April 10, 2019

Redi-Mix, LLC.
331 North Main Street
Euless, TX 76039

Attention: **David Behring and Patrick Garrett**
Subject: **Proposed Concrete Batch Plant – Grand Prairie, Tx**

Dear Mr. Behring and Mr. Garrett,

The following Noise Abatement Study was developed for your Proposed Concrete Batch Plant located in Grand Prairie, Texas. The noise levels produced by normal operations at the site could possibly exceed the noise standards set forth by the City of Grand Prairie, Noise Restrictions section of the Code of Ordinance. The following report identifies the noise sources for the Concrete Batch Plant operations and includes noise mitigation models.

Description of the Proposed Facility/Operation

A concrete batch plant, also known as a batch plant or batching plant, is a facility that combines various ingredients to form concrete. Some of these inputs include sand, water, aggregate (rocks, gravel, etc.), fly ash, potash and cement. Batch plants combine all ingredients, including water, at a central location. The final product is then transported to the job site, via mixer trucks. These plants offer the end user a consistent product since all the ingredient mixing is done in a central location and is computer-assisted to ensure uniformity of product. Concrete batch plants contain a variety of equipment and accessories, including but not limited to: mixers, conveyors, radial stackers, aggregate bins, cement bins, cement silos, fly ash silos, batch plant controls and dust collectors.

Site Location and Conditions

The Proposed Concrete Batch Plant site is located off of W Hunter Ferrell Rd approximately 1.5 miles north of Interstate 30 in Grand Prairie, Texas. A residential neighborhood can be found to the north and is located approximately 350 feet from the Truck Loadout. Proposed Concrete Batch Plant coordinates are below.

Site Coordinates
32°46'55.96"N
96°58'18.05"W

Weather Conditions

The average temperature was between 52ºF - 82ºF throughout the entire duration of the survey with minimal amounts of precipitation recorded. Winds ranged from calm to 21 mph with gust up to 28 mph.

Sound Level Survey Instrumentation

A Brűel and Kjær 2250 Type 1 Hand-held Analyzer sound level meter was programmed, field calibrated, and deployed at the drill site. The meter was programmed to measure the entire audible range of frequencies as well as low frequency noise levels at the site. The metering system was installed approximately 5 feet above ground level in a locked weatherproof enclosure for security purposes. Figure 1 displays the drill site and the ambient noise measurement locations.

Code of Ordinance – Noise Restrictions

Sec. 13-281. - Designated Noise Zones.

(a) *Noise Zone 1:* All residential Structures or properties.
(b) *Noise Zone 2:* All commercial properties.
(c) *Noise Zone 3:* All manufacturing, industrial, or governmental properties.
(d) *Noise Zone 4:* All properties designated as having entertainment as a major use by the city council.

Sec. 13-282. - Maximum Permissible Sound Levels.

(a) The following noise standards, unless otherwise specifically indicated, shall apply to all property within a designated noise zone:

Noise Standards		
Noise Zones	Times of Day	Average Equivalent Sound Levels (Leq)
Noise Zone 1	6:00 a.m. to 10:00 p.m. 10:00 p.m. to 6:00 a.m.	65 dB(A) 58 dB(A)
Noise Zone 2	6:00 a.m. to 10:00 p.m. 10:00 p.m. to 6:00 a.m.	67 dB(A) 60 dB(A)
Noise Zone 3	6:00 a.m. to 10:00 p.m. 10:00 p.m. to 6:00 a.m.	70 dB(A) 65 dB(A)
Noise Zone 4	6:00 a.m. to 10:00 p.m. 10:00 p.m. to 6:00 a.m.	80 dB(A) 60 dB(A)

(b) When noise contains strong pure tone components or is impulsive, 5 dB(A) shall be subtracted from the appropriate limitation.
(c) If the background sound level exceeds the applicable standard, the background level shall be the standard.
(d) Measurements may be taken at a point on adjacent private property or on either side of an adjacent public right-or-way at or near the boundary line of the property where the noise is generated.
(e) When the noise zone of the property on which the source of sound originates differs from the designation of the property on which the sound is measured, the more restrictive noise standard shall apply. This requirement shall not apply to properties within the Zone 4 classification
(f) At any time in a measurement period, no noise may exceed the maximum sound level standard plus 20 dB(A).

Compliance of Noise Restrictions

Compliance of the Noise Restrictions section of the Code of Ordinance for the City of Grand Prairie is determined two ways. First by a 15-minute measurement of sound that must be within the maximum permissible sound levels. Second, continuous sound levels must stay under the maximum permissible sound levels +20 dB.

Compliance is determined by a 15-minute measurement of the sound levels. If the recorded LAeq sound levels are over the maximum permissible sound levels then there is a violation. Sound levels can go over the maximum permissible sound levels as long as the LAeq measurement over a 15-minute period is under the maximum permissible sound levels.

Compliance of the Noise Restrictions section is also determined by continuous measurements of the sound levels. If at any point during operations sound levels at the receiver are found to be 20 dB over the maximum permissible sound levels a violation will occur. Example: Noise Zone 1, between the hours of 10:00 p.m. and 6:00 a.m. the maximum permissible sound levels are 58 dBA. A violation will occur if the sound levels ever reach 78 dBA.

Ambient Sound Level Survey

A 72-hour pre-construction ambient noise level survey was taken at the Proposed Concrete Batch Plant from Sunday March 24 - Tuesday, March 26, 2019, to measure and document the ambient sound levels at the site. Noise sources observed by the noise technician during the survey include nearby road traffic observed from W Hunter Ferrell Rd.

