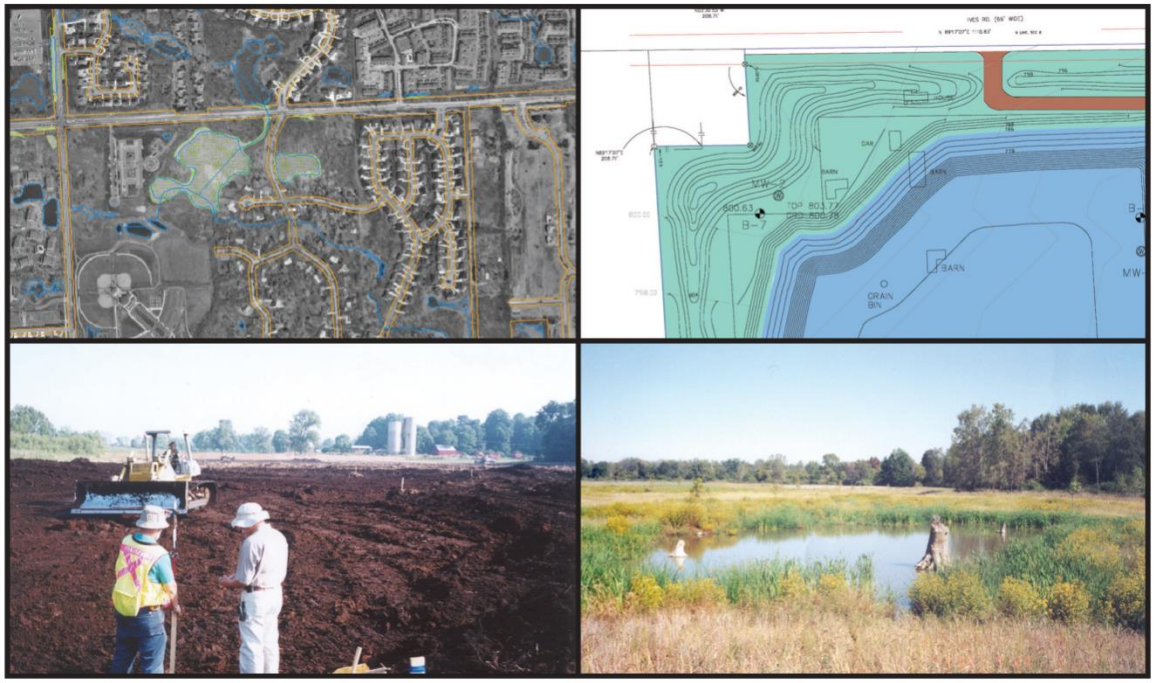
Noise Assessment
Saint Matthews Catholic School
5970 Audubon Road
Detroit, Michigan

Catholic Charities of Southeast Michigan

December 1, 2020

ASTI ENVIRONMENTAL



ASTI ENVIRONMENTAL

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Saint Matthews Catholic School
5970 Audubon Road
Detroit, Michigan

December 1, 2020

Report Prepared For:

Catholic Charities of Southeast Michigan
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ENVIRONMENTAL

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ATTACHMENTS

- **A** NAL Location Map
- **B** Airport Noise Contour Map
- **C** AADT Information
- **D** Day-Night Level Electronic Assessment

1.0 INTRODUCTION

Catholic Charities of Southeast Michigan proposes the adaptive reuse, utilizing funding provided from the Michigan State Housing Development Authority (MSHDA), of the Saint Matthew Elementary School and activities building into low-income housing at 5970 Audubon Road, Detroit, Michigan, referred to herein as “Subject Property”.

This assessment was conducted to provide the noise level and associated noise category at each designated Noise Assessment Location (NAL) at the Subject Property. This assessment does not include an evaluation of noise attenuation but general guidance is provided at the end of this assessment.

This evaluation was conducted per guidelines set forth in 24 CFR 51B. This noise analysis evaluates the Subject Property’s exposure to three major sources of noise: aircraft, roadways, and railways. If identified, additional non-transportation noise sources such as loud impulse sounds from nearby industry are also evaluated.

The following three sources of transportation noise and their applicable search distances are outlined below when evaluating noise at a site.

