GORDON BRICKEN & ASSOCIATES

ACOUSTICAL and ENERGY ENGINEERS

October 27, 2006

ACOUSTICAL ANALYSIS

ALTAMONT MOTORSPORTS PARK

COUNTY OF ALAMEDA

Prepared by:

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/mmb

Prepared for:

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SUMMARY

Measurements were performed at and around the Altamont Motorsports Park on October 14 and October 15, 2006 for the purpose of establishing the existing conditions. All the events were monitored either by manned or automatic stations located on and around the track.

The existing track operations were found to yield the following results:

1. The existing limit of 95 dBA at 100 feet from the edge of the track appears to be met at most locations. It would not be met on the pit side of the track.

2. The existing limits of the County's Noise Ordinance are not being met in an area roughly 1,200 to 3,000 feet depending on the direction from the site.

3. Mitigation of the existing noise levels to insure compliance with the Noise Ordinance at all locations within the affected zone most likely cannot occur. Some amount of noise reduction is feasible.

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1.0 INTRODUCTION

This study has been completed to ascertain the potential noise impacts of the existing Altamont Motorsports Park upon the surrounding community and to determine the need and design of mitigation measures.

2.0 DESCRIPTION OF THE PROJECT

The project location is shown on Exhibit 1. This Exhibit is derived from the 7.5 Minute USGS Midway Quadrangle. It was the only available regional map with grading contours. It was assumed that the location of the motorsports park shown on this map is accurate. The project is situated in a shallow bowl. The surrounding terrain is rolling hills.

3.0 ASSESSMENT CRITERIA

Section 6.60.040 of the Alameda County Code contains limits on the allowable noise levels for various uses. The Standards for residential uses are given in Table 1.

TABLE 1

NOISE STANDARDS FOR RESIDENTIAL USES

ALLOWED DURATION	ALLOWED LIMIT DAY	NIGHT	SYMBOL
30 minutes in hour	50	45	L50
15 minutes in hour	55	50	L25
5 minutes in hour	60	55	L8
1 minute in hour	65	60	L2
Maximum	70	65	Lmax

(1) Day = 7:00 A.M. to 10:00 P.M.
Night = 10:00 P.M. to 7:00 A.M.

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The track is currently operating under a Conditional Use Permit that established a maximum limit of 95 dBA from the edge of the track.

4.0 DESCRIPTION OF TRACK OPERATIONS

The track was hosting NASCAR related events, stock cars, and motorcycles. The published schedule is contained in Appendix 1. The actual schedule varied slightly from the published schedule.

The track layout is shown on Exhibit 2. The track can be configured as a half mile oval, a quarter mile oval, a Figure 8 Course and a Road Course. The road course is made up of elements of each of the other courses. On this weekend, the NASCAR related events were on the half mile oval, the stock cars on the quarter mile oval and the motorcycles on both the quarter mile oval and the road course.

Each class of vehicles is allowed practice times, a qualifying run, preliminary heats in some cases and a final event. The number of cars on the track will vary during practice times typically from six to ten. Qualifying is usually one vehicle for two trips around a course, although on this weekend, two cars were on the track at one time in some qualifying periods. Heats consisted on six to twelve vehicles. The final events had as many as 32 vehicles.

The types of vehicles varied, but bore some similar appearances. A typical Limited Sportsman car is shown on Exhibit 3 in the upper photo. A NASCAR Grand National West (GNW) car looks similar. The GNW cars are usually former NASCAR Nextel Cup cars. The lower photo of Exhibit 3 depicts the pit area of the track located on the south side of the facility. This is a cold pit (meaning that cars cannot enter this area during a race unless all cars do so at the same time). This is why the schedule for the main 200 lap event on both days shows a break halfway through the event so all cars can get off the track at the same time and get fuel and tires.

5.0 MEASUREMENT CONDITIONS

Measurements were taken at eight locations around the track on Saturday, October 14, 2006 and Sunday, October 15, 2006. The equipment used consisted of Larson-Davis, Model 700, Integrating Sound Level meters, Bruel and Kjaer, Model 2209, Sound Level Meter, Ono Sokki, Model LA1250, Sound Level Meter, a Bruel and Kjaer, Model 2306, Portable Level Recorder, a Bruel and Kjaer,

Model 2317, Portable Level Recorder and a Fujitsu Lifebook computer.

The measurement locations are shown on Exhibit 4. The locations are the ones used by the County in their surveys of track noise. The following photos depict aspects of the sites that will affect sound propagation:

1. Exhibit 5. The upper photo shows the view of the track from Position 2. Most of the track is visible. This location is about 100 feet higher in elevation than the track. The lower photo shows the view from Position 3 behind the scoreboard on the east side of the track. This location is lower than the track grade.

2. Exhibit 6. The upper photo shows the view of the track from Position 4. The stands are visible. This location is higher in elevation than the track. The lower photo shows the view from Position 5. Only the upper portion of the light towers are visible. This location is higher than the track grade.

3. Exhibit 7. The upper photo shows the view looking toward the track from Position 6. The track is not visible. The structure in the background is a freeway overpass over Midway Road. The lower photo shows the view from Position 7. The track is not visible from this location.