Ambient Measurement Results

The ambient sound level data collected at the site is attached in both a graphed and tabular form, along with the established 72-hour ambient sound levels. The Ambient Results can be seen in Figure 2 to Figure 6. The allowable sound levels were established in accordance with the Noise Restrictions section of the Code of Ordinance for the City of Grand Prairie, Texas.

Non-Compliance in Ambient Measurement Results

The Proposed Concrete Batch Plant is required to meet the Noise Zone 1 restrictions at the receivers across the street. Ambient noise levels exceeded the maximum permissible sound levels multiple times during the recorded survey. At 10:30 p.m., 12:30 a.m., 12:45 a.m., 8:45 p.m. and 10:00 p.m. the 15-minute measured LAeq was recorded at sound levels above the maximum permissible sound levels. These examples can also be seen in Figure 3 and tabular form in Figure 6. Furthermore, during the survey the continuous sound levels recorded a value that exceeded the maximum permissible sound levels +20 dB at 10:08 p.m. To conclude, this information shows that the ordinance set in place by Grand Prairie is being violated before the construction of the Proposed Concrete Batch plant.

Summary of Findings

We can expect the following Hourly LAeq averages to be produced by the unmitigated operational equipment during specific operations, which can be measured at the receiver to the north.

Operations Type	Expected Sound Levels
Pneumatic Pump	64-68 dBA
Truck Reversing	60-65 dBA
Truck on Road	52-58 dBA

Noise Impact Model Results

The *unmitigated noise impact models* for Pneumatic pumping, trucks reversing and truck entering the roadway are included in Attachment 7. It displays estimated sound levels of 64-68 dBA. The *mitigated noise impact models* are included in Attachment 8. It displays the estimated sound levels to be between 55-62 dBA for operations with the installation of the concrete blocks. The nearest occupied structure (single-family residence), is located approximately 350 feet to the north of the site. The concrete barrier would decrease the overall noise level of the operations by 4-6 dBA at the receiver.

Noise Impact Potential

The maximum noise levels generated during normal operations of a Concrete Batch Plant are produced from the pneumatic pumps mounted truck used to deliver dry cement to the material silos. From Concrete Mixer Truck warning signals for reversing trucks and high revving engines contribute substantially to the overall sound levels.

Noise impact models were created to evaluate and predict the noise impact potential of typical operations on the site's adjacent surroundings. Included in Figure 7 is the Hourly sound levels of the Operational survey at the Desoto, Tx Concrete Batch Plant. Noise mitigation measures were included in the models to ensure compliance with the maximum permissible noise levels established above.

The results of the noise impact models are included in Figures 8 and 9 of this report. Figure 8 displays the *unmitigated sound levels* for Concrete Batch Plant operations. Figure 9 displays the *mitigated sound levels* for Batch Plant operations.

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Noise Mitigation Recommendations	**Activity**
Install an Concrete Barrier on the northern side of the site	Normal Operations
Orient trucks that are using pneumatic pumps to refill the silos with ingredients such that the pneumatic pumps are on the south side of the silos to maximize the distance between the pumps and the regulated receivers	Pneumatic pumping

Please contact us if you have any questions or comments.

