language; like calling out the "freaks next door" are out when we are in our yard, in front, etc. And much worse but those notes are available if needed.
- Occasionally ride ATV's on the road

We respectfully request the City of West Linn, intervene on our behalf to stop the objectionable noise and dangerous objects from coming on to our property from the adjacent property owner. It is chronic and negatively impacts us and our property.

Please let us know how we can work together to make the dangerous objects and loud noise stop. Would you like anything else from us? We have more detailed records of conversations with the property owner and agencies like police, window company etc. if they would be helpful we can provide those records. Our phone number is 503 557-5516, if you would like to call.

Thank you for your time and attention to this important matter.

Sincerely,

Maryand Bruce (approved) Swanson

Mary and Bruce Swanson