



CITY OF SPRING PARK
WORK SESSION AGENDA
MARCH 18, 2019 – 6:00 PM
SPRING PARK CITY HALL

(Work Session discussion times are approximate)

1. 6:00 – LORD FLETCHER’S CONCERT SERIES PERMIT

- a. Orono resident Gina Kosek will be in attendance to share some feedback regarding the annual concert series at Lord Fletcher’s Restaurant. Police Chief Farniok and Management from Lord Fletcher’s will also be in attendance to provide their thoughts regarding the permit. Attached for review are several documents to provide background information to the Council:
 - i. Approved 2018 Permit Conditions
 - ii. Draft 2019 Permit Conditions as proposed by City Attorney
 - iii. Third Party Sound Measurement Test Results from 2012, 2013, 2015, & 2017
 - iv. An Excerpt from the MPCA Document “A Guide to Noise Control in Minnesota”

2. 6:20 – POLICE CHIEF UPDATE

- a. Police Chief Correy Farniok will provide the Council with a brief update on police matters.

3. 6:30 – H.F. 1076 UPDATE

- a. Included for review is a copy of House File 1076, which has been introduced at the State Legislature by Rep. Kelly Morrison. The proposed bill allocates five million dollars for the City of Spring Park to use for critical infrastructure projects.

4. 6:35 – SMALL CELL FACILITIES ORDINANCE

- a. City Attorney Mary Tietjen will provide the Council with a brief overview of recent changes to small cell facilities laws and discuss any recommendation she may have for modifying the City’s existing right of way ordinance to better protect the City’s interests.

5. 6:45 – MISCELLANEOUS

6. 6:50 – ADJOURN

CONDITIONS TO 2018 MUSIC CONCERT PERMIT - LORD FLETCHER'S

- 1) Outdoor music concerts will be permitted on Saturdays, Sundays and Holidays from 3-7 p.m. and Thursdays and Fridays 6-9 p.m. only.
- 2) Lord Fletcher's may hold outdoor music concerts during a period commencing no earlier than May 26, 2018 and ending no later than September 3, 2018.
- 3) Lord Fletcher's will comply with all applicable laws, ordinances, and codes and will continuously monitor its property and surrounding streets, lakeshore and docks to ensure compliance. This specifically includes, but is not limited to and compliance with, serving of alcohol, posted occupancy loads, proper designated unobstructed exits, all fire safety and emergency evacuation requirements, noise requirements, and Hennepin County Sheriff's Water Patrol requirements.
- 4) Live music played by a band or DJ within the building shall not be amplified outside through the use of speakers.
- 5) Lord Fletcher's will employ at its expense identifiable security staff and off-duty police personnel to sufficient to insure its compliance with item 3.
- 6) If Orono Police requests music be stopped because of complaints or violations of permit conditions or City ordinances, Lord Fletcher's will immediately and willingly comply with the request and will not resume the music that day.
- 7) Lord Fletcher's will make every reasonable effort to ensure that its music concerts and DJ amplification does not exceed the state guidelines for noise as defined in Minnesota Rules 7030, as well as the following db limits for sustained periods of time (defined as: one continuous exceedance for a duration of more than ten seconds, or five or more individual exceedances in any one minute period) at the soundboard (85), or any nearby residence (65). Sustained db levels above and beyond the db limit at any of the three locations shall be deemed as non-compliance with this section. The City Council reserves the right to modify the db limits at any time throughout the duration of this permit.
- 8) Lord Fletcher's agrees to have a qualified sound technician on the premises at all times amplified music is being played outside. The sound technician shall possess the proper knowledge and equipment capabilities to effectively control volume levels. The sound technician shall also exercise authority over the volume controls of performers if they fail to comply with requests to decrease their own volume levels.
- 9) Lord Fletcher's will deposit with the City \$1,500 to be placed in a non-interest bearing escrow account. In the event the City incurs expenses related to monitoring or regulating noise levels or the performance of live music at Lord Fletcher's the City shall be reimbursed from the escrow account. Any unused funds remaining in the escrow account after the final performance of the year shall be repaid to Lord Fletcher's within 30 days of the final performance of the year.
- 10) Lord Fletcher's will provide the City in advance with a list of all scheduled music concert events.

- 11) Refrigeration equipment/trucks shall be located on the property so as not to interfere with the peace and quiet of adjacent properties.
- 12) Lord Fletcher's will reposition the directional speakers and drum shield in a manner designed to mitigate noise escapement.
- 13) Lord Fletcher's will place a sound barrier fence west of the stage.
- 14) Lord Fletcher's agrees that the city will periodically monitor the noise levels at the property line. Should those results indicate excessive noise levels on more than one occasion or, if the Orono Police request that the music be stopped five or more times during the permit period, the City will have the right to revoke the permit – after a formal hearing at a regular or special Council meeting.
- 15) Lord Fletcher's will educate its employees regarding appropriate methods for responding to complaint calls and procedures for forwarding complaints to management.
- 16) Lord Fletcher's will hold semi-annual meetings with neighborhood residents from both Spring Park and Orono to provide a forum for the discussion of possible concerns regarding its music concerts.

CONDITIONS TO ~~2018~~2019 MUSIC CONCERT PERMIT - LORD FLETCHER'S

- 1) Outdoor music concerts will be permitted on Saturdays, Sundays and Holidays from 3-7 p.m. and Thursdays and Fridays 6-9 p.m. only.
- 2) Lord Fletcher's may hold outdoor music concerts during a period commencing no earlier than May ~~26, 2018~~25, 2019 and ending no later than September ~~3, 2018~~2, 2019.
- 3) Lord Fletcher's will comply with all applicable laws, ordinances, and codes and will ~~continuously~~ monitor at all times its property and surrounding streets, lakeshore and docks to ensure compliance. This specifically includes, but is not limited to ~~and~~ compliance with ~~, serving~~ all laws related to the sale and distribution of alcohol, posted occupancy loads, proper designated unobstructed exits, ~~all~~ fire safety and emergency evacuation requirements, noise requirements, and Hennepin County Sheriff's Water Patrol requirements.
- ~~4) Live music played by a band or DJ within the building shall not be amplified outside through the use of speakers.~~ 5) At all times during outdoor music concerts, Lord Fletcher's will employ at its expense identifiable security staff and off-duty police personnel ~~to~~ sufficient to ~~insure~~ensure its compliance with ~~item 3~~laws.
- 4) Live music played by a band or DJ within the building shall not be amplified outside through the use of speakers.
- ~~6~~5) If Orono Police requests music be stopped because of ~~complaints or violations~~any violation(s) of permit conditions ~~or City ordinances~~, Lord Fletcher's will immediately and willingly comply with the request and will not resume ~~the~~ music that day.
- ~~7)~~6) Lord Fletcher's ~~will make every reasonable effort to~~shall ensure that its music concerts and DJ amplification does not exceed the state guidelines for noise as defined in Minnesota Rules 7030, as well as the following decibel (db) limits for sustained periods of time (defined as: one continuous exceedance for a duration of more than ten seconds, or five or more individual exceedances in any one minute period) at the soundboard (85 db); or any nearby residence (65 db). Sustained db levels above and beyond ~~the db limit~~these limits at any of ~~the three~~these locations shall be deemed ~~as non-compliance with~~a violation of this section condition. The City Council reserves the right to modify the db limits at any time throughout the duration of this permit.
- ~~8)~~7) Lord Fletcher's agrees to have a qualified sound technician on the premises at all times amplified music is being played outside. The sound technician shall possess the proper knowledge and equipment capabilities to effectively control volume levels. The sound technician shall also exercise authority over the volume controls of performers if they fail to comply with requests to decrease their own volume levels.
- ~~9)~~8) Lord Fletcher's will deposit with the City \$1,500 to be placed in a non-interest bearing escrow account. In the event the City incurs expenses related to monitoring or regulating noise levels or the performance of live music at Lord Fletcher's the City shall be reimbursed from the escrow account. Any unused funds remaining in the escrow account after the final performance of the year shall be repaid to Lord Fletcher's within 30 days of the final performance of the year.

~~10)~~ 9) On or before May 15, 2019, Lord Fletcher's will provide the City ~~in advance~~ with a list of all scheduled music concert events.

~~11)~~ ~~Refrigeration~~ 10) All equipment/trucks ~~shall be located on~~ brought onto the property ~~so as for the outdoor concerts shall~~ not ~~to~~ interfere with the peace and quiet of adjacent properties.

~~12)~~ 11) Lord Fletcher's will reposition the directional speakers and drum shield in a manner designed to mitigate noise escapement.

~~13)~~ 12) Lord Fletcher's will place a sound barrier fence west of the stage.