1. Aircraft - All military and FAA-regulated civil airfields within 15 miles of the Subject Property.
2. Roadways - Major roadways and limited access highways/freeways within 1,000 feet of the Subject Property utilizing a 10-year projection. Roadways considered are generally based on number of lanes, speed limit, presence of stop signs or lights, overall traffic counts, and/or number of medium or heavy trucks.
3. Railroad - All active railroads within 3,000 feet of the Subject Property.

The noise level calculated at a NAL is known as the day-night average sound level or DNL. A calculated DNL can fall within three categories as follow.

1. Acceptable - DNL not exceeding 65 decibels (dB)
2. Normally Unacceptable - DNL above the 65 dB threshold but not exceeding 75 dB
3. Unacceptable - DNL above 75 dB

Two NALs (NAL #1 and NAL #2) were selected on the Subject Property for this analysis based on proximity to noise sources. A map with the Subject Property boundaries and NAL locations is included as Attachment A.

The following is a summary of the applicable noise sources identified at the NALs.

NAL #1

Noise Source with Applicable Distance	**Name**	**Distance to NAL**
Airport(s)	Coleman A Young International Airport	3 miles
	Windsor International Airport	8.75 miles
	Selfridge Air National Guard Base	13.95 miles
Busy Road(s)	Harper Avenue	72 feet
	Whittier Avenue	326 feet
	I-94	365 feet
Railroad(s)	None	NA
Non-Transportation	None	NA

NAL #2

Noise Source with Applicable Distance	**Name**	**Distance to NAL**
Airport(s)	Coleman A Young International Airport	3 miles
	Windsor International Airport	8.75 miles
	Selfridge Air National Guard Base	13.95 miles
Busy Road(s)	Whittier Avenue	55 feet
	Harper Avenue	495 feet
	I-94	790 feet
Railroad(s)	None	NA
Non-Transportation	None	NA

2.0 EVALUATION OF NOISE SOURCES

2.1 Airports

Coleman A. Young International Airport is approximately 3 miles distant. Based on the Noise Contour Map for the airport (Attachment B), the site is not within a distance of concern.

Windsor International Airport is approximately 8.75 miles distant. Based on the Noise Contour Map for the airport (Attachment B), the site is not within a distance of concern.

Selfridge Air National Guard Base is approximately 13.95 miles distant. Based on the Noise Contour Map for the airport (Attachment B), the site is not within a distance of concern.

Other small airfields were identified within 15 miles, but these airfields have no commercial traffic and are not likely FAA-regulated. They are not considered to represent a noise concern.

2.2 Busy Roadways

The major roadways are:

- Harper Avenue
- Whittier Avenue
- I-94

Harper Ave. is a two-lane road and the speed limit is 30mph. The roadway is an approximate effective distance of 72 feet from the north western corner of the former school building (NAL #1). Traffic counts for Harper Ave. were obtained through MDOT. Projections were done through 2030. A growth rate of 1% per year compounded was judged appropriate as traffic levels are expected to remain relatively stable.

Whittier Ave. is a two-lane road and the speed limit is 25mph. The roadway is an approximate effective distance of 55 feet from the north eastern corner of the former activities building (NAL #2). Traffic counts for Whittier Ave. were obtained through MDOT. Projections were done through 2030. A growth rate of 1% per year compounded was judged appropriate as traffic levels are expected to remain relatively stable.

I-94 is a six-lane east and west bound highway with a center median. The speed limit is 55mph. The roadway is an approximate effective distance of 365 feet from the north western corner of the former school building (NAL #1). Traffic counts for I-94 were obtained through MDOT. Projections were done through 2030. A growth rate of 1% per year compounded was judged appropriate as traffic levels are expected to remain relatively stable or increase slightly. Traffic projections are included in Attachment C.

2.3 Railroads

Not applicable.

2.4 Non-Transportation Sources

Not applicable.

3.0 CALCULATIONS

Noise DNL calculator worksheets for the NALs are provided in Attachment D.

Using the HUD DNL calculator, the noise level at NAL #1, as predicted in 2030, is calculated to be 75 dB and within the Unacceptable range. However, HUD allows a one decibel variance for noise calculations. If noise attenuation calculations can be provided that show the building materials bring interior noise to 45 decibels, no further attenuation measures will be required.