Sincerely,

Kent Grimes
Project Engineer
Absolute Noise Control
(817) 991-0053

ABSOLUTE NOISE CONTROL
Noise Mitigation & Consulting

Attachments

Figure 1.
Proposed Concrete Batch Plant Site

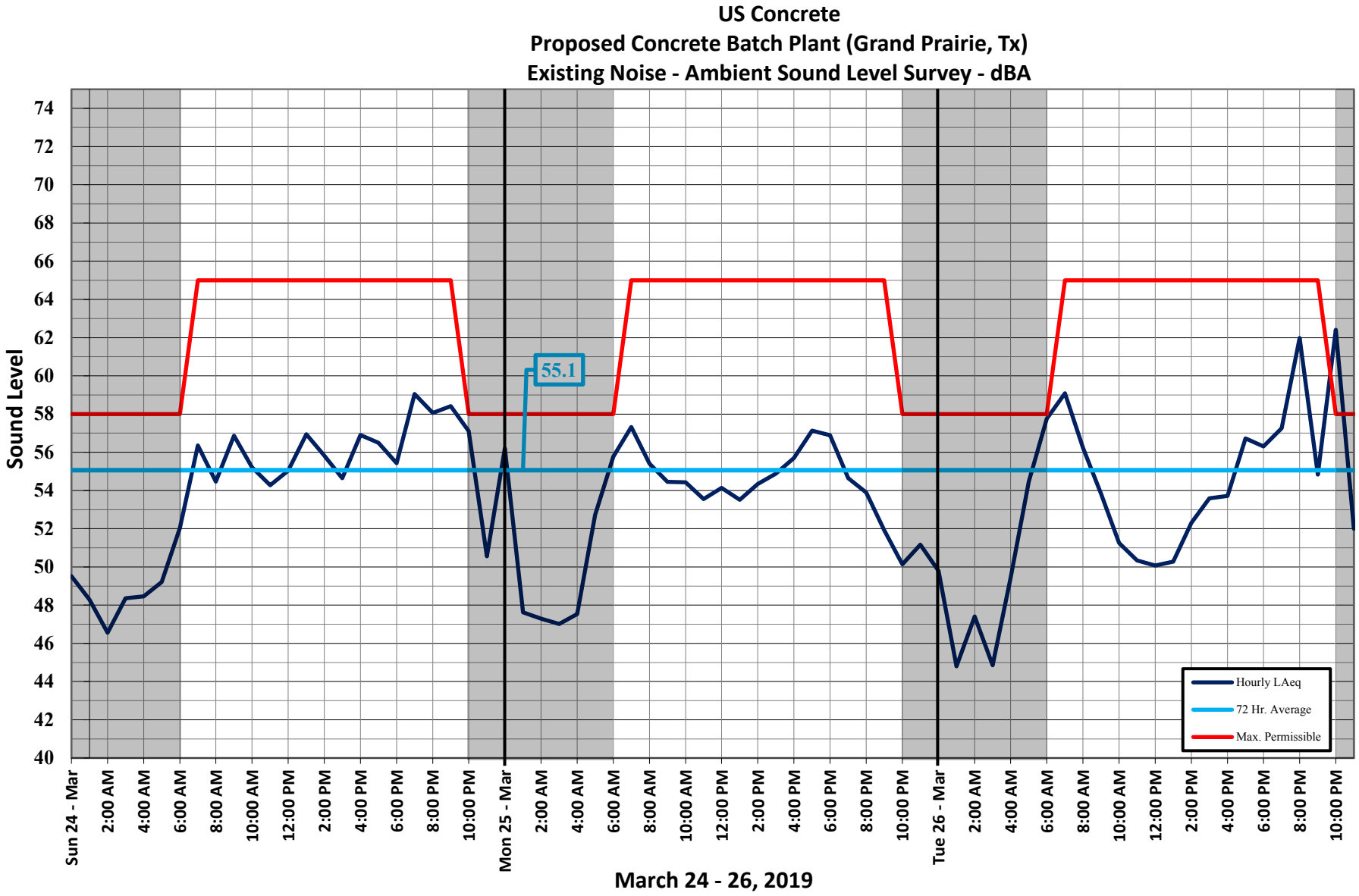

Figure 2.
Proposed Concrete Batch Plant – Hourly Average dBA Sound Levels

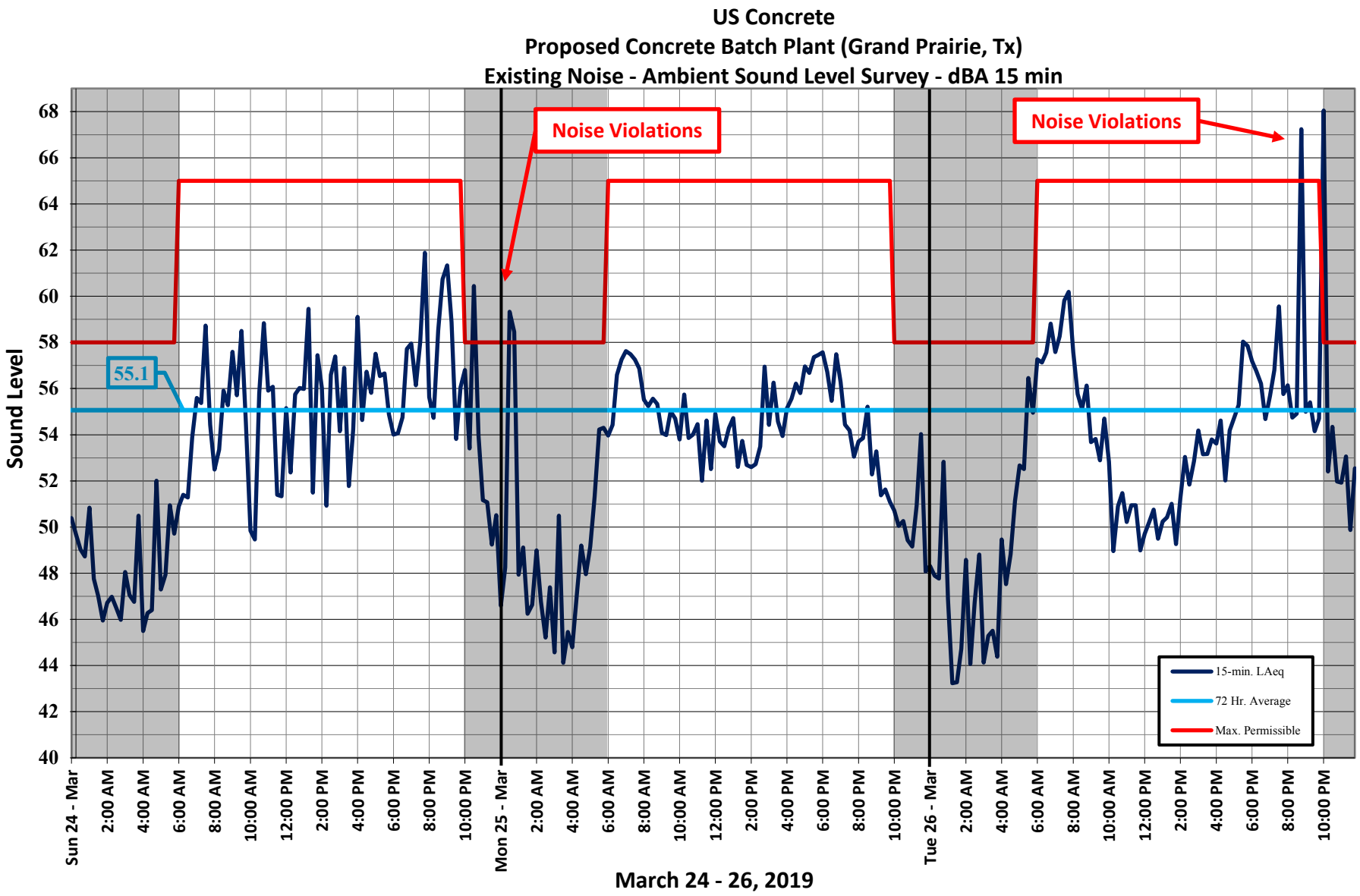

Figure 3.
Proposed Concrete Batch Plant – 15 Min Average dBA Sound Levels

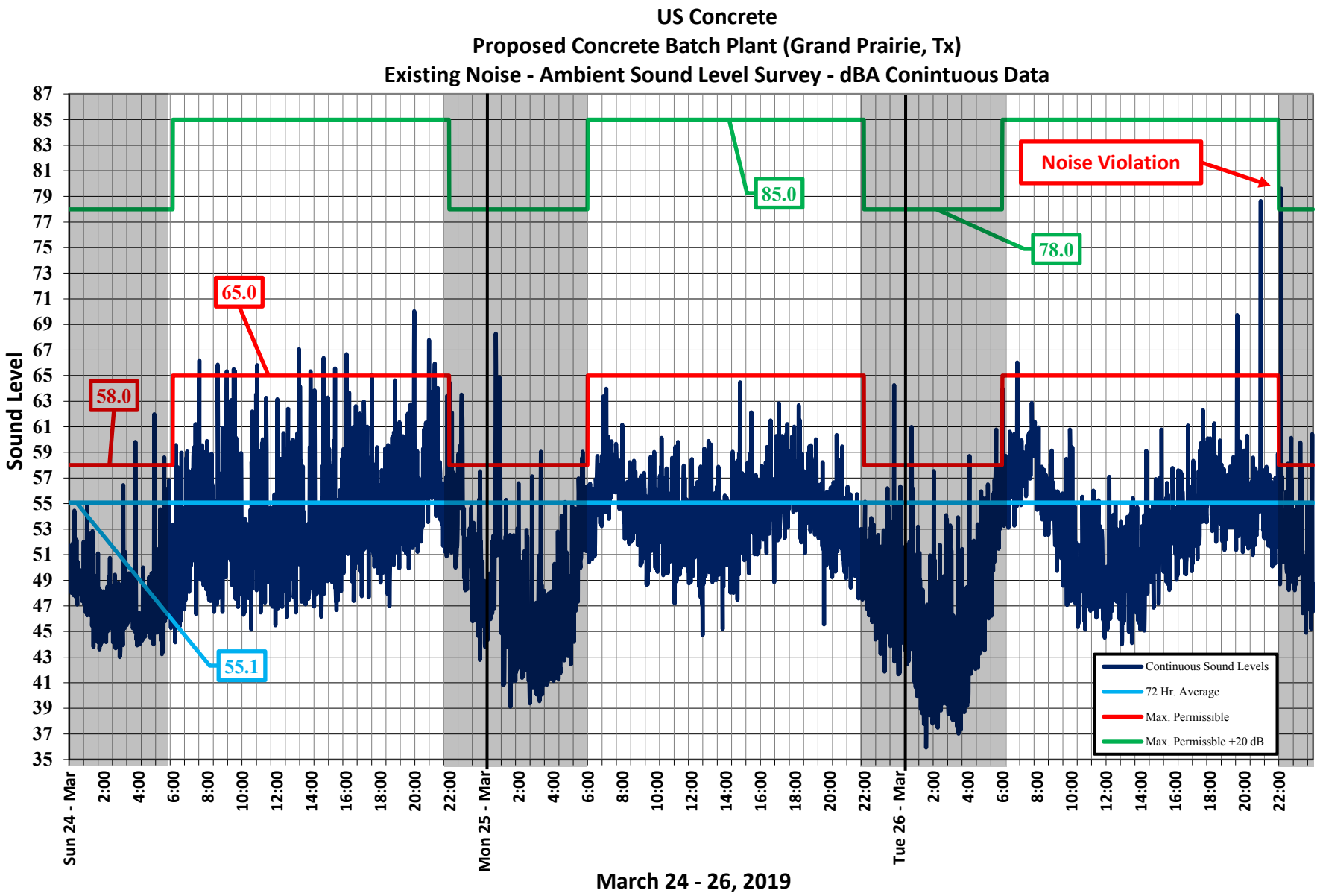

Figure 4.
Proposed Concrete Batch Plant – Continuous dBA Sound Levels