~~14)~~ 13) Lord Fletcher's agrees that the city will periodically monitor the noise levels at the property line. Should ~~these results indicate excessive~~ noise levels result in a violation of the permit conditions on more than one occasion or, if the Orono Police request that the music be stopped five or more times during the permit period for any violation of permit conditions, the City ~~will~~ shall have the right to revoke the permit —after a formal hearing at a regular or special City Council meeting during which Lord Fletcher's will have an opportunity to address the violations and revocation prior to any decision.

~~15)~~ 14) Lord Fletcher's will educate its employees regarding appropriate methods for responding to ~~complaint calls~~ complaints and procedures for forwarding complaints to management. Lord Fletcher's shall also notify the City Administrator of all complaints within three business days of the complaint being made.

~~16)~~ 15) Lord Fletcher's will hold semi-annual meetings with neighborhood residents from both Spring Park and Orono to provide a forum for the discussion of possible concerns regarding its music concerts. The first meeting shall occur before the first outdoor music concert of the permit year and the second meeting shall occur between June 15 and July 15 of the permit year.

AUG 22 2012

August 8, 2012

Mr. Dan Tolsma, City Administrator
 City of Spring Park
 4349 Warren Ave
 Spring Park, MN 55384

Re: Noise Test at Lord Fletchers, 3746 Sunset Road, Spring Park, MN
 Sunday, August 5, 2012 at 4:02 pm

Dear Mr. Tolsma:

I conducted a background noise test on Sunday, August 5, 2012 at 4:00 pm when the band was scheduled to begin playing at Lord Fletcher's outdoor bar at 3746 Sunset Road in Spring Park. I obtained noise sample measurements off-site at points closest to surrounding neighbors as well as in the south parking lot adjacent to the outdoor bar where the music was playing. I took samples from approximately 3:50 pm to 5:10 pm. Please note my sampling descriptions as it is important to differentiate between on-going quieter "background taped music" versus live "band music".

Testing Equipment:

The noise monitoring equipment I used was a Quest Technologies, Type I Sound Level Monitor with wind screen, and I calibrated the sound level monitor about an hour prior to the testing period with a Quest Technologies, Acoustic Calibrator, Model QC-10/QC-20.

Noise Sample Measurements (measured in decibels as "dBA"):

- 1875 Shadywood Rd (Backyard of resident across from Lord Fletchers)
 Background noise level: 45 dBA
 Traffic from Sunset Ridge: 55 dBA
 Volleyball yelling: 52.1 dBA
 Band Music with boats passing in channel: 53.4 dBA
- Overflow parking adjacent to volleyball courts
 Background noise level: 46 dBA, 48 dBA
 Yelling & cheering: 55 dBA, 62 dBA
 Band Music: 57.5 dBA, 56.7 dBA
- Vacant gas station on corner of Sunset Rd & Shadywood Rd.
 Background noise (cars & motorcycles) 59 dBA, 49 dBA, 61 dBA, 52.4 dBA
 Band Music: *Could not perceive over the background and traffic noise.*
- Dickson Alley, directly south of the outdoor bar/band
 Background noise level: 45 dBA, 48.5 dBA, 52 dBA
 Band Music: 49 dBA, 50.6 dBA
- South parking lot of Lord Fletcher's property (On-site)

Closest drive-by lane:

Background noise (Large AC cooling unit): 55.5 dBA, 61 dBA

Band music: 57 dBA, 58.5 dBA, 58.9 dBA, 62.2 dBA, 63.0 dBA, 63.7 dBA, 61 dBA, 64.1 dBA

Farthest south drive-by lane:

Traffic noise: 59 dBA, 61.4 dBA

Band Music: 54 dBA, 55 dBA

Closest parking spot immediately adjacent to entrance to outdoor bar area:

Band Music: 64.2 dBA, 63.0 dBA, 63.8 dBA, 61 dBA, 64.2 dBA

Cheering & whistling: 58 dBA, 59 dBA

Overall Observations

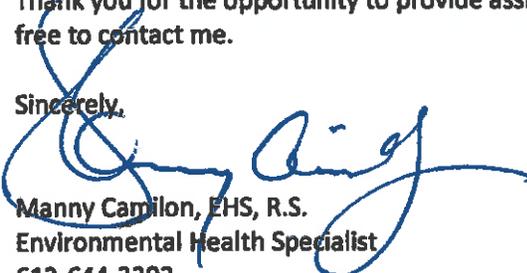
The band started promptly at 4 pm and it appeared from the noise sample readings off site that they were relatively moderate. Overall, I would have to say they were noticeable but not objectionable or unduly loud. By comparison, I certainly noted the loud motorcycles driving by on the public street or the loud yelling from the patrons playing in the closer volleyball courts.

The background music was insignificant before the band started and I wonder if anyone has complained about the air conditioning unit on the south side which to me was more objectionable. Comparing today's noise measurements to similar past noise sampling that I have conducted at approximately the same locations, I would say the volume on this day was conservative and under control, albeit still noticeable. My experience shows that aside of clearly loud & excessive volume, the next complaint is from an expectation that one does not have to listen to any noise from neighbors.

If you were to compare these measurements to the MPCA noise regulations for a residential district with a maximum daytime limit of 65 decibels in a residential area, the highest off-site reading of 57.5 dBA (Overflow parking lot) was not in violation. On this particular date and time, the volume of the band playing at Lord Fletcher's outdoor bar was not in violation.

Thank you for the opportunity to provide assistance to you. If you have further questions, please feel free to contact me.

Sincerely,



Manny Camilon, EHS, R.S.
Environmental Health Specialist
612-644-2292

Monitoring Notes for Lord Fletchers
Spring Park, MN
Microphone Location: 1873 Shadywood Road (Owners Jeanna & Mark)
Operator: Manny Camilon, R.S.

July 5, 2013 "Session 8" Recording
3:11pm to 4:12 pm
Quiet time

Observations:

No music. Traffic noise, especially motorcycles with straight pipes! Also boat engines were loud as they came through the channel.

3:21 pm – Some loud music started, but it was determined it was from a boat maneuvering into Fletcher's docks.

July 5, 2013 "Session 9" Recording
4:15 pm – 4:44 pm
Quiet time

Observations:

4:15 pm – Homeowner's A.C. kicked in. Loud boats still heading toward Fletchers.

4:30 pm – Music started, but I think it was piped in music, not live music.

4:44 pm – Mark came out and indicated his wife said the music started at 6 pm. I decided not to wait around for another 2.5 hours but come back the next day on Saturday July 6th from 3-7 pm. Mark said they always get louder in the last hour, so 6-7 pm would be ideal.

July 6, 2013 "Session 10" Recording
5:22 pm to 7 pm (end of music)
Live Music

Observations:

5:33 pm, the live music began.

A loud motorcycle caused a jump on noise meter at 42 minute mark.
Homeowner's A.C. kicked in at 50 minute mark.
"Burn Baby Burn" song really kicked the meter up at 51 minute mark.

Police siren @ 1hr. 2 minute mark

Loud boat @ 1 hr. 9 minute mark, ~ 61.5 and radio on another boat going through channel: 62 dBA, followed by very loud boat (with no muffler?). Actually drowned out live music.

Loud boat music at 1 hr. 16 minutes >60 dBA

Loud motorcycle revving up Shadywood @ 1 hr. 19 minutes.

Noise survey

Investigator Manny Camelon Date 7-5-13

SLM Manufacturer and Model _____ Serial Number _____

Calibrator Manufacturer and Model LARSON DAVIS

Calibrator Serial Number _____ Calibrator Frequency (Hz) _____

Initial Calibration (dBA) 94 Final Calibration (dBA) 94

Meteorological Conditions: Wind Speed 10 Direction _____ Temperature 91

Source Background noise 1 Hr - Loud Fletcher Ave, Lake Moka

Monitor Location Backyard of 1875 Shadywood Rd.

Time Start 3:11 pm Time End 4:12 pm

Results L10 59.3 dBA L50 55.5 dBA

65 State Std. 60 State Std.

Diagram (Indicate noise source, receiver, microphone location, reflecting objects, obstructions, landmarks, and distances)

Session # 8

Noise survey

Investigator Manny Carmona Date 7-6-13

SLM Manufacturer and Model _____ Serial Number _____

Calibrator Manufacturer and Model LARSON DAVIS

Calibrator Serial Number _____ Calibrator Frequency (Hz) _____

Initial Calibration (dBA) 94 Final Calibration (dBA) 98.9

Meteorological Conditions: Wind Speed 10- Direction SE Temperature 89

Source Lord Fletcher's Live band.