4. Exhibit 8. The upper photo shows the view looking toward the track from Position 8, which is located at the south fence line below Position 2. Note that the near portion of the track in the turn is not visible. The lower photo illustrates the fact that a southwest wind was blowing most of the time during the weekend. This wind ranged from five (5) to 20 miles per hour depending on the measurement location. Temperatures ranged from 65 to 76 degrees and the relative humidity was from 32 to 54 percent.

6.0 AMBIENT CONDITIONS

Spot ambient noise measurements were conducted at all the off-track locations at various times during the weekend. However, there was some variation from time to time. The typical results are plotted on Exhibit 9. The results are given in Table 2 on the following page.

TABLE 2

TYPICAL HOURLY AMBIENT NOISE CONDITIONS

POSITION	Lmax	L2	L8	L25	L50	Lmin
#2	60	59	58	56	54	44
#3	77	68	64	61	59	52
#4	64	62	60	58	56	52
#5	67	55	54	51	49	47
#6	85	65	61	58	55	52
#7	82	62	55	50	44	40

7.0 MEASUREMENT RESULTS

Automatic monitors were placed at all but Positions #6 and #7. The plots of the maximum and L50 levels are contained in Appendix 2. Inspection of these plots indicates that the highest levels tended to occur for the last event of the each day, which was a 200 lap main event.

Positions #6 and #7 did not have automatic monitors. However, spot measurements over the course of the two days indicated that the events were either not audible or just barely audible. As such, they could not be separated from the ambient noise records. This would indicate that the event levels never exceeded the ambient noise levels.

The Grand National West even on Sunday, October 15, tended to produce higher noise levels than the Limited Sportsman events of Saturday, October 14, 2006, as illustrated by the graphs shown on Exhibit 10 for Position #2. The maximum trackside level was 113 dBA. The distribution is very narrow with 79 percent of passes in the 109 to 113 dBA range.

While all of the parameters listed in the Noise Ordinance are of interest, compliance is really determined by the maximum noise level and the land use. Position #2 is a clear residential land use. The other locations were either on the track property or did not exceed the ambient. However, Position #5 is near a residential property line. Unfortunately, this location did not have an automatic monitor on October 15, 2006, so a full hour could not be graphed.

The noise distribution at Position 2 on October 15, 2006 is illustrated on Exhibit 10. All of the parameters exceeded the allowed limits of the Noise Ordinance for the hour listed. The 93 dBA is a one time occurrence. The levels exceed the maximum allowed 70 dBA limit about 30 percent of the time. Exhibit 11 is a plot of Position 5 based on a five minute sample which will be used to illustrate what might have happened for the full hour.

Inspection of the that Exhibit indicates the maximum noise limit was not exceeded, but the levels for all the other limits were higher than allowed by the Noise Ordinance. This illustrates the fact that the difference between the highest and lowest levels tend to decrease as the distance from the track increases.

The measurement points are basically benchmarks. Using these benchmarks and a plotting program, it is possible to construct a reasonable facsimile of the area wide noise levels in the form of contours of constant value. Such a contour is shown on Exhibit 12 for the Grand National West event. This contour set is a macroscopic projection since the rolling hills and valleys cannot be approximated at every location in this area. Therefore, the contour should not be taken to assume that it accurately depicts every location, but it does describe the potential for compliance as the contour tends to describe the worst possible condition.

The track's currently allowed maximum limit of 95 dBA appears to be met during all track operations except in the pit area. This is because there is no shielding in the form of walls, buildings or grandstands that are on most of the other side of the track.

8.0 MITIGATION FEASIBILITY

It is clear that a portion of the area around the track site does exceed the allowed limits of the County's Noise Ordinance at times. It is not the purpose of this study to design mitigation measures for the facility. There is simply not enough accurate information on the track's design or the terrain elevations in the surrounding area. However, some direction toward successful mitigation measures can be obtained from the information gathered in this study.

There are two criteria to be considered in mitigation. One is the current approved maximum limit of 95 dBA at 100 feet from the track. The other is the County's Noise Ordinance maximum limit of 70 dBA any place on a residential property.

Position #8 at the common property line will be in the 85 to 95 dBA range so it will comply with the 95 dBA track limit. However, the maximum noise level will be 18 to 25 dBA higher than the allowed 70 dBA limit of the Noise Ordinance. Position #2 at 93 dBA clearly exceeds the allowed 70 dBA limit by as much as 23 dBA.

Meeting the 70 dBA Noise Ordinance limit at the property line could be accomplished with a barrier ten to twelve (10 to 12) feet high on the west edge of the track. This barrier would also provide noise reduction no matter where cars are on the track.

Meeting the 70 dBA Noise Ordinance limit at Position #2 is a much more complicated matter because that location is elevated above the track. A sound barrier placed on the edge of the west side of the track will provide noise reduction to the location at Position #2. Exhibit 13 illustrates the relationship between the barrier height and the noise reduction. A 23 dBA noise reduction requires a barrier about 38 feet in height. However, that barrier height does not shield the east turn of the track. The exposed portion would still produce a maximum level around 80 dBA, or 10 dBA higher than the allowed level of 70 dBA. Shielding the far portion of the track would require a barrier over 40 feet high at the edge of the west side of the track.