Concrete Batch Plant - Sun 24 to Tue 26				
Time	**dBA**		**Time**	**dBA**
Sun 24 - Mar	49.5		1:00 PM	53.5
1:00 AM	48.3		2:00 PM	54.3
2:00 AM	46.6		3:00 PM	54.9
3:00 AM	48.4		4:00 PM	55.7
4:00 AM	48.5		5:00 PM	57.1
5:00 AM	49.2		6:00 PM	56.9
6:00 AM	52.0		7:00 PM	54.6
7:00 AM	56.4		8:00 PM	53.9
8:00 AM	54.5		9:00 PM	51.9
9:00 AM	56.9		10:00 PM	50.1
10:00 AM	55.2		11:00 PM	51.2
11:00 AM	54.3		**Tue 26 - Mar**	49.8
12:00 PM	55.0		1:00 AM	44.8
1:00 PM	56.9		2:00 AM	47.4
2:00 PM	55.8		3:00 AM	44.9
3:00 PM	54.6		4:00 AM	49.4
4:00 PM	56.9		5:00 AM	54.5
5:00 PM	56.5		6:00 AM	57.8
6:00 PM	55.4		7:00 AM	59.1
7:00 PM	59.1		8:00 AM	56.2
8:00 PM	58.1		9:00 AM	53.8
9:00 PM	58.4		10:00 AM	51.3
10:00 PM	57.1		11:00 AM	50.3
11:00 PM	50.6		12:00 PM	50.1
Mon 25 - Mar	56.2		1:00 PM	50.3
1:00 AM	47.6		2:00 PM	52.3
2:00 AM	47.3		3:00 PM	53.6
3:00 AM	47.0		4:00 PM	53.7
4:00 AM	47.5		5:00 PM	56.7
5:00 AM	52.7		6:00 PM	56.3
6:00 AM	55.8		7:00 PM	57.3
7:00 AM	57.3		8:00 PM	62.0
8:00 AM	55.4		9:00 PM	54.8
9:00 AM	54.5		10:00 PM	62.4
10:00 AM	54.4		11:00 PM	52.0
11:00 AM	53.6			
12:00 PM	54.1		**72 Hr Average**	55.1