Monitor Location _____

Time Start 5:33 pm Time End 7:01 pm

Results L10 57.7 dBA L50 56.5 dBA

65
State Std. 60
State Std.

Diagram (Indicate noise source, receiver, microphone location, reflecting objects, obstructions, landmarks, and distances)

Session # 10



MEMORANDUM

To: Mr. Dan Tolsma, City Administrator
City of Spring Park
4349 Warren Avenue
Spring Park, MN 55384

From: John Crawford, P.E., PTOE
Kimley-Horn and Associates, Inc.

Date: September 14th, 2015

Subject: Lord Fletchers Noise Compliance Study

Kimley-Horn and Associates conducted a noise study around Lord Fletchers restaurant on Saturday September 5th 2015. The purpose was to determine if the noise levels conform to the conditions of the 2015 music concert permit for Lord Fletchers. A total of three distinct site locations were measured with one site containing two measurement points. All noise measurements were conducted following the MPCA and MnDOT Noise policy guidelines. An approved and calibrated Larson Davis LXT sound meter was used to conduct the noise measurements. Each site was measured for a minimum of 7.5 minutes with the majority of the measurements taken for 15 minutes. For each measurement taken, the Leq was watched to determine if the instantaneous Leq ever exceeded the 65 dBA limit set forth by the city of Spring Park. If the instantaneous Leq exceeded the 65 dBA threshold the level was noted and recorded. At each location the "background" noise was measured. Background noise was determined to be the hourly Leq equivalent for each analysis period.

Measurement Locations and Notes:

1875 Shadywood Road – Measurements were taken at two different locations at this property per the request of the homeowner. The first measurement was taken in the backyard approximately 20 feet from the lake shore from 4:30 to 4:45 PM. At this location the music could be heard but was dampened by the large amount of Cattails between the measurement site and Lord Fletchers. The 65 dBA limit was exceeded 2 times during the 15 minute measurement period. The first was 68.3 dBA and correlated to the drummer. The duration was approximately two seconds, well below the permitted duration of ten seconds. The second was 70.8 dBA and this was correlated to a passing motorcycle. The overall Leq for the measurement was determined to be 56.4 dBA. Based on the 65 dBA threshold being exceeded only twice during the 15 minute measurement, Lord Fletchers is within the permitted noise limits at this location. Also based on the 15 minute Leq they are also within the MPCA standards for a residential area. The second measurement taken at this site was located on the homeowner's back deck. The meter was placed approximately 10 feet from the house. A 7.5 minute measurement was conducted between 4:47 and 4:54 and determined that the 65 dBA threshold was only exceeded once at 65.6 dBA. This was correlated to a shout at the end of a song

by the lead singer. The overall Leq for the measurement was 56.1 dBA. A third measurement was conducted at this site as well between 6:22 and 6:37 PM on the homeowner's back deck. The 65 dBA level was exceeded twice during the 15 minute measurement at levels of 66.3 dBA and 66.4 dBA. Both were correlated to the lead singer shouting at the end of a song. The overall Leq was 56.8 for the 15 minute period. Based on all three measurement at this location it can be determined that Lord Fletchers is within the permitted noise levels for outdoor live music.

Overflow Parking Lot – One noise measurement was conducted between 5:07 and 5:22 PM in Lord Fletchers overflow parking lot. The music could not be heard from this location. The background noise was mainly traffic noise from the adjacent streets and any noise spikes were correlated to cheering or yelling on the volleyball courts. The overall Leq for this measurement was 60.3 dBA, with no exceedances of 65 dBA. Based on this measurement Lord Fletchers is within the permitted noise levels.

1910 Shadywood Road – One noise measurement was taken at this location between 5:36 and 5:51 PM. The music could be heard but the line of sight was blocked by the roadway and the music was overpowered by the adjacent street traffic. All noise spikes were due to passing traffic. The band sound level varied between 55 and 60 dBA for the entire measurement. The overall Leq for the 15 minute period was 66.9 dBA. The Leq at this location is louder than the noise from the band due to the adjacent street traffic. Based on this measurement Lord Fletchers is within the permitted noise levels.

Noise Conclusions and Suggestions:

Based on the measurements taken and the noise levels that were observed, Lord Fletchers is not violating any part of the permit set forth by the city of Spring Park, MN. It must be noted that local residents stated the Saturday September 5th, 2015 was an average day for the noise levels. Two local residences made comments that the nighttime disc jockey music seems to be louder than the live music on occasion.

Sincerely,



John Crawford, P.E., PTOE

Kimley-Horn and Associates

MEMORANDUM

To: Mr. Dan Tolsma, City Administrator
City of Spring Park
4349 Warren Avenue
Spring Park, MN 55384

From: John Crawford, P.E., PTOE
Justin Sebens, EIT.

Date: August 15, 2017

Subject: Lord Fletchers Noise Compliance Study

Kimley-Horn conducted a noise study around Lord Fletchers restaurant on Saturday August 12th, 2017. The purpose was to determine if the noise levels conform to the conditions of the 2017 music concert permit for Lord Fletchers. A total of three distinct site locations were measured with one site containing two measurement points. All noise measurements were conducted following the MPCA and MnDOT Noise policy guidelines. An approved and calibrated Larson Davis LXT sound meter was used to conduct the noise measurements. Each site was measured for 15 minutes. For each measurement taken, the Leq was watched to determine if the instantaneous Leq ever exceeded the 65-dBA limit set forth by the city of Spring Park. If the instantaneous Leq exceeded the 65-dBA threshold the level was noted and recorded. At each location, the "background" noise was measured. Background noise was determined to be the hourly Leq equivalent for each analysis period. **Figure 1** summarizes the measurement locations.

Measurement Locations and Notes:

1875 Shadywood Road – Measurements were taken at two different locations at this property per a previous request of the homeowner. The measurement for location 1 was taken in the backyard approximately 20 feet from the lake shore from 5:20 PM – 5:50 PM. At this location, the music could be heard but was dampened by the large number of Cattails between the measurement site and Lord Fletchers. The 65-dBA limit was exceeded 3 times during the 15-minute measurement period. The first was 66.4 dBA and correlated to the lead singer. The duration was approximately three seconds, well below the permitted duration of ten seconds. The second was 66.0 dBA and this was correlated to a passing motorcycle. The third was 65.3 decibels and was also attributed to a passing motorcycle. The overall Leq for the measurement was determined to be 55.3 dBA. Based on the 65-dBA threshold being exceeded only three times during the 15-minute measurement, Lord Fletchers is within the permitted noise limits at location 1.

The measurement taken at location 2 was located on the homeowner's back deck. The meter was placed approximately 5 feet from the house. A 15-minute measurement was conducted between 5:35 PM - 5:50 PM and determined that the 65-dBA threshold was exceeded three times. The first was 65.1