Using the HUD DNL calculator, the noise level at NAL #2, as predicted in 2030, is calculated to be 73 dB and within the Normally Unacceptable range.

4.0 CONCLUSIONS

The following is a summary of the findings of this assessment.

NAL #	Combined Source DNL (dB)	Category
1	75	Unacceptable
2	73	Normally Unacceptable

5.0 REFERENCES

- 24 CFR Part 51 Subpart B
- The Noise Guidebook, U.S. Department of Housing and Urban Development,
- U.S. DOT
- https://mdot.ms2soft.com/
- https://www.hudexchange.info/programs/environmental-review/dnl-calculator/

HUD ATTENUATION GUIDANCE

https://www.hudexchange.info/programs/environmental-review/noise-abatement-and-control/

All sites whose environmental or community noise exposure exceeds the day night average sound level (DNL) of 65 decibels (dB) are considered noise-impacted areas. For new construction that is proposed in high noise areas, grantees shall incorporate noise attenuation features to the extent required by HUD environmental criteria and standards contained in Subpart B (Noise Abatement and Control) of 24 CFR Part 51. The interior standard is 45 dB.

The "Normally Unacceptable" noise zone includes community noise levels from above 65 dB to 75 dB. Approvals in this noise zone require a minimum of 5 dB additional sound attenuation for buildings having noise-sensitive uses if the day-night average sound level is greater than 65 dB but does not exceed 70 dB, or a minimum of 10 dB of additional sound attenuation if the day-night average sound level is greater than 70 dB but does not exceed 75 dB.

Locations with day-night average noise levels above 75 dB have “Unacceptable” noise exposure. For new construction, noise attenuation measures in these locations require the approval of the Assistant Secretary for Community Planning and Development (for projects reviewed under Part 50) or the Responsible Entity’s Certifying Officer (for projects reviewed under Part 58). The acceptance of such locations normally requires an environmental impact statement.

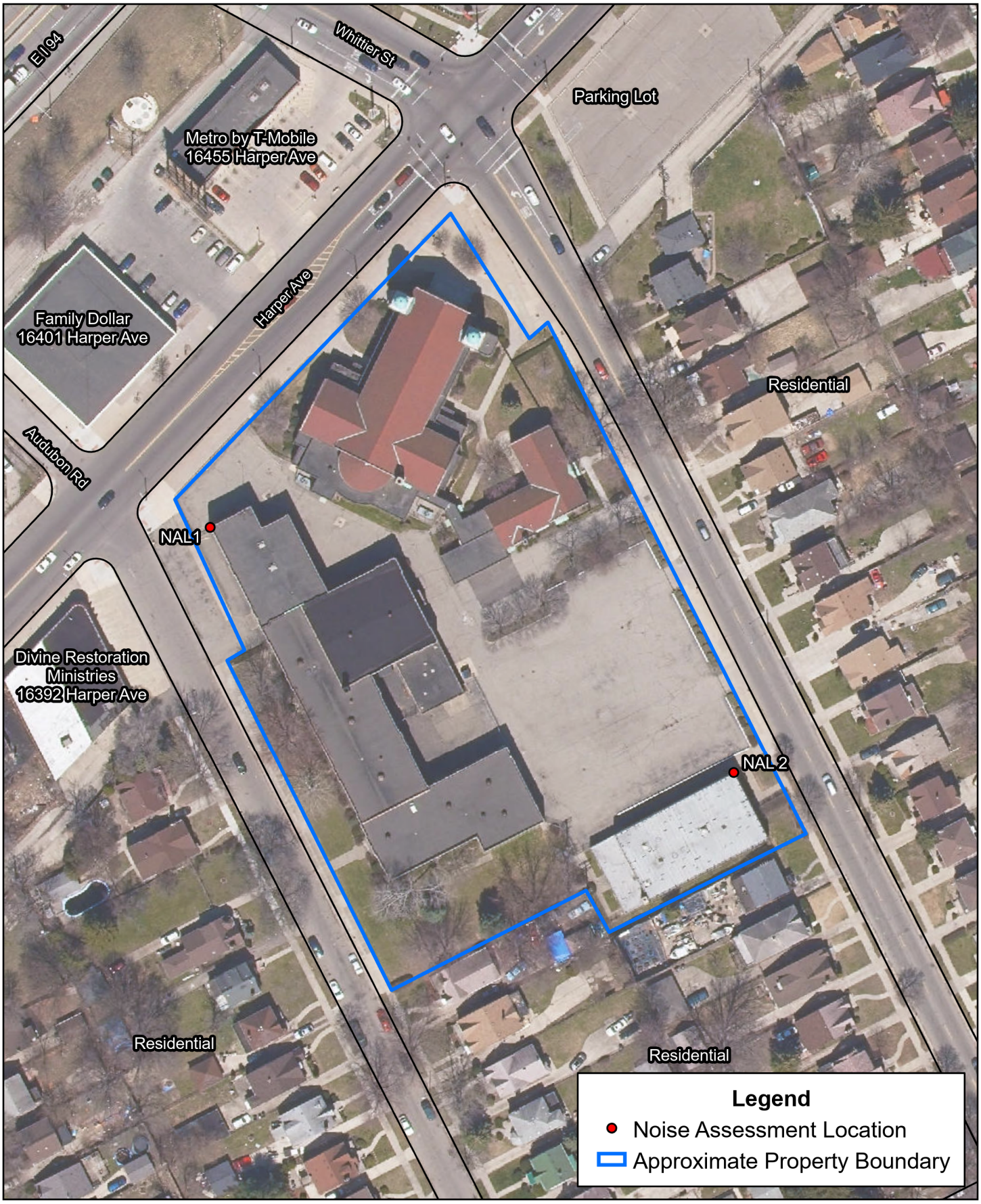
The environmental review record should contain **one** of the following:

- Documentation the proposed action is not within 1000 feet of a major roadway, 3,000 feet of a railroad, or 15 miles of a military or FAA-regulated civil airfield.
- If within those distances, documentation showing the noise level is *Acceptable* (at or below 65 DNL).
- If within those distances, documentation showing that there’s an effective noise barrier (i.e., that provides sufficient protection).

- Documentation showing the noise generated by the noise source(s) is *Normally Unacceptable (66 – 75 DNL)* and identifying noise attenuation requirements that will bring the interior noise level to 45 DNL and/or exterior noise level to 65 DNL.

ATTACHMENT A

NAL Location Map



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St. Matthew's Catholic School

5970 Audubon Road,
Detroit MI

0 50 100 200 Feet

N

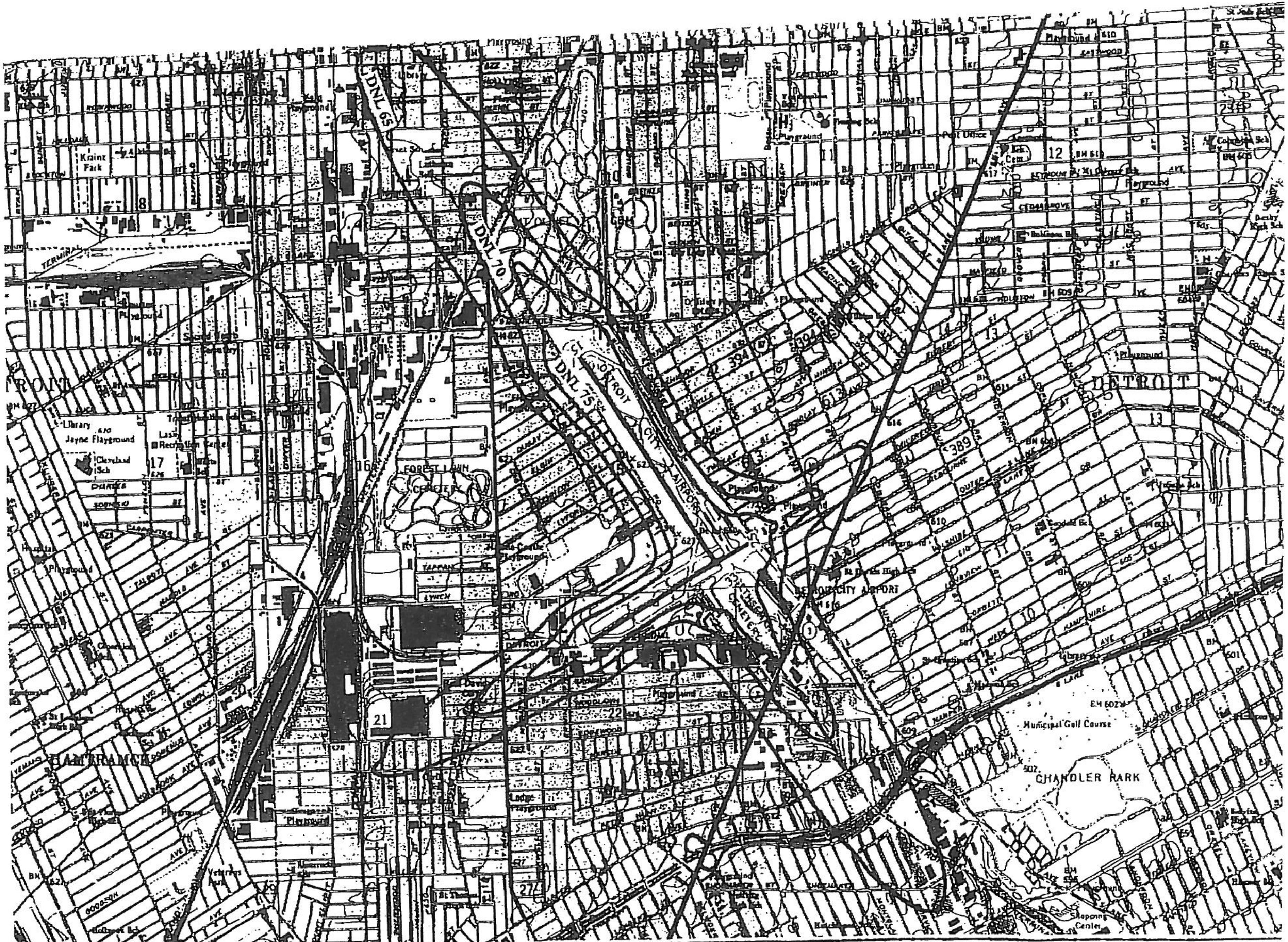
ASTI Environmental

Client: Catholic Charities of Southeast Michigan
Created by: RMH, December 8, 2020, ASTI Project 1-11685

Noise Assessment Location Map

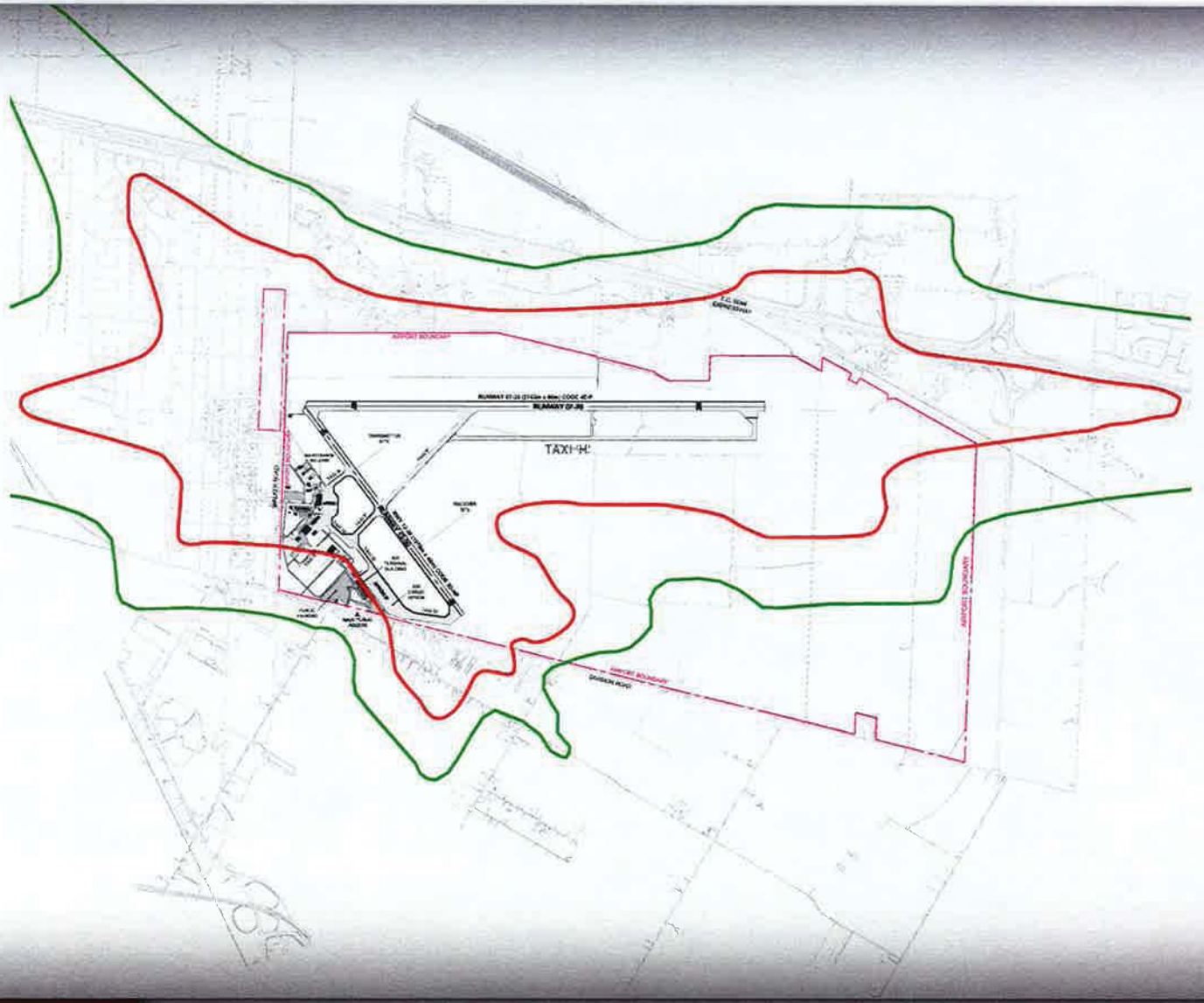
ATTACHMENT B

Airport Noise Contour Maps



CITY OF DETROIT
AIRPORT DEPARTMENT

1996 BASE
NOISE EXPOSURE CONTOURS



WINDSOR AIRPORT
MASTER PLAN

FIGURE 3-4 - AIRPORT NOISE EXPOSURE FORECAST CONTOURS

30 NEF (NOISE EXPOSURE FORECAST)

25 NEF

Notes

1. Conceptual Layout
2. All dimensions approximate
3. Noise Exposure Forecast provided by Windsor Airport Management

YQG YOUR QUICK GATEWAY
WINDSOR INTERNATIONAL AIRPORT

DILLON CONSULTING

Base data provided by City of Windsor Official Plan
Map created by EDH
Map checked by EGL

File Location: \\20dillon.dillon.ca\toronto data\PROJECTS\DRAFT\09\092665 Windsor Airport Master Plan

Map Projection: n/aTAXI 'H'

Project #: 09-2665
Status: n/a
Date: December 2010

N E W S

ENHANCED USE LEASE ZONE LEGEND

65 – AICUZ – NOISE CONTOURS

SELFRIDGE ANGB
ENHANCED USE LEASING (EUL)
AICUZ - NOISE CONTOURS

ATTACHMENT C

AADT Information

Auto and Heavy Truck 10-year ADT Projections

Harper Ave.

	Cars	% Change	Trucks	% Change
2017	5897		512.8	
2018	5897	0.0	512.8	0.0
2019	5868	-0.5	510.24	-0.5
	Avg % change:	-0.2	Avg % change:	-0.25
	% Change/Year Assumption	1	**%/Year Change Assumption**	1

2030 Projections

	Cars	Trucks
2019	5868	510
2020	5926	515
2021	5986	520
2022	6046	526
2023	6106	531
2024	6167	536
2025	6229	542
2026	6291	547
2027	6354	553
2028	6417	558
2029	6482	564
2030	6546	569

Predicted 2030 Auto ADT	Predicted 2030 Truck ADT
6546	569

Auto and Heavy Truck 10-year ADT Projections

Whittier

	Cars	% Change	Trucks	% Change
2016	8205		713.52	
2017	8542	4.1	742.8	4.1
2018	8542	0.0	742.8	0.0
2019	8500	-0.5	739.12	-0.5
	Avg % change:	1.2	Avg % change:	1.20
	% Change/Year Assumption	1	**%/Year Change Assumption**	1

2030 Projections

	Cars	Trucks
2019	8500	739
2020	8585	747
2021	8671	754
2022	8757	762
2023	8845	769
2024	8933	777
2025	9023	785
2026	9113	792
2027	9204	800
2028	9296	808
2029	9389	816
2030	9483	825

Predicted 2030 Auto ADT	Predicted 2030 Truck ADT
9483	825

Auto and Heavy Truck 10-year ADT Projections

I-94-Edsel Ford Freeway

	Cars	% Change	Trucks	% Change
2009	102884		12716	
2011	94785	-7.9	11715	-7.9
2012	96921	2.3	11979	2.3
2013	98078	1.2	12122	1.2
2014	100432	2.4	12412.95	2.4
2015	99858	-0.6	12342	-0.6
2016	105643	5.8	13057	5.8
2017	107783	2.0	13321.44	2.0
2018	107783	0.0	13321.44	0.0
2019	104822	-2.7	12955.58	-2.7
	Avg % change:	0.3	Avg % change:	0.28
	Avg % change (Last 5-yr Trend):	1.3	Avg % change (Last 5-yr Trend):	1.29
	% Change/Year Assumption	1	**%/Year Change Assumption**	1

2030 Projections

	Cars	Trucks
2019	104822	12956
2020	105871	13085
2021	106929	13216
2022	107999	13348
2023	109079	13482
2024	110169	13616
2025	111271	13753
2026	112384	13890
2027	113508	14029
2028	114643	14169
2029	115789	14311
2030	116947	14454

Predicted 2030 Auto ADT	Predicted 2030 Truck ADT
116947	14454

ATTACHMENT D

Day-Night Level Electronic Assessments

DNL Calculator

The Day/Night Noise Level Calculator is an electronic assessment tool that calculates the Day/Night Noise Level (DNL) from roadway and railway traffic. For more information on using the DNL calculator, view the **Day/Night Noise Level Calculator Electronic Assessment Tool Overview (/programs/environmental-review/daynight-noise-level-electronic-assessment-tool/)**.

Guidelines

- To display the Road and/or Rail DNL calculator(s), click on the "Add Road Source" and/or "Add Rail Source" button(s) below.
- All Road and Rail input values must be positive non-decimal numbers.
- All Road and/or Rail DNL value(s) must be calculated separately before calculating the Site DNL.
- All checkboxes that apply must be checked for vehicles and trains in the tables' headers.
- **Note #1:** Tooltips, containing field specific information, have been added in this tool and may be accessed by hovering over all the respective data fields (site identification, roadway and railway assessment, DNL calculation results, roadway and railway input variables) with the mouse.
- **Note #2:** DNL Calculator assumes roadway data is always entered.

DNL Calculator

Site ID	1-11685
Record Date	12/01/2020
User's Name	ASTI Environmental NAL 1

Road # 1 Name:	**Harper Ave.**

Road #1

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	72	72	72
Distance to Stop Sign			
Average Speed	30	30	30
Average Daily Trips (ADT)	6546	285	284
Night Fraction of ADT	15	15	15
Road Gradient (%)			2
Vehicle DNL	58	55	66

Calculate Road #1 DNL | 67 | Reset

Road # 2 Name: **Whittier**

Road #2

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	326	326	326
Distance to Stop Sign			
Average Speed	25	25	25
Average Daily Trips (ADT)	9483	413	412
Night Fraction of ADT	15	15	15
Road Gradient (%)			2
Vehicle DNL	48	45	58

Calculate Road #2 DNL | 59 | Reset

Road # 3 Name:	I-94

Road #3

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	365	365	365
Distance to Stop Sign			
Average Speed	55	55	55
Average Daily Trips (ADT)	116947	2628	11826
Night Fraction of ADT	15	15	15
Road Gradient (%)			2
Vehicle DNL	65	59	73
Calculate Road #3 DNL	74	Reset	

Add Road Source | Add Rail Source

Airport Noise Level	
Loud Impulse Sounds?	○Yes ◉No
Combined DNL for all Road and Rail sources	**75**
Combined DNL including Airport	**N/A**
Site DNL with Loud Impulse Sound	

Calculate Reset

Mitigation Options

If your site DNL is in Excess of 65 decibels, your options are:

- **No Action Alternative**: Cancel the project at this location
- **Other Reasonable Alternatives**: Choose an alternate site
- **Mitigation**
  - **Contact your Field or Regional Environmental Officer (/programs/environmental-review/hud-environmental-staff-contacts/)**
  - Increase mitigation in the building walls (only effective if no outdoor, noise sensitive areas)
  - Reconfigure the site plan to increase the distance between the noise source and noise-sensitive uses
  - Incorporate natural or man-made barriers. See ***The Noise Guidebook (/resource/313/hud-noise-guidebook/)***
  - Construct noise barrier. See the **Barrier Performance Module (/programs/environmental-review/bpm-calculator/)**

Tools and Guidance

Day/Night Noise Level Assessment Tool User Guide (/resource/3822/day-night-noise-level-assessment-tool-user-guide/)

Day/Night Noise Level Assessment Tool Flowcharts (/resource/3823/day-night-noise-level-assessment-tool-flowcharts/)

DNL Calculator

The Day/Night Noise Level Calculator is an electronic assessment tool that calculates the Day/Night Noise Level (DNL) from roadway and railway traffic. For more information on using the DNL calculator, view the **Day/Night Noise Level Calculator Electronic Assessment Tool Overview (/programs/environmental-review/daynight-noise-level-electronic-assessment-tool/)**.

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- **Note #2:** DNL Calculator assumes roadway data is always entered.

DNL Calculator

Site ID	1-11685
Record Date	12/01/2020
User's Name	ASTI Environmental NAL 2

Road # 1 Name:	**Harper Ave.**

Road #1

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	495	495	495
Distance to Stop Sign			
Average Speed	30	30	30
Average Daily Trips (ADT)	6546	285	284
Night Fraction of ADT	15	15	15
Road Gradient (%)			2
Vehicle DNL	46	42	54
Calculate Road #1 DNL	55	Reset	

Road # 2 Name:	**Whittier**

Road #2

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	55	55	55
Distance to Stop Sign			
Average Speed	25	25	25
Average Daily Trips (ADT)	9483	413	412
Night Fraction of ADT	15	15	15
Road Gradient (%)			2
Vehicle DNL	60	56	70
Calculate Road #2 DNL	70	Reset	

Road # 3 Name:	I-94

Road #3

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	790	790	790
Distance to Stop Sign			
Average Speed	55	55	55
Average Daily Trips (ADT)	116947	2628	11826
Night Fraction of ADT	15	15	15
Road Gradient (%)			2
Vehicle DNL	60	54	68
Calculate Road #3 DNL	69	Reset	

Add Road Source | Add Rail Source

Airport Noise Level	
Loud Impulse Sounds?	○Yes ◉No
Combined DNL for all Road and Rail sources	**73**
Combined DNL including Airport	**N/A**
Site DNL with Loud Impulse Sound	

Calculate Reset

Mitigation Options

If your site DNL is in Excess of 65 decibels, your options are:

- **No Action Alternative**: Cancel the project at this location
- **Other Reasonable Alternatives**: Choose an alternate site
- **Mitigation**
  - **Contact your Field or Regional Environmental Officer (/programs/environmental-review/hud-environmental-staff-contacts/)**
  - Increase mitigation in the building walls (only effective if no outdoor, noise sensitive areas)
  - Reconfigure the site plan to increase the distance between the noise source and noise-sensitive uses
  - Incorporate natural or man-made barriers. See ***The Noise Guidebook (/resource/313/hud-noise-guidebook/)***
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- **SOIL AND GROUNDWATER ASSESSMENTS**
- **SOIL AND GROUNDWATER REMEDIATION**
- **STORAGE TANK COMPLIANCE AND CLOSURE**
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ASTI ENVIRONMENTAL
Detroit/Grand Rapids/Brighton

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