Figure 5.
Proposed Concrete Batch Plant – Ambient Sound Level – Hourly LAeq

Concrete Batch Plant - Sun 24 to Tue 26															
Time	**dBA**	**Time**	**dBA**	**Time**	**dBA**	**Time**	**dBA**	**Time**	**dBA**	**Time**	**dBA**	**Time**	**dBA**	**Time**	**dBA**
Sun 24 - Mar	50.4	9:00 AM	57.6	6:00 PM	54.0	3:00 AM	44.6	12:00 PM	54.9	9:00 PM	53.3	6:00 AM	57.3	3:00 PM	54.2
12:15 AM	49.7	9:15 AM	55.7	6:15 PM	54.1	3:15 AM	50.5	12:15 PM	53.7	9:15 PM	51.4	6:15 AM	57.1	3:15 PM	53.2
12:30 AM	49.0	9:30 AM	58.5	6:30 PM	54.7	3:30 AM	44.1	12:30 PM	53.5	9:30 PM	51.6	6:30 AM	57.6	3:30 PM	53.2
12:45 AM	48.7	9:45 AM	54.5	6:45 PM	57.7	3:45 AM	45.5	12:45 PM	54.3	9:45 PM	51.1	6:45 AM	58.8	3:45 PM	53.8
1:00 AM	50.8	10:00 AM	49.8	7:00 PM	58.0	4:00 AM	44.8	1:00 PM	54.7	10:00 PM	50.7	7:00 AM	57.6	4:00 PM	53.6
1:15 AM	47.8	10:15 AM	49.5	7:15 PM	56.1	4:15 AM	47.1	1:15 PM	52.6	10:15 PM	50.1	7:15 AM	58.3	4:15 PM	54.6
1:30 AM	47.0	10:30 AM	55.8	7:30 PM	58.0	4:30 AM	49.2	1:30 PM	53.7	10:30 PM	50.3	7:30 AM	59.8	4:30 PM	52.0
1:45 AM	45.9	10:45 AM	58.8	7:45 PM	61.9	4:45 AM	48.0	1:45 PM	52.7	10:45 PM	49.4	7:45 AM	60.2	4:45 PM	54.2
2:00 AM	46.7	11:00 AM	55.9	8:00 PM	55.6	5:00 AM	49.1	2:00 PM	52.6	11:00 PM	49.2	8:00 AM	57.6	5:00 PM	54.7
2:15 AM	47.0	11:15 AM	56.1	8:15 PM	54.7	5:15 AM	51.3	2:15 PM	52.7	11:15 PM	50.9	8:15 AM	55.8	5:15 PM	55.3
2:30 AM	46.5	11:30 AM	51.4	8:30 PM	58.5	5:30 AM	54.2	2:30 PM	53.5	11:30 PM	54.0	8:30 AM	55.1	5:30 PM	58.0
2:45 AM	46.0	11:45 AM	51.3	8:45 PM	60.7	5:45 AM	54.3	2:45 PM	56.9	11:45 PM	48.1	8:45 AM	56.1	5:45 PM	57.8
3:00 AM	48.1	12:00 PM	55.2	9:00 PM	61.3	6:00 AM	54.0	3:00 PM	54.4	**Tue 26 - Mar**	48.3	9:00 AM	53.7	6:00 PM	57.2
3:15 AM	47.1	12:15 PM	52.4	9:15 PM	58.9	6:15 AM	54.4	3:15 PM	56.3	12:15 AM	47.9	9:15 AM	53.8	6:15 PM	56.8
3:30 AM	46.8	12:30 PM	55.8	9:30 PM	53.8	6:30 AM	56.6	3:30 PM	54.6	12:30 AM	47.8	9:30 AM	52.9	6:30 PM	56.2
3:45 AM	50.5	12:45 PM	56.0	9:45 PM	56.1	6:45 AM	57.3	3:45 PM	53.9	12:45 AM	52.8	9:45 AM	54.7	6:45 PM	54.7
4:00 AM	45.5	1:00 PM	56.0	10:00 PM	56.8	7:00 AM	57.6	4:00 PM	55.1	1:00 AM	46.9	10:00 AM	52.8	7:00 PM	55.7
4:15 AM	46.3	1:15 PM	59.5	10:15 PM	53.4	7:15 AM	57.5	4:15 PM	55.6	1:15 AM	43.2	10:15 AM	49.0	7:15 PM	56.8
4:30 AM	46.4	1:30 PM	51.5	10:30 PM	60.4	7:30 AM	57.3	4:30 PM	56.2	1:30 AM	43.3	10:30 AM	50.9	7:30 PM	59.6
4:45 AM	52.0	1:45 PM	57.4	10:45 PM	54.0	7:45 AM	56.9	4:45 PM	55.8	1:45 AM	44.7	10:45 AM	51.5	7:45 PM	55.8
5:00 AM	47.3	2:00 PM	56.0	11:00 PM	51.2	8:00 AM	55.5	5:00 PM	57.0	2:00 AM	48.6	11:00 AM	50.2	8:00 PM	56.1
5:15 AM	47.9	2:15 PM	50.9	11:15 PM	51.1	8:15 AM	55.2	5:15 PM	56.7	2:15 AM	44.1	11:15 AM	50.9	8:15 PM	54.7
5:30 AM	50.9	2:30 PM	56.6	11:30 PM	49.2	8:30 AM	55.6	5:30 PM	57.4	2:30 AM	46.7	11:30 AM	50.9	8:30 PM	54.9
5:45 AM	49.7	2:45 PM	57.4	11:45 PM	50.5	8:45 AM	55.3	5:45 PM	57.5	2:45 AM	48.8	11:45 AM	49.0	8:45 PM	67.2
6:00 AM	50.9	3:00 PM	54.2	**Mon 25 - Mar**	46.6	9:00 AM	54.1	6:00 PM	57.6	3:00 AM	44.1	12:00 PM	49.7	9:00 PM	55.0
6:15 AM	51.4	3:15 PM	56.9	12:15 AM	48.3	9:15 AM	54.0	6:15 PM	56.7	3:15 AM	45.3	12:15 PM	50.2	9:15 PM	55.4
6:30 AM	51.3	3:30 PM	51.8	12:30 AM	59.3	9:30 AM	55.0	6:30 PM	55.5	3:30 AM	45.5	12:30 PM	50.8	9:30 PM	54.1
6:45 AM	53.9	3:45 PM	54.2	12:45 AM	58.5	9:45 AM	54.7	6:45 PM	57.5	3:45 AM	44.4	12:45 PM	49.5	9:45 PM	54.7
7:00 AM	55.6	4:00 PM	59.1	1:00 AM	47.9	10:00 AM	53.8	7:00 PM	56.3	4:00 AM	49.5	1:00 PM	50.2	10:00 PM	68.0
7:15 AM	55.4	4:15 PM	54.6	1:15 AM	49.1	10:15 AM	55.7	7:15 PM	54.4	4:15 AM	47.5	1:15 PM	50.4	10:15 PM	52.4
7:30 AM	58.7	4:30 PM	56.7	1:30 AM	46.2	10:30 AM	53.9	7:30 PM	54.2	4:30 AM	48.8	1:30 PM	51.0	10:30 PM	54.3
7:45 AM	54.4	4:45 PM	55.8	1:45 AM	46.6	10:45 AM	54.0	7:45 PM	53.1	4:45 AM	51.1	1:45 PM	49.3	10:45 PM	52.0
8:00 AM	52.5	5:00 PM	57.5	2:00 AM	49.0	11:00 AM	54.5	8:00 PM	53.7	5:00 AM	52.7	2:00 PM	51.3	11:00 PM	51.9
8:15 AM	53.4	5:15 PM	56.5	2:15 AM	46.8	11:15 AM	52.0	8:15 PM	53.8	5:15 AM	52.5	2:15 PM	53.0	11:15 PM	53.1
8:30 AM	55.9	5:30 PM	56.7	2:30 AM	45.2	11:30 AM	54.6	8:30 PM	55.2	5:30 AM	56.5	2:30 PM	51.8	11:30 PM	49.9
8:45 AM	55.3	5:45 PM	54.9	2:45 AM	47.4	11:45 AM	52.5	8:45 PM	52.3	5:45 AM	55.0	2:45 PM	52.9	11:45 PM	52.5