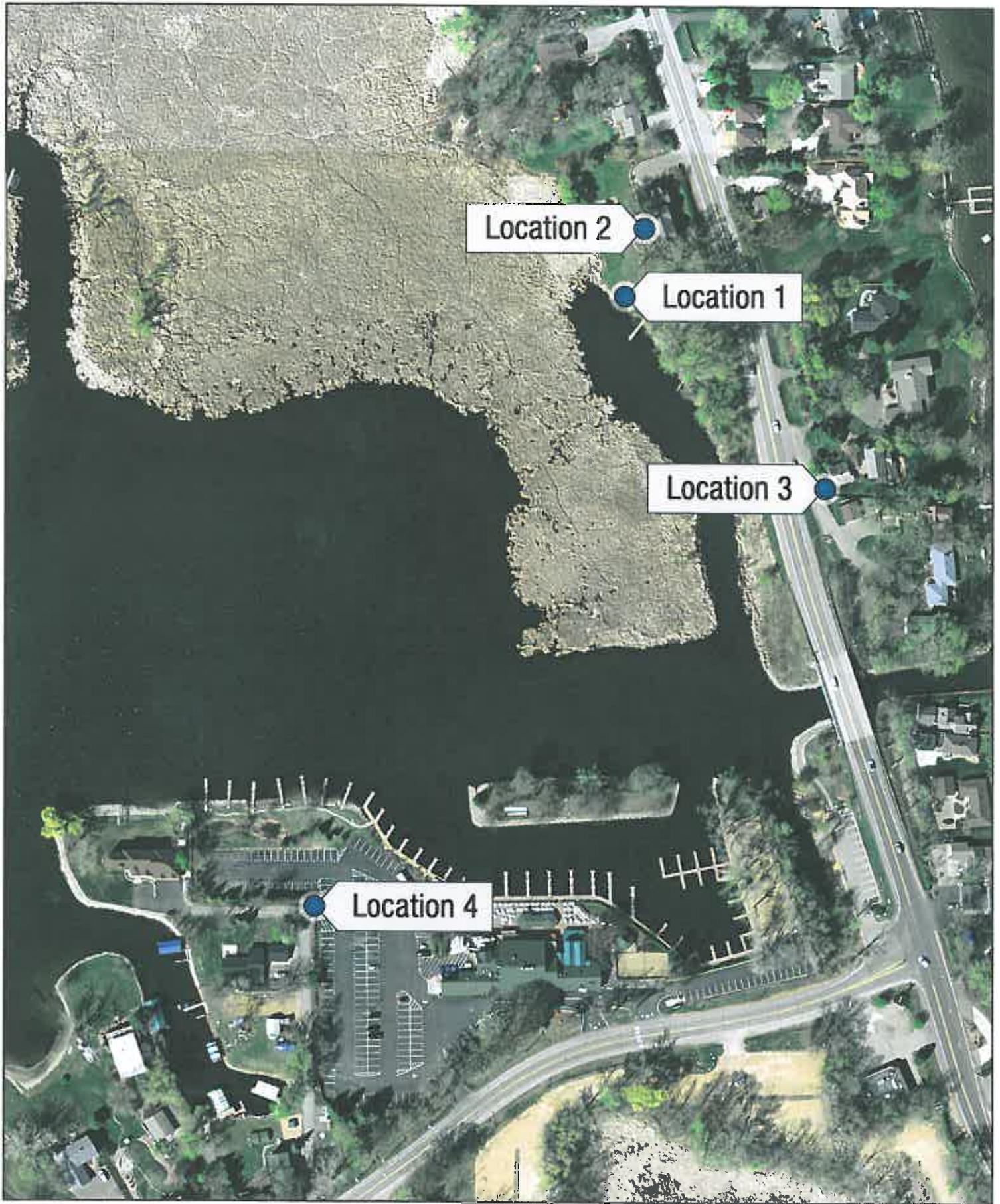
dBA and was correlated to the lead singer. The second exceedance was 66.8 dBA and was correlated to the lead singer. The third exceedance was 65.7 dBA and was correlated to the lead singer. In all three cases, the duration of the exceedance was only one second. The overall Leq for the measurement was 57.6 dBA. Based on the measurement at location 2 it can be determined that Lord Fletchers is within the permitted noise levels for outdoor live music.

1910 Shadywood Road – One measurement was taken at location 3 between 6:05 PM – 6:20 PM. The music could be heard but the line of sight was blocked by the roadway and the music was overpowered by the adjacent street traffic. All noise spikes were due to passing traffic. The band sound level varied between 50 and 55 dBA for the entire measurement. The overall Leq for the 15-minute period was 61.3 dBA. Traffic noise is the dominant noise source at location 3. Based on this measurement Lord Fletchers is within the permitted noise levels.

3800 Budd Lane – One measurement was taken at location 4 between 6:30 PM – 6:45 PM. There were no recorded exceedances during the 15-minute measurement at this location. The speakers for the band are pointed away from this location and much of the noise at this location is background or ambient noise from passing boats and nearby residences. The overall Leq for the 15-minute period was 54.3 dBA. Based on this measurement Lord Fletchers is within the permitted noise levels.

Noise Conclusions and Suggestions:

Based on the measurements taken and the noise levels that were observed, Lord Fletchers is not violating any part of the permit set forth by the city of Spring Park, MN. It should be noted that a walkthrough on the patio of Lord Fletchers was completed after the 7:00 PM permit time and music was being amplified by speakers on the patio.



A Guide to Noise Control in Minnesota

Acoustical Properties, Measurement, Analysis, and Regulation



Minnesota Pollution Control Agency

November 2015

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Minnesota Pollution Control Agency

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This report is available in alternative formats upon request, and online at www.pca.state.mn.us

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Introduction

Noise is a pollutant. While its physical and emotional effects are difficult to define quantitatively, the noise level itself can be measured.

Sound: An alteration of pressure that propagates through an elastic medium such as air and produces an auditory sensation.

Noise: Any undesired sound.

The Minnesota Pollution Control Agency (MPCA) is empowered to enforce the State of Minnesota noise rules ([Minn. Rules Ch. 7030](#)). Minnesota's primary noise limits are set by "noise area classifications" (NACs) based on the land use at the location of the person that hears the noise. They are also based on the sound level in decibels (dBA) over ten percent (L_{10}), or six minutes, and fifty percent (L_{50}), or thirty minutes, of an hour.

For residential locations (NAC 1), the limits are $L_{10} = 65$ dBA and $L_{50} = 60$ dBA during the daytime (7:00 a.m. – 10:00 p.m.) and $L_{10} = 55$ dBA and $L_{50} = 50$ dBA during the nighttime (10:00 p.m. – 7:00 a.m.) ([Minn. R. 7030.0040](#)). This means that during a one-hour period of monitoring, daytime noise levels cannot exceed 65 dBA for more than 10 percent of the time (six minutes) and cannot exceed 60 dBA more than 50 percent of the time (30 minutes).

1. Noise rules in Minnesota

1.1 The basics

Minnesota's noise pollution rules are based on statistical calculations that quantify noise levels over a one-hour monitoring period. The L_{10} calculation is the noise level that is exceeded for 10 percent, or six minutes, of the hour, and the L_{50} calculation is the noise level exceeded for 50 percent, or 30 minutes, of the hour. There is not a limit on maximum noise.

The statutory limits for a residential location are $L_{10} = 65$ dBA and $L_{50} = 60$ dBA during the daytime (7:00 a.m. – 10:00 p.m.) and $L_{10} = 55$ dBA and $L_{50} = 50$ dBA during the nighttime (10:00 p.m. – 7:00 a.m.) ([Minn. R. 7030.0040](#)). This means that during the one-hour period of monitoring, daytime noise levels cannot exceed 65 dBA for more than 10 percent of the time or 60 dBA more than 50 percent of the time.

The basic noise rules for other noise area classifications are:

Noise Area Classification	Daytime		Nighttime	
	L_{10}	L_{50}	L_{10}	L_{50}
1	65	60	55	50
2	70	65	70	65
3	80	75	80	75

1.2 Noise area classifications

Noise area classifications (NAC) are based on the land use at the location of the person who hears the noise, which does not always correspond with the zoning of an area. Therefore, noise from an industrial facility near a residential area is held to the NAC 1 standards if it can be heard on a residential property.

Some common land uses associated with the NACs include:

NAC 1: Residential housing, religious activities, camping and picnicking areas, health services, hotels, educational services

NAC 2: Retail, business and government services, recreational activities, transit passenger terminals

NAC 3: Manufacturing, fairgrounds and amusement parks, agricultural and forestry activities

NAC 4: Undeveloped and unused land

Note that, although there is a NAC 4, there are no noise standards for these areas. The full list of NAC land uses can be found starting on [page 21](#) of this guide or in Minnesota Rule [7030.0050](#).

1.3 Common noise concerns

By Minnesota law, the MPCA is empowered to enforce the state's noise rules. Many other agencies and levels of government, however, have an important role to play in upholding the noise standards. Depending on the source and location of the noise, some agencies may be in a better position than others to help citizens with noise concerns.

Industrial facilities

The MPCA enforces noise standards at facilities for which it has issued an air permit. For complaints about noise at one of these facilities, please use the [Online Citizen Complaints Form](#). If you prefer, you may call the MPCA to make your complaint: 651-296-6300 within the Twin Cities metropolitan area or 1-800-657-3864 if you are outside of this area.

Local land uses

Local law enforcement agencies are empowered to enforce Minnesota state rules and laws relating to the prevention and control of pollution ([Minn. Stat. 115.071](#)). Many local governments also have nuisance noise ordinances or general public nuisance ordinances that can be used to enforce local noise concerns.

Local governments are required to take reasonable measures to prevent the approval of land use activities that will violate the state noise standard immediately upon establishment of the land use ([Minn. R. 7030.0030](#)). Municipalities should consider the state noise standard when reviewing and approving new projects in their jurisdiction. The MPCA can provide some expertise to support this review process. Please contact noise.pca@state.mn.us.

Roads and highways

The Minnesota Department of Transportation (MnDOT) handles complaints about noise on highways and other roads it manages. According to [Minn. Stat. 116.07.2a](#), most roads are exempt from Minnesota's state noise rules. MnDOT does, however, have policies, agreed on with the MPCA, for providing noise mitigation when it is determined to be both feasible and reasonable. MPCA reviews some MnDOT projects and noise mitigation decisions. For further information on MnDOT's noise policies, please visit its [website](#).