Compliance on the property near Position #5 could be accomplished with some type of sound barrier at the common property line. The exact height and extent would need further research, but such a barrier could be in the ten to twelve (10 to 12) foot high range.

9.0 CONCLUSIONS

The existing track operations were found to yield the following results:

1. The existing limit of 95 dBA at 100 feet from the edge of the track appears to be met at most locations. It would not be met on the pit side of the track.

2. The existing limits of the County's Noise Ordinance are not being met in an area roughly 1,200 to 3,000 feet depending on the direction from the site.

3. Mitigation of the existing noise levels to insure compliance with the Noise Ordinance at all locations within the affected zone most likely cannot occur. Some amount of noise reduction is feasible.

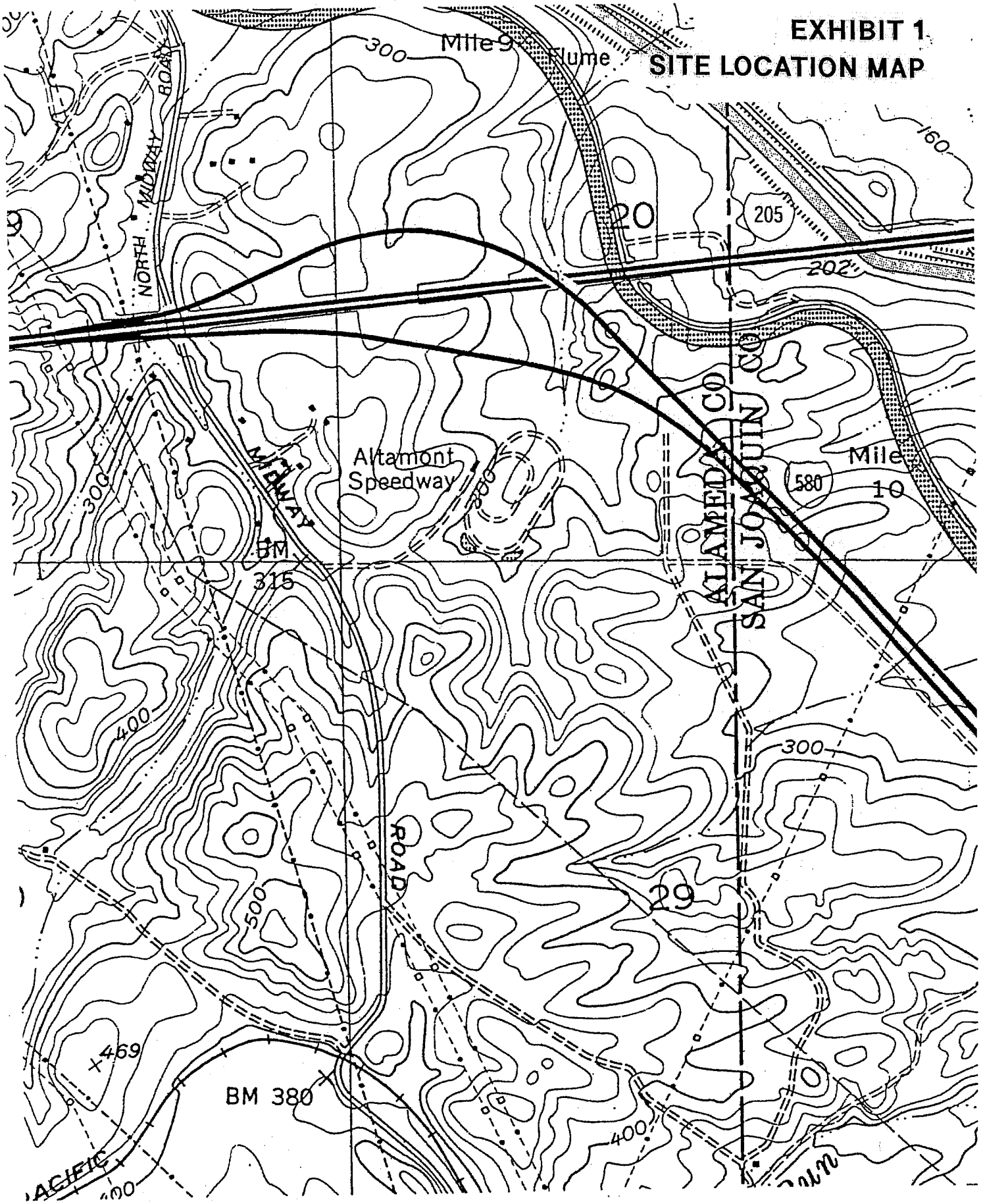
APPENDIX 1

TRACK SCHEDULES

A P P E N D I X 2

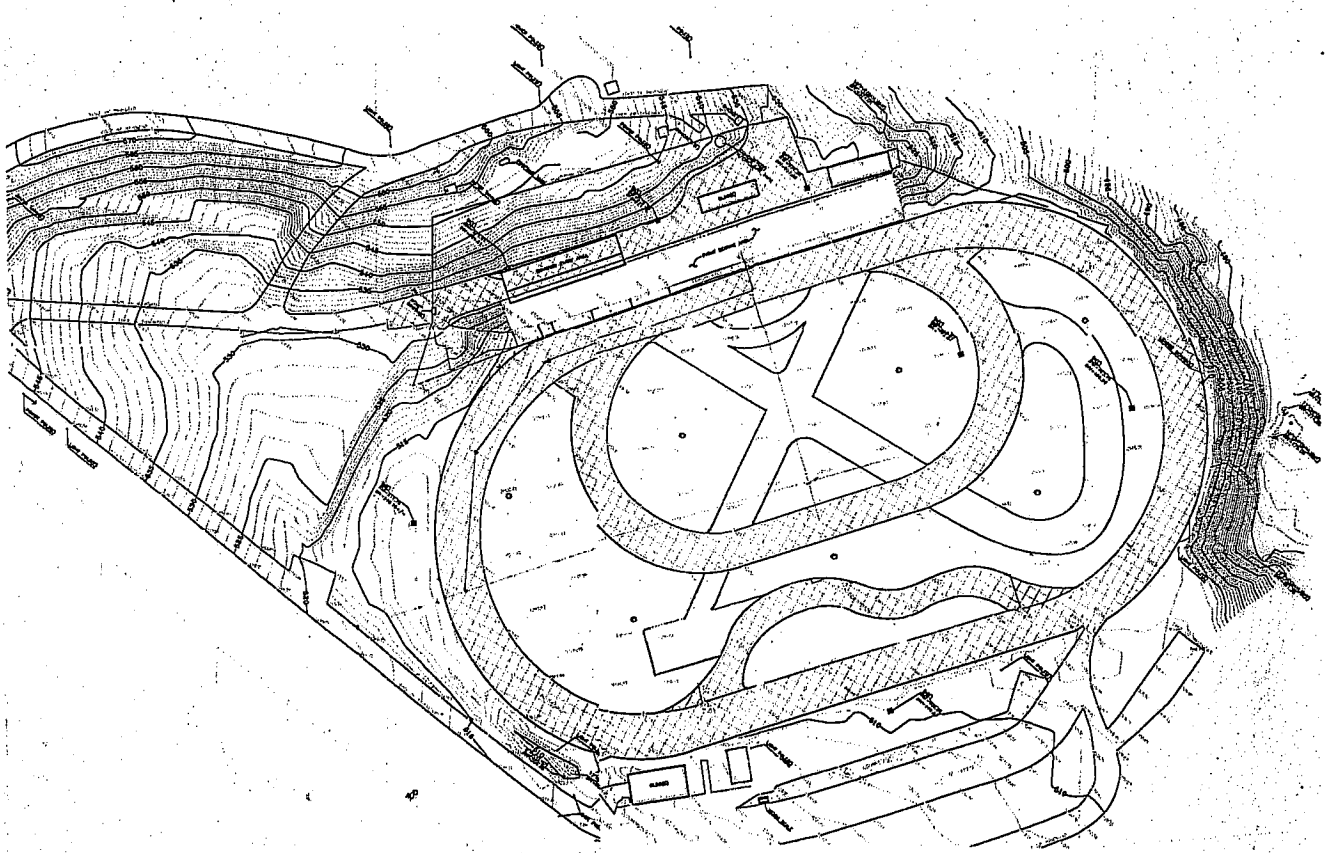
15 MINUTE Lmax AND L50 GRAPHS

EXHIBIT 1
SITE LOCATION MAP



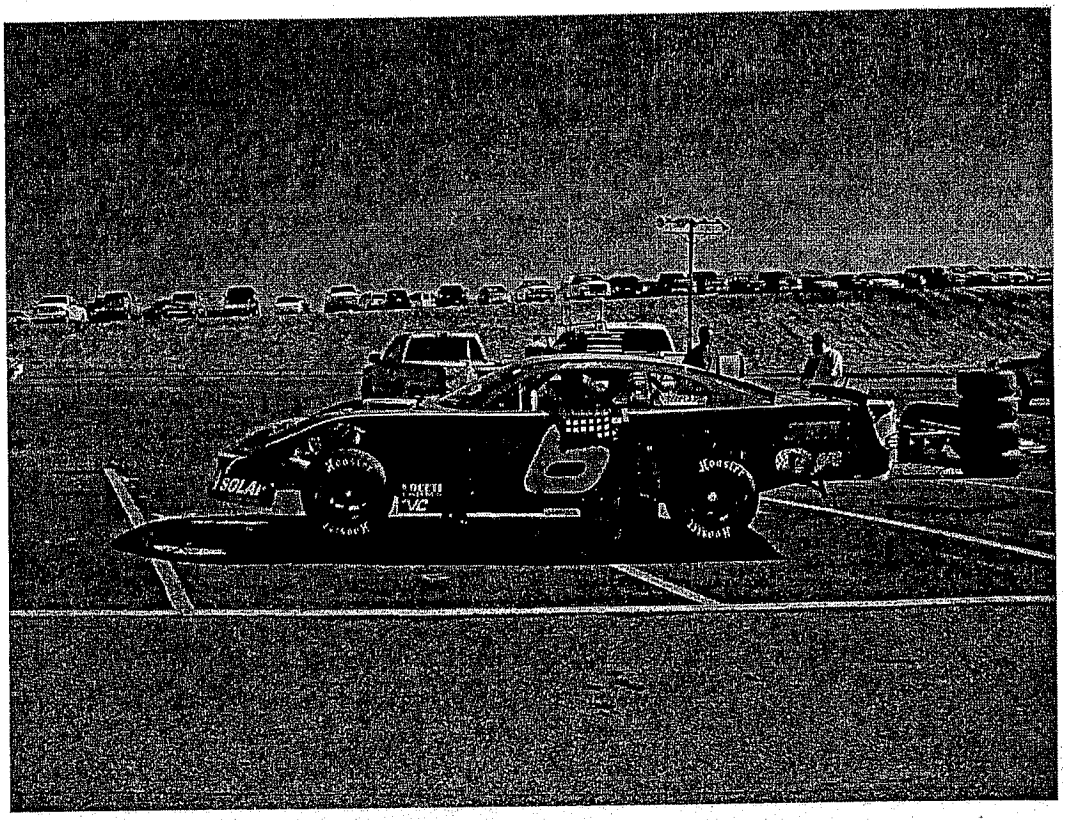
SCALE 1" = 1,000'