Figure 6.
Proposed Concrete Batch Plant – Ambient Sound Level – 15-min. LAeq

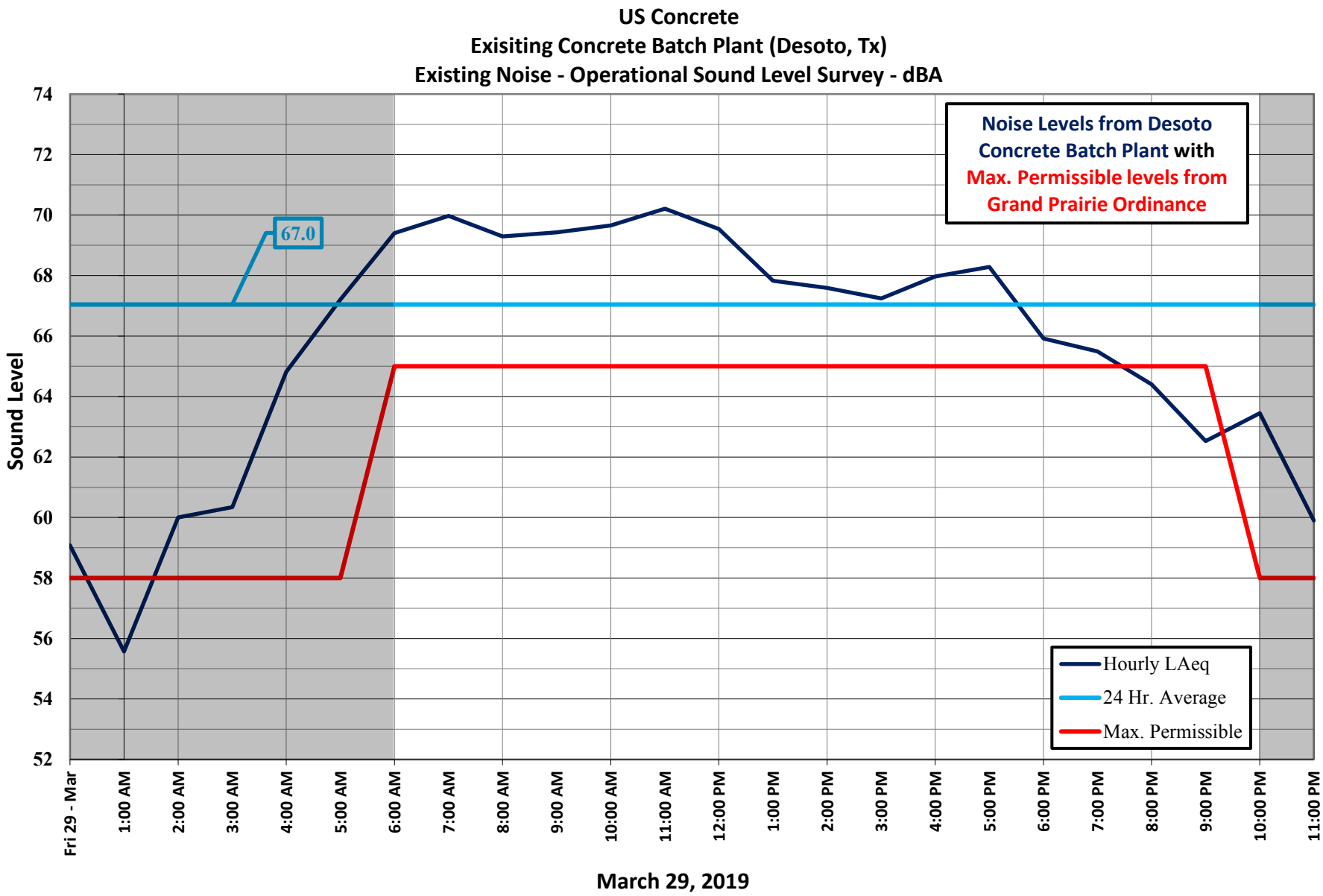

Figure 7.
Proposed Concrete Batch Plant – Unmitigated Operations

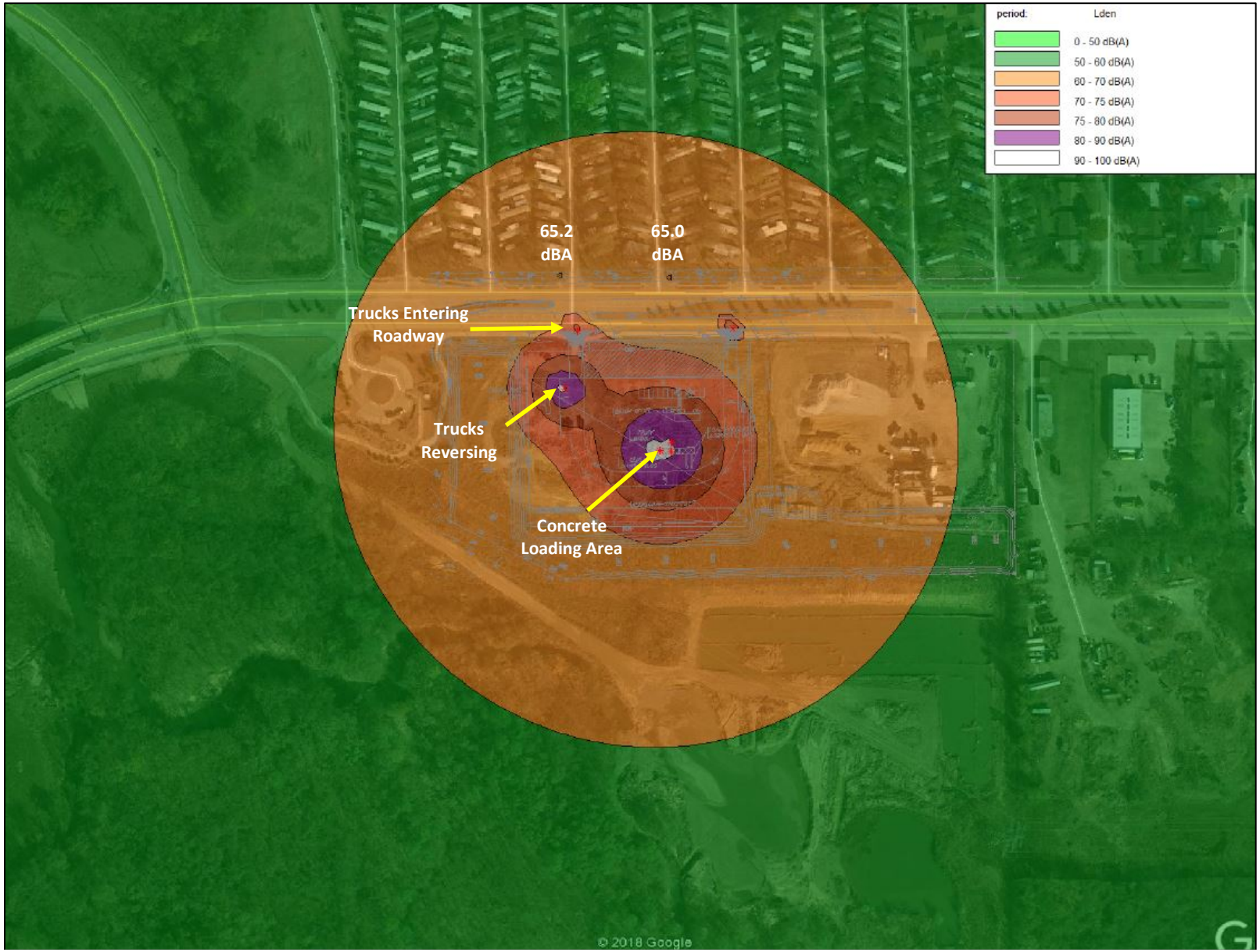

Figure 8.
Proposed Concrete Batch Plant – Unmitigated Operations