Vehicles

[Minn. R. 7030.1000-1060](#) outlines Minnesota's state rules relating to motor vehicle noise. In addition to the state rules, local governments may have nuisance sound ordinances, which are often easier to enforce than the state rule. As with noise relating to local land-use decisions, contacting your local government or law enforcement is your best course of action.

Airplanes

The Metropolitan Airports Commission (MAC) responds to all concerns regarding noise relating to aircraft or the airports. For more information, please see its [website](#).

Snowmobiles, off-highway vehicles, and motor boats

The Minnesota Department of Natural Resources (MDNR) has source-specific noise rules for snowmobiles ([Minn. R. 6100.5700.5](#)), off-highway vehicles ([Minn. R. 6102.0040.4](#)), and motor boats ([Minn. Stat. 86B.321](#)), requiring them to be equipped with proper mufflers and conform to certain noise standards. For more information on MDNR regulations for snowmobiles, off-highway vehicles, and boats, please visit its [website](#).

Mining

The MDNR also has source-specific rules to restrict noise and vibrations from different types of metallic mining operations ([Minn. R. 6130.3900](#) and [6132.2900](#)). Local governments are relied upon to consider noise when approving and permitting sand and gravel mining operations. The MPCA enforces noise standards at mining facilities for which it has issued an air permit. For complaints about noise at one of these facilities, please use the [Online Citizen Complaints Form](#). If you prefer, you may call the MPCA to make your complaint: 651-296-6300 within the Twin Cities metropolitan area or 1-800-657-3864 if you are outside of this area.

Gun clubs

[Minn. Stat. 116.07.2a](#) exempts gun clubs from the receiver-based noise standards administered by the MPCA. However, [Minn. Stat. 87A](#) includes some standards regarding gun club noise. Through this statute, the MDNR is authorized to regulate gun club noise. For further information, please visit its [website](#).

Motor vehicle race track

[Minn. Stat. 116.07.2a](#) exempts motor vehicle race tracks built before July 1, 1996 from Minnesota's noise standards. All tracks built since that date must comply with the noise rules. Local governments have often been successful in working with exempt tracks to mitigate noise concerns by establishing time and date restrictions, muffler requirements, and noise barriers.

1.4 Regulatory agencies

Several agencies have noise regulations for different noise sources. Noise rules either set standards based on the source of the noise (source standards) or based on who hears the noise (receiver-based standards).

Minnesota Pollution Control Agency - The MPCA has a receiver-based standard intended to limit noise levels and protect the health and welfare of the general public. The MPCA enforces the standard at facilities for which the agency issues air quality permits. The MPCA also works with other agencies and levels of government to enforce noise standards and reduce violations through pre-construction project reviews.

Local Agencies - Local governing agencies, such as a cities and counties, are relied upon to enforce noise standards relating to local land use and often have ordinances regulating noise levels. They are also responsible for not allowing land uses that would immediately violate the state noise standard. For instance, local governments should be cautious of allowing a loud local utility facility to locate in a residential area.

Minnesota Department of Natural Resources - The MDNR has source standards for snowmobiles, motorboats, personal watercraft, off-highway vehicles, and gun clubs. MDNR also has source standards for metallic mining operations. For more information, see its [website](#).

Metropolitan Airport Commission - The MAC is responsible for all noise issues related to the Minneapolis-St. Paul International Airport and reliever airports. For more information, see its [website](#).

Federal Aviation Administration - The FAA has source regulations for commercial jet engines. All commercial jet engines must meet noise emission criteria prior to being certified for flight. However, the Metropolitan Airport Commission is the best contact for noise concerns related to its airports. Additional information on the FAA's noise standards can be found on its [website](#).

Minnesota Department of Transportation - MnDOT is responsible for state highway noise mitigation. It works with the Federal Highway Administration (FHWA) and the MPCA to evaluate road projects for noise impacts and possible mitigation measures. For more information see the Department's [website](#).

Federal Highway Administration (FHWA) - The FHWA does not have actual noise standards, but has a 70 dBA L₁₀ guideline that is used to determine federal funding for noise abatement on highway projects. New highway projects must go through a noise impact analysis and be considered for abatement measures. Information on FHWA's noise policies can be found on its [website](#).

Federal Railroad Administration (FRA) - Regulation of railroad-related noise is the responsibility of the FRA. For more information see the Administration's [website](#) and to contact them about a noise concern, call 1-800-724-5040.

Occupational Safety and Health Administration (OSHA) - OSHA has regulations to protect against hearing loss in the workplace. These are "dose standards" that restrict the amount of noise an employee receives over a period of time, such as eight hours. For additional information, visit OSHA's [website](#).

Housing and Urban Development (HUD) - HUD has noise regulations that establish acceptable noise zones for HUD housing projects. More information can be found on HUD's [website](#).

2. Basics of how sound works

2.1 Waves and sound pressure level

Sound travels in a wave motion through the air to our ears. A good way to imagine wave motion is with a weight hanging from a spring. Picture the following diagram (Figure 1) as a single weight and spring combination varying as time progresses along the horizontal axis.

In Figure 1 the first position of the weight on the spring is at rest with no forces exerted upon the system. If the weight is raised above its point of rest and the progression of the weight moving down and up again is observed over a period of time, a wave form is produced.

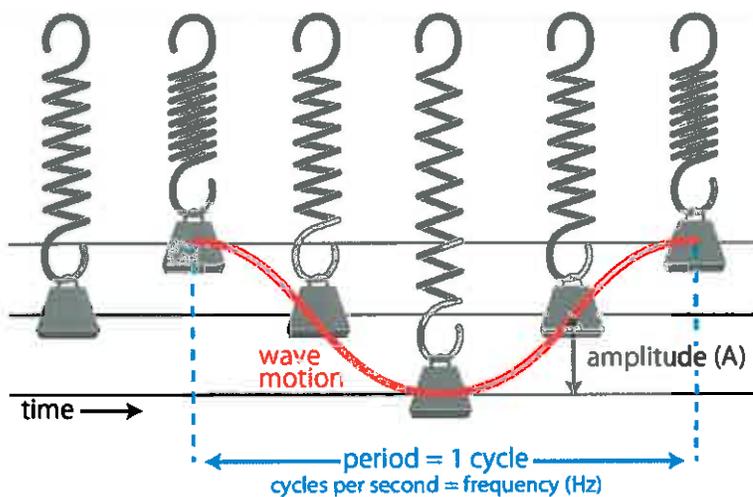


Figure 1. Weight on a spring – example of periodic motion

The *amplitude* of the moving weight is labeled as “A” in Figure 1 and corresponds with the maximum movement of the weight from its “at rest” position to the peak of the wave form either up or down. We hear changes in amplitude as changes in volume.

The *period* of the vibration is the amount of time taken to produce one complete cycle or, in this example, how quickly the weight moves from top to bottom and back. The number of cycles per second defines the *frequency* of the periodic (up and down) motion, which is given the unit of *hertz*, or *Hz*. We hear different frequencies as higher or lower pitched sounds.

Figure 2 shows how the weight on a string (two-dimensional) example of sound waves compares to the compression and expansion of sound waves through space (three-dimensional).

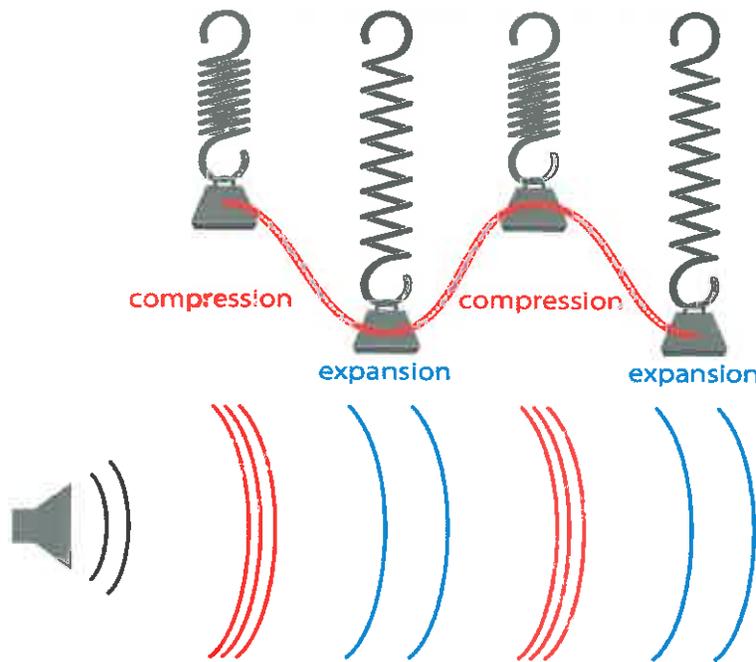


Figure 2. Comparison of periodic motion to sound waves

The graphical representation of sound waves in Figure 2 is of *pure tones*, which are sounds made up of a single frequency. A familiar example of a pure tone is the sound produced when a single key of a piano is pressed. For instance, the middle C key on a piano vibrates the associated wire at a rate of approximately 260 times per second or 260 Hertz. The vibration of the wire transfers its motion to the sound board of the piano, which then vibrates at the same frequency, causing the air adjacent to the sound board to form compression and expansion waves in the air emitting outward from the sound board. When received by the human ear, this is regarded as sound. Most sounds are not pure tones, but a mixture of tones of varying amplitude, frequency, and duration.

The *intensity* of a sound is the amount of sound energy at a given moment in a given area. The *sound pressure level*, measured in a unit called the *decibel*, or *dB*, is the ratio between the intensity of a sound and that of a reference pressure, which is the threshold of perception. The decibel is a logarithmic measurement which can accommodate a large range of values. The human ear can detect sounds more than a million times quieter than a jet aircraft during take-off; therefore, to have a system with a manageable range of numbers, the logarithm is used.

$$\text{Sound pressure level} = 20 \text{ Log}_{10} * (\text{Measured Sound Pressure} / \text{Reference Pressure})$$

$$\text{Reference Pressure} = 0.00002 \text{ Newtons} / (\text{meter})^2$$

Many different properties affect the noise level of a specific source type. For example, three lawn mowers may have three different noise levels because of differences in each specific piece of equipment. Noise level also depends on the distance from the noise source and features of the surrounding environment.

Figure 3 provides a rough estimate of decibel levels of some common noise sources.

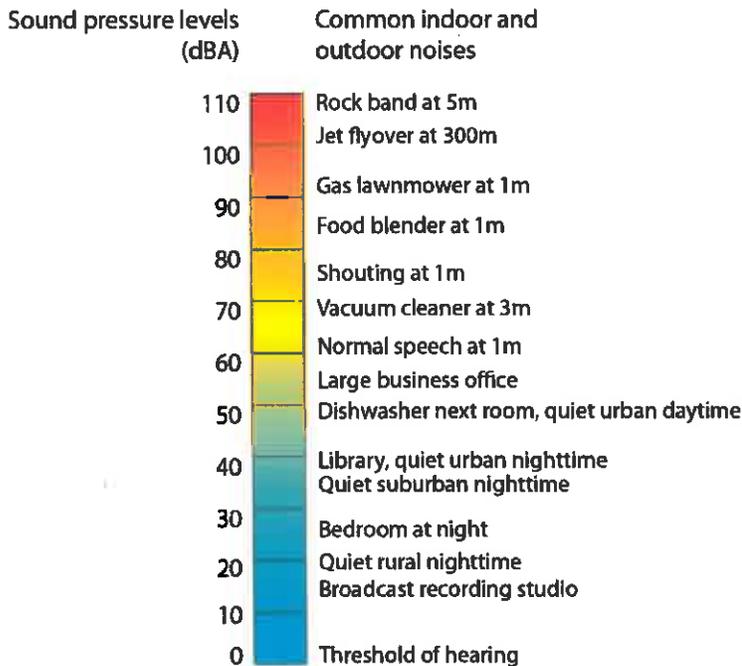


Figure 3. Decibel levels of common noise sources

2.2 Sound weighting networks

Sound level meters (SLM) used for monitoring can pick up sounds as a perfect computer, but the human ear is not as precise. The human ear cannot hear very low frequencies or very high frequencies. Weighting networks are used in noise monitors to adjust specific frequencies in the audio spectrum to attempt to duplicate the response of the human ear.

The C-weighting network represents the actual sound pressure level that is received by the sound level meter, and does not noticeably vary in its amount of compensation throughout the audio spectrum. C-weighting is used during the calibration of sound level meters to ensure that the sound level displayed on the meter is accurate and the same as the frequency of the calibrator.

The A-weighting network is used to duplicate the sensitivity of the human ear. At 100 Hertz, the A-weighting network filters out approximately 20 dB from the incoming signal before it is combined with the levels from the other frequency ranges to produce an A-weighted sound level.

The graph in Figure 4 represents the sensitivity of the human ear in comparison to the compensation of a C-weighting network and an A-weighting network. This illustration is useful in understanding how the ear is inefficient in the detection of lower frequencies and is very sensitive to higher frequencies.

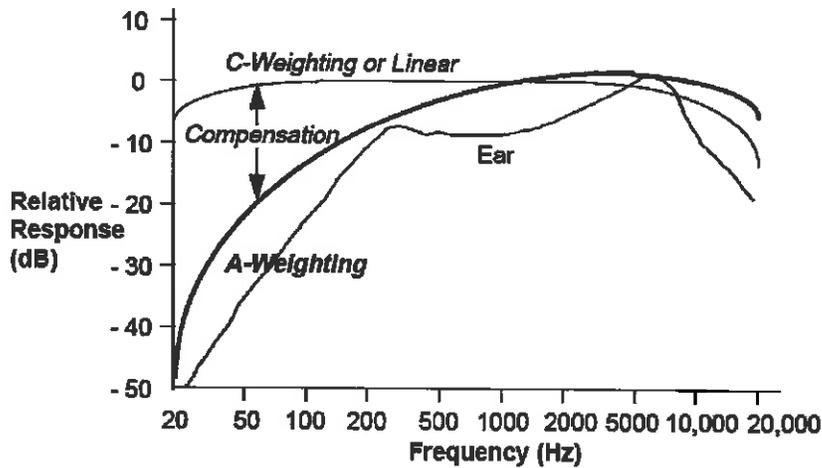


Figure 4. Weighting networks with sound measurements done in the A-weighting network are reported with the unit dBA

2.3 Human perception of sound

Sound has qualitative aspects that can be described with adjectives and quantitative aspects that can be described with measurements. Sound can be qualitatively perceived as pleasant or annoying, and quantitatively (as loudness) measured in terms of decibels.

Changes in loudness are described on a logarithmic scale because the human ear can hear such a wide range of sound levels. The human ear can usually tell the difference when sound changes by 3 dBA and a 5 dBA change is clearly noticeable. Because of how the logarithmic scale functions in compressing the measurements associated with sounds, an increase of 10 dBA sounds twice as loud.

± 1 dBA.....	Not Noticeable
± 3 dBA.....	Threshold of Perception
± 5 dBA.....	Noticeable Change
± 10 dBA.....	Twice (Half) As Loud
± 20 dBA.....	Four Times (One Fourth) As

Figure 5. Change in decibel level and perceived change in loudness

2.4 Using decibel measurements

Addition and subtraction of decibels is often necessary for estimating total noise levels or background noise. Because decibels are measured using a logarithmic scale, conventional linear mathematics cannot be used. The following rules of thumb provide a good estimate of the effect that type, distance, and number of sources have on measured sound pressure level.

Sound propagation and sources

Sources of sound can be defined as *point* or *line* sources, based on the way sound pressure waves spread away from the source. Sound waves move out from sources in a way similar to waves traveling away from a rock dropped in a pond. A *point* source, like a factory, emits sound that spreads out in a sphere. A *line* source, like a busy highway, emits sound that spreads out in a cylinder. Knowing the sources of sounds makes it possible to make assumptions about how the sound behaves.

Distance attenuation

Over distance, sound *attenuates*, or is reduced in amplitude, and is perceived as becoming quieter. This occurs as the sound travels outward to an increasingly larger sphere or cylinder, and the energy per unit of area decreases. These basic principles allow us to make generalized assumptions about sound.

When the distance is doubled from a *line* source, the sound level decreases three decibels.

Example: If a sound level is: **70 decibels at 50 feet it will be**
67 decibels at 100 feet, and
64 decibels at 200 feet

When the distance is doubled from a *point* source, the sound level decreases six decibels (Figure 6).

Example: If a sound level is: **70 decibels at 50 feet it will be**
64 decibels at 100 feet, and
58 decibels at 200 feet

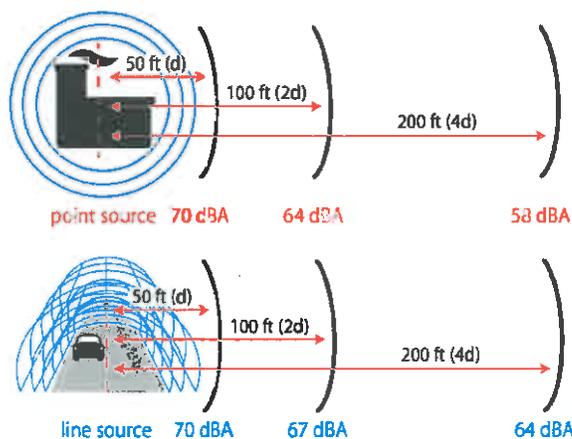


Figure 6. Distance attenuation of noise levels from a point source (top) and a line source (bottom)

Number of sources

In many situations pertaining to noise control and monitoring, it is very useful to be able to add and subtract multiple sources of sound. This can be done with principles similar to how sound attenuation over distance is estimated.