EXHIBIT 2
SITE MAP

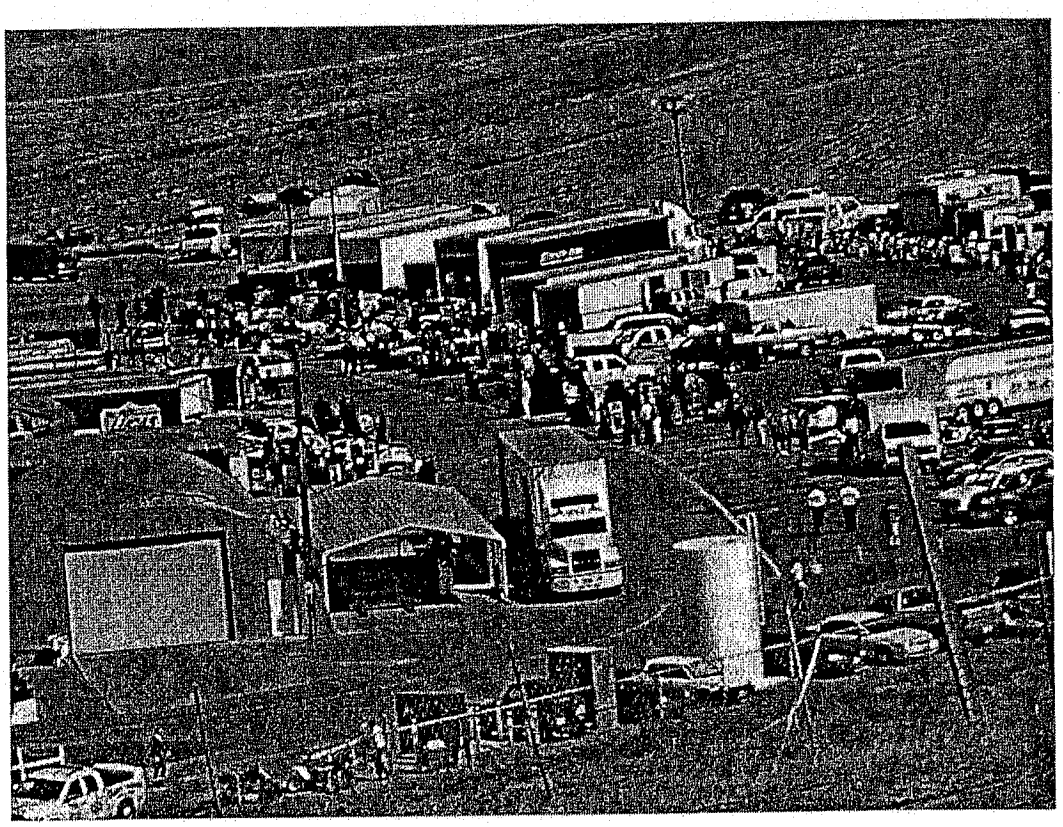


SCALE 1" = 240'