Notes: Predicted Noise Levels from Desoto Plant used to determine Noise at Proposed Plant in Grand Prairie

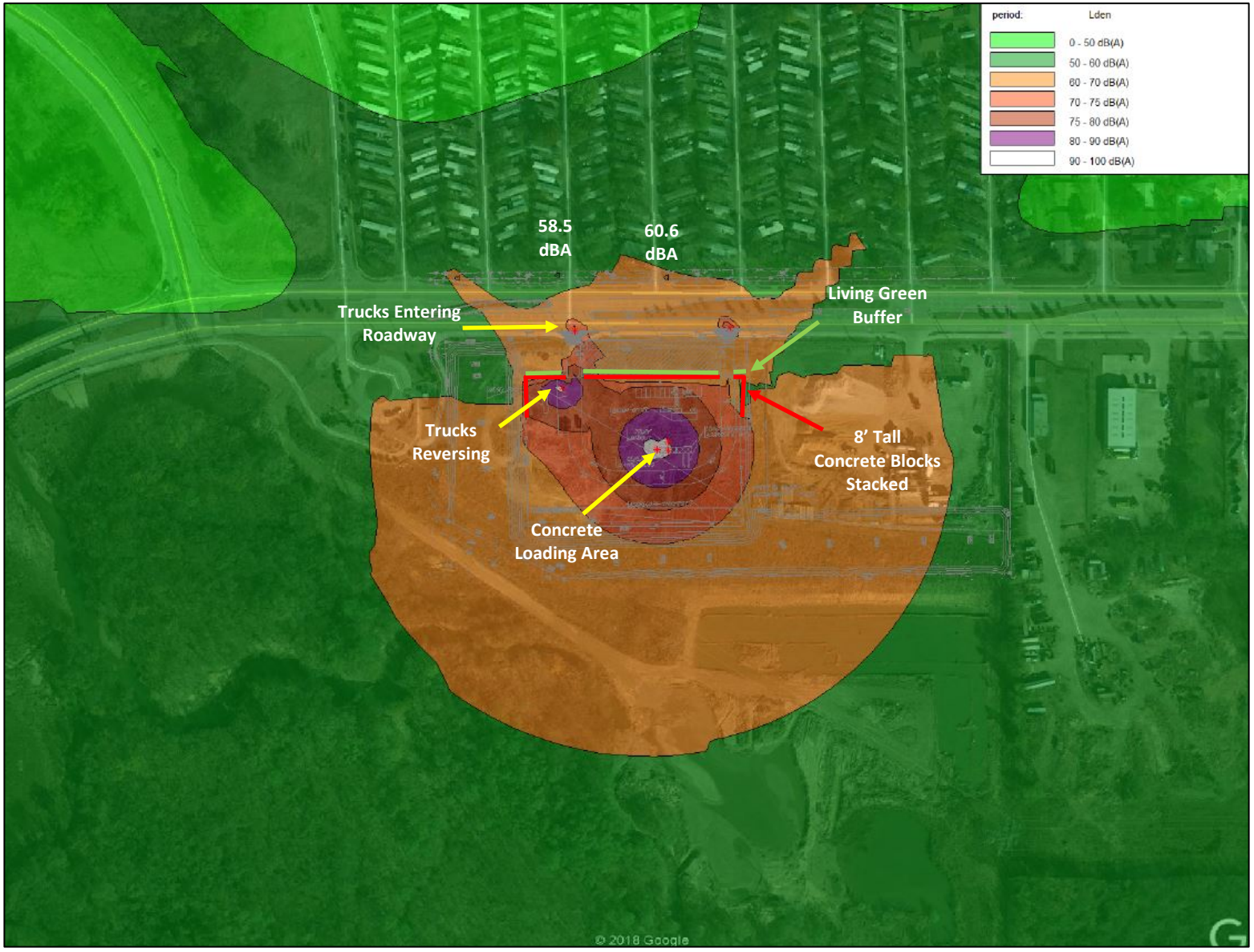

Figure 9.
Proposed Concrete Batch Plant – Concrete Barrier (8' Tall)
Notes: Predicted Noise Levels from Desoto Plant used to determine Noise at Proposed Plant in Grand Prairie