A doubling of sound energy yields an increase of three decibels. For example, each generator at a factory produces sound that is measured at 70 decibels, so running one generator would create sound measured at 70 dBA, turning on a second generator would increase sound by 3 dBA to 73 dBA, and doubling again to four generators would increase sound levels to 76 dBA. Figure 7 illustrates this principle.

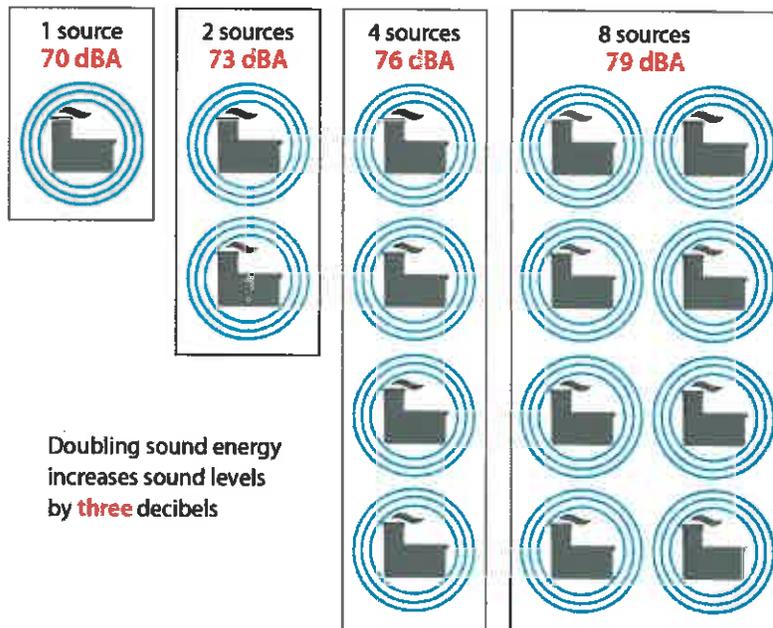


Figure 7. Addition and subtraction of decibel levels

In the same way, reducing the number of sources by half will reduce the sound pressure by 3 dBA.

Consider the perception of changes in decibel levels (Figure 5) compared to the example of addition or subtraction of sources (Figure 7). Doubling sources yields an increase of 3 dBA, which is a change that is just perceptible.

Background noise

Background, or ambient, noise consists of all noise sources other than the noise source of concern. This can include traffic, animals, machinery, voices, and other sounds.

Wind is often a major source of ambient noise and can frequently be a problem when trying to monitor a specific source of noise. The MPCA's noise test procedures state that measurements should not be made when noise from wind or precipitation results in a difference of less than 10 dBA between the background sound level and noise source being measured. In practice, this means that wind speeds must be below 11 mph when making noise measurements and rainy weather conditions should be avoided. When background noise is less than 10 dBA from the decibel level of the noise source to be measured, confidence in the accuracy of the measurement decreases.

In certain instances, when a single noise source is analyzed along with other noise sources, correction factors can be used to isolate the noise source being monitored and calculate its individual noise level. This is done by measuring and recording the total noise level of all sources. Next, the noise source to be isolated is turned off and a noise level reading is taken with all the other existing noise sources in operation. The background noise level is then subtracted from the total noise level. The result is used in conjunction with the following background noise correction chart (Figure 8) to find the approximate noise level of the source.

Figure 8 is a graph used to estimate the amount of background noise influencing a measurement. Based on the measured background noise it gives the corresponding decibel level to be subtracted from the total measurement to determine the decibel level of the noise source being monitored.

For example, if the total noise level is 74 dBA, and then falls to 70 dBA when the source of interest is turned off, the difference of four decibels between the total noise level and background noise indicates that two decibels should be subtracted from the total. This means that a 72 dBA noise level can be attributed to the monitored source in the absence of background noise.

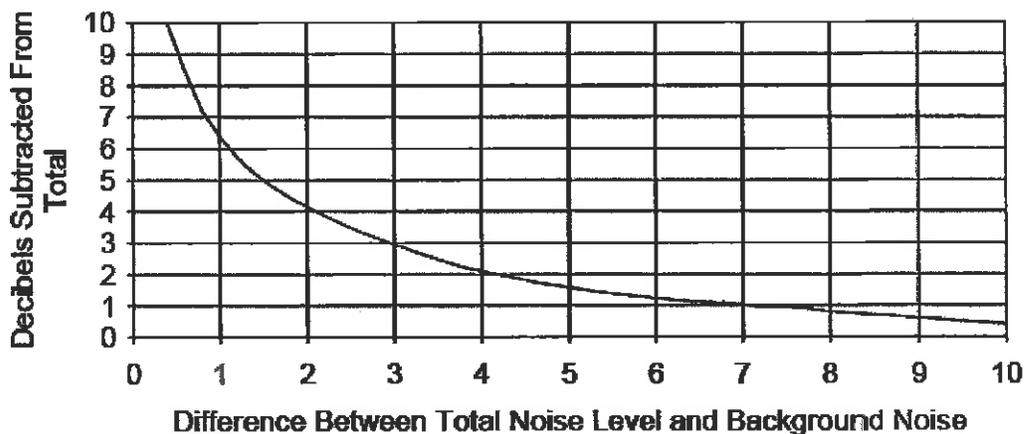


Figure 8. Background noise correction

3. Measurement procedures

This guide contains two measurement procedures. The general protocols remain the same, but your choice of procedure depends on the capabilities of your sound level meter (SLM). Noise Test Procedure 1 (NTP-1) should be used if your SLM is capable of calculating monitoring results and Noise Test Procedure 2 (NTP-2) should be used if your SLM only displays instantaneous readings.

3.1 General procedures

Sound level meter

Your sound level meter and microphone must comply with the specifications for ANSI S1.4-1983 Type 0, 1, 2, or S.

Calibration

You must also have a calibrator of a known frequency and sound level. Calibrators should be compared to a lab standard periodically. Calibration must be performed before and after the monitoring period. Adjustments should be made if necessary.

Weather conditions

Measurements should not be made when noise from wind or precipitation results in a difference between the background sound level and noise source being measured that is less than 10 dBA. In practice, this means that wind speeds must be below 11 mph and rainy weather conditions should be avoided. Temperature and humidity should be within equipment specifications.

Background noise

As mentioned in the previous section, background noise is any ambient noise other than the noise to be measured, including wind, precipitation, traffic, etc. The difference between the sound level of the source being monitored and that of the background noise must be less than 10dBA. See [page 11](#) for suggestions on how to correct for background noise.

Location of measurement

Properly choosing a monitoring location is an important consideration. Measurements should be made in the appropriate NAC, at the area of normal outdoor human activity nearest to the noise source. The monitoring location may not necessarily be at the property line; for instance, if the property of the complainant is large and residential outdoor activity is limited to a backyard patio (possibly such as on a farm).

Measurements must be made outdoors from at least three feet off of the ground (a tripod is helpful for this). Another important part of site selection is the consideration of errors caused by reflecting objects, such as a house or other large manmade or natural structures. Measurements should be made at least as far away from any large reflecting object as from the noise source being measured. If this is not possible, stay at least 30 feet from structures.

Documentation of measurement

A survey form must be completed containing date, time, location, noise source, wind speed/direction, temperature, humidity, equipment information (make, model, serial number), site sketch with the location of the noise source and measurement location (including appropriate distances), data and calibration information. A sample survey form can be found on [page 16](#).

3.2 Noise Test Procedure 1: Measurement procedure for non-impulsive noise

The following test procedure has been approved by the Commissioner of the MPCA for the measurement of non-impulsive noise. The general procedures described above ([3.1 General procedures](#)) should be followed whether you are using the NTP-1 or NTP-2 procedures.

Instrumentation:

- Sound level meter and a microphone conforming to type 0, 1, 2, or S specifications under ANSI S1.4-1983
- Calibrator of known frequency and level
- Small screwdriver for sensitivity adjustment
- Microphone windscreen
- Noise survey form
- Tripod (optional)

Monitoring procedure:

Monitoring must be conducted for at least a one hour time period. Sound meter must use the "A" weighting and FAST response characteristics. Follow your manufacturer instructions to obtain the L_{10} and L_{50} results.

3.3 Noise Test Procedure 2: Manual measurement procedure for non-impulsive noise

The following test procedure has been approved by the Commissioner of the MPCA for the measurement of non-impulsive noise. The general procedures described above ([3.1 General procedures](#)) should be followed whether you are using the NTP-1 or NTP-2 procedures. The NTP-2 procedure is to be used with SLMs that cannot calculate noise statistics and only provide instantaneous readings.

Instrumentation:

- Sound level meter and a microphone conforming to type 0, 1, 2, or S specifications under ANSI S1.4-1983
- Calibrator of known frequency and level
- Small screwdriver for sensitivity adjustment
- Microphone windscreen
- Noise survey form
- Tripod (optional)

Manual monitoring procedure:

Using a hand-held SLM, take an instantaneous sound reading every 10 seconds and record on a data sheet. A partner is very helpful.

Continue taking sound readings for one hour, which will give you 360 individual readings. Figure 9 provides an example of a manual monitoring data sheet.

To determine the L_{10} , take the 36th loudest (10 percent of 360 = 36) individual sound reading by counting from the loudest to the quietest on the data sheet. For example, in Figure 9, the L_{10} = 63 and is the 36th X from the top of the sheet.

To determine the L_{50} , take the 180th loudest (50 percent of 360 = 180) individual sound reading. In Figure 9, the L_{50} = 57 and represents the 180th X from the top of the sheet.

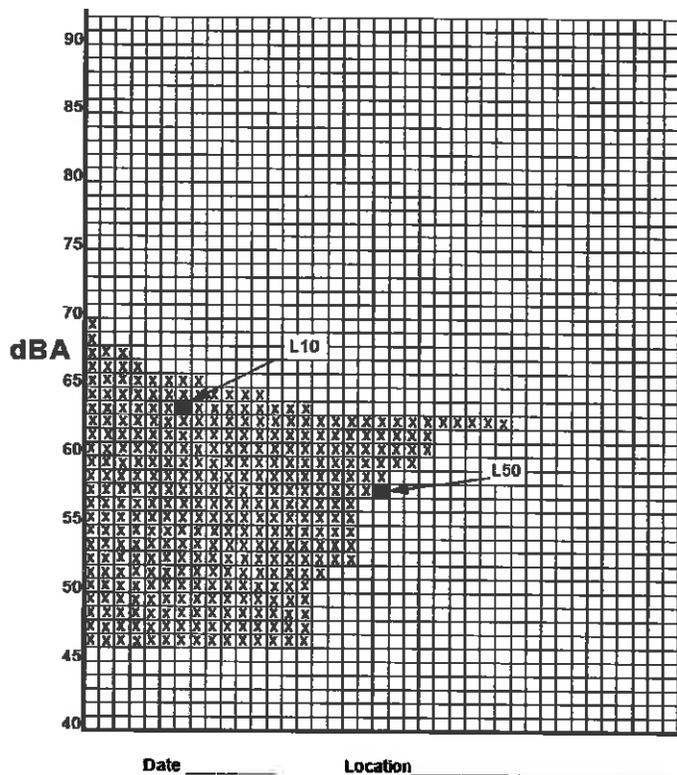
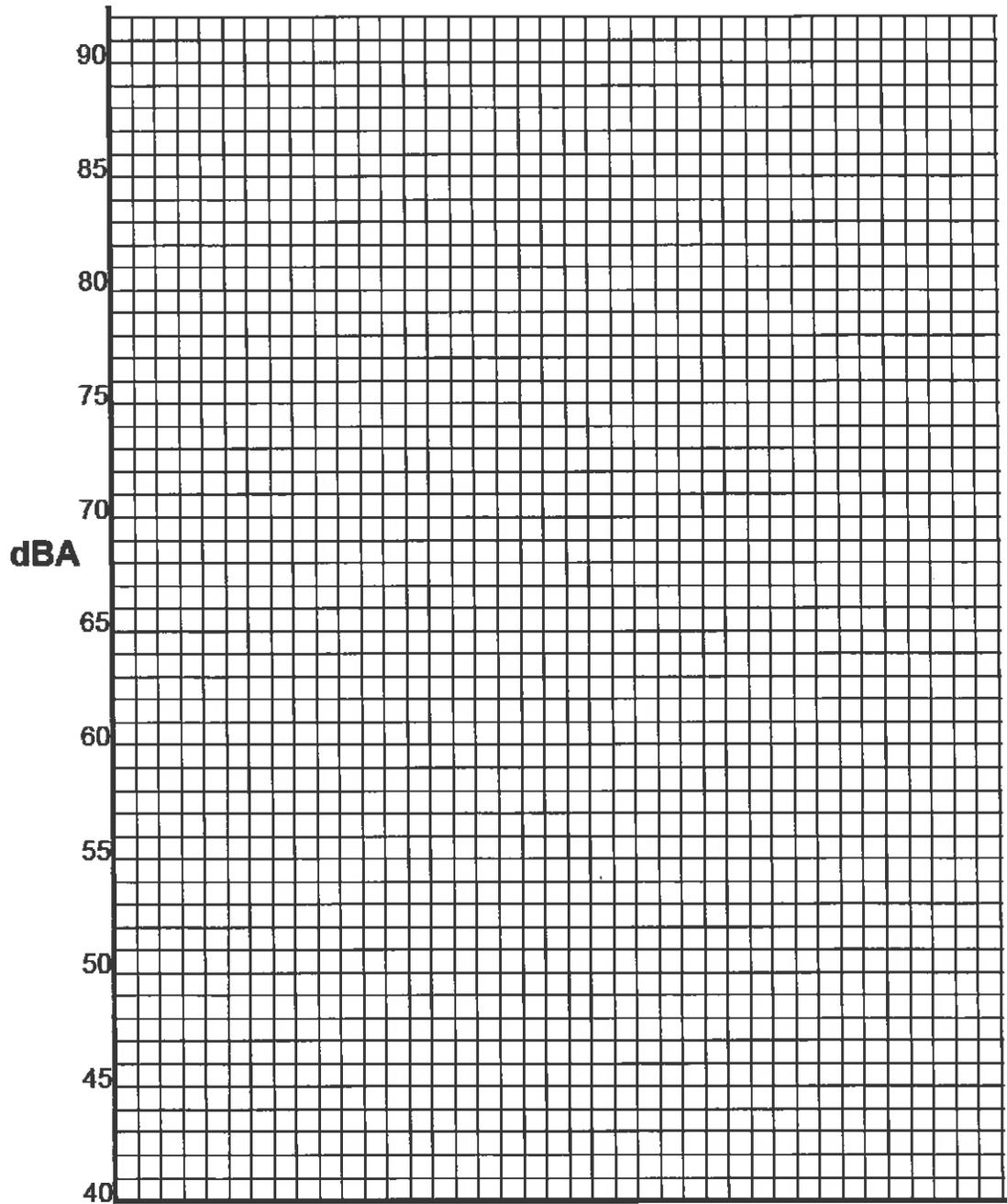


Figure 9. Example manual monitoring data sheet

Manual Monitoring Data Sheet



Date _____

Location _____

3a.

This Document can be made available in alternative formats upon request

State of Minnesota
HOUSE OF REPRESENTATIVES

NINETY-FIRST SESSION

H. F. No. 1076

02/14/2019 Authored by Morrison
The bill was read for the first time and referred to the Committee on Ways and Means

1.1 A bill for an act
1.2 relating to capital investment; appropriating money for water and sewer
1.3 infrastructure in Spring Park; authorizing the sale and issuance of state bonds.
1.4 BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF MINNESOTA:

1.5 Section 1. CITY OF SPRING PARK; WATER AND SEWER INFRASTRUCTURE.

1.6 Subdivision 1. Appropriation. \$5,000,000 is appropriated from the bond proceeds fund
1.7 to the Public Facilities Authority for a grant to the city of Spring Park for improvements to
1.8 the city's water and sewer system. This appropriation is not available until the commissioner
1.9 of management and budget determines that \$5,000,000 has been committed to complete
1.10 the project from nonstate sources.

1.11 Subd. 2. Bond sale. To provide the money appropriated in this section from the bond
1.12 proceeds fund, the commissioner of management and budget shall sell and issue bonds of
1.13 the state in an amount up to \$5,000,000 in the manner, upon the terms, and with the effect
1.14 prescribed by Minnesota Statutes, sections 16A.631 to 16A.675, and by the Minnesota
1.15 Constitution, article XI, sections 4 to 7.

1.16 EFFECTIVE DATE. This section is effective the day following final enactment.