EXHIBIT 3



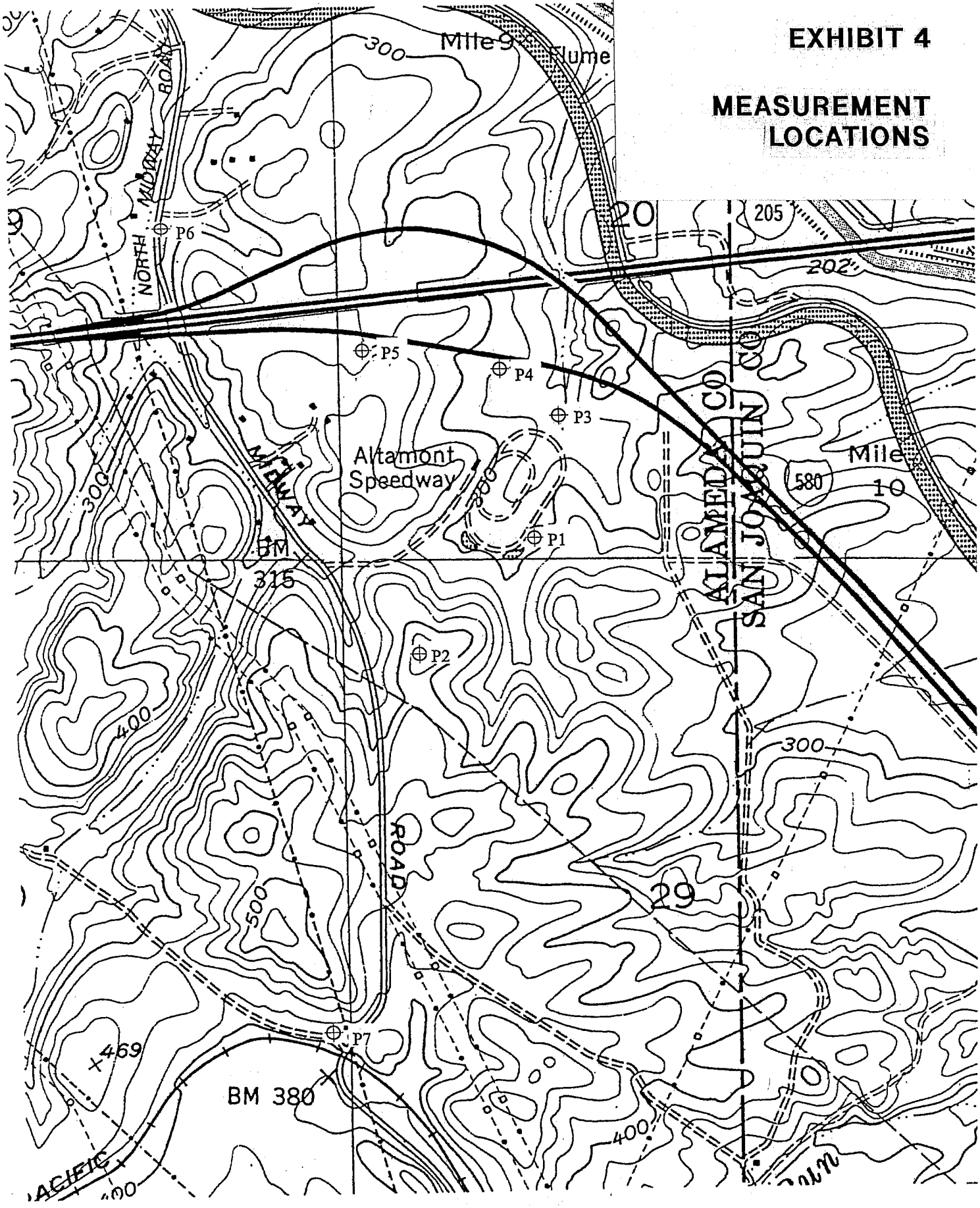
VIEW OF TYPICAL OVAL TRACK CAR



VIEW OF PIT AREA

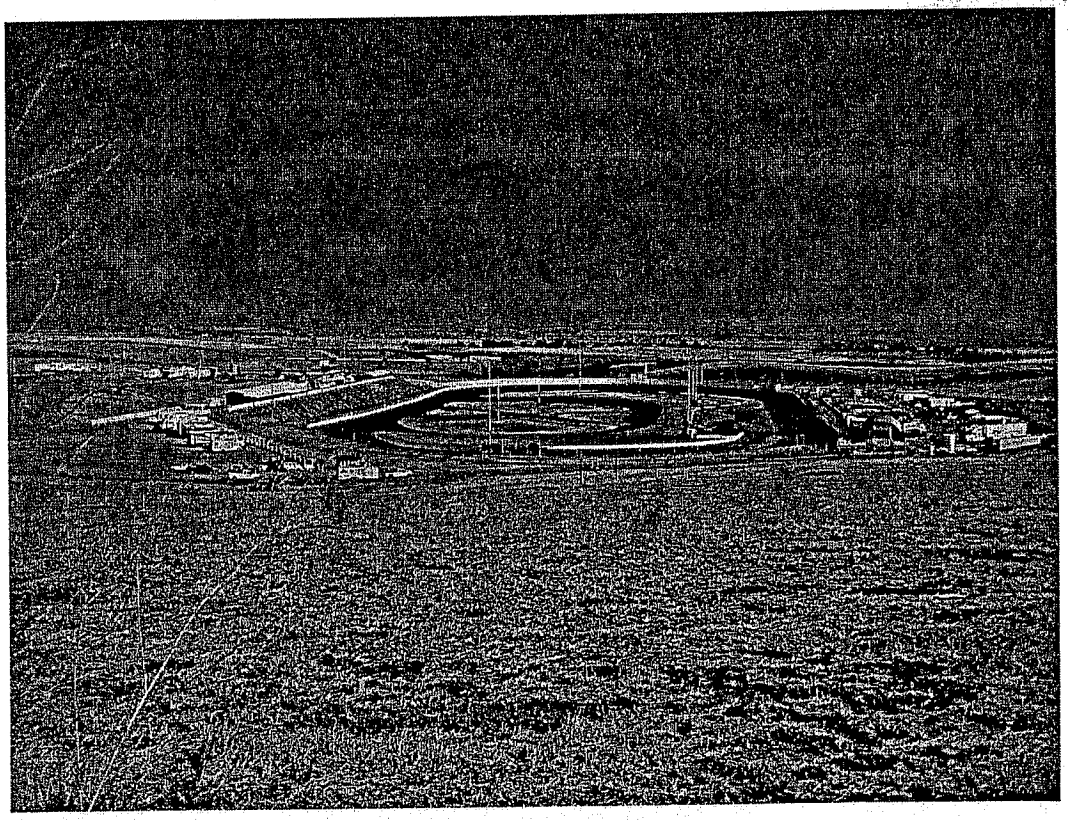
EXHIBIT 4

MEASUREMENT LOCATIONS



SCALE 1" = 1,000'

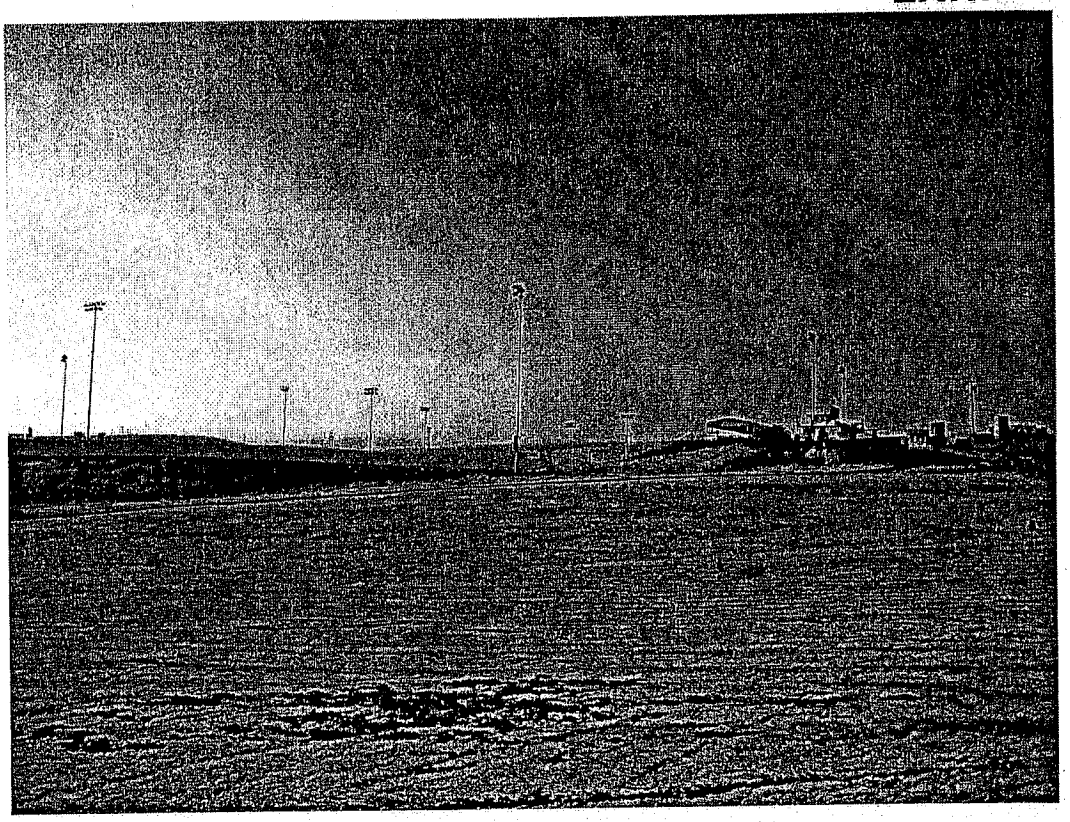
EXHIBIT 5



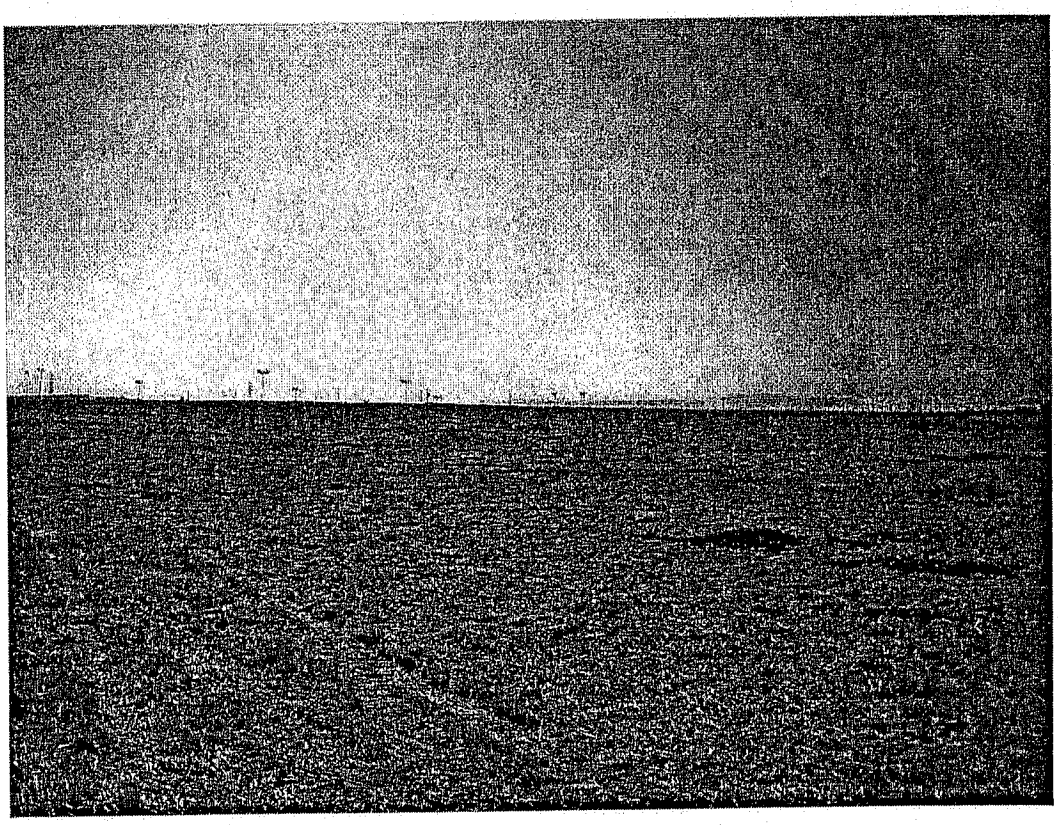
VIEW FROM POSITION 2

VIEW FROM POSITION 3

EXHIBIT 6



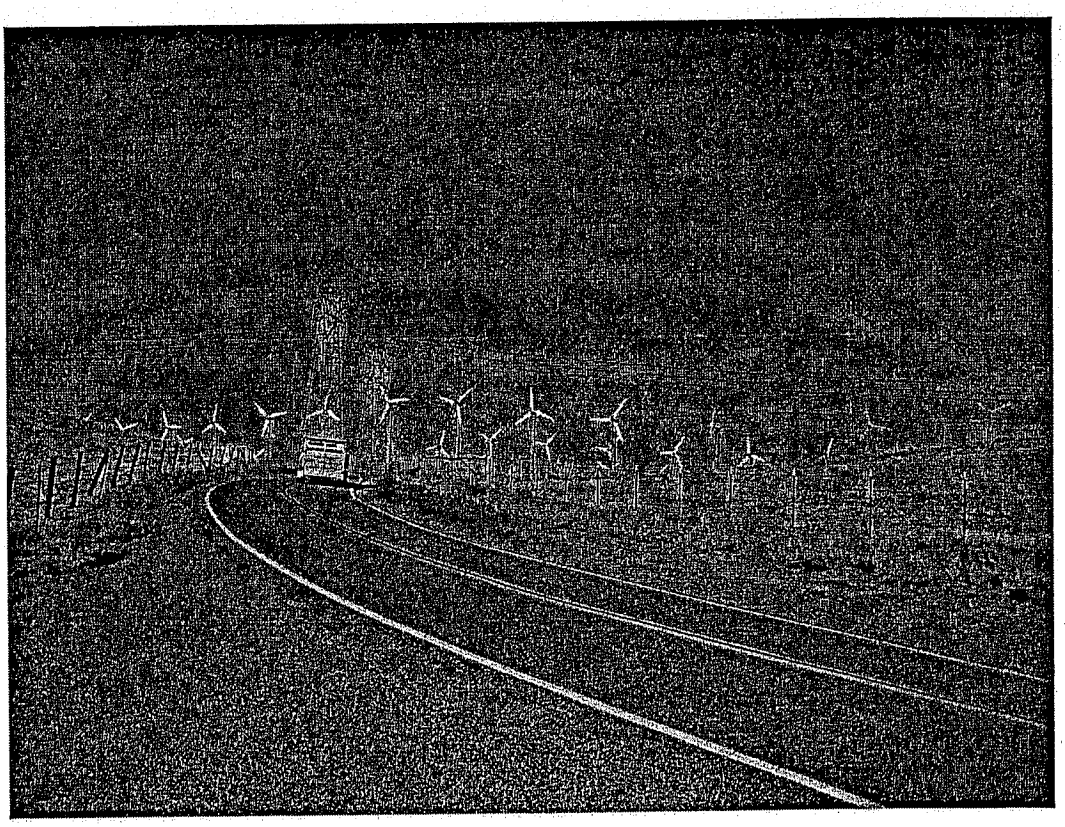
VIEW FROM POSITION 4



VIEW FROM POSITION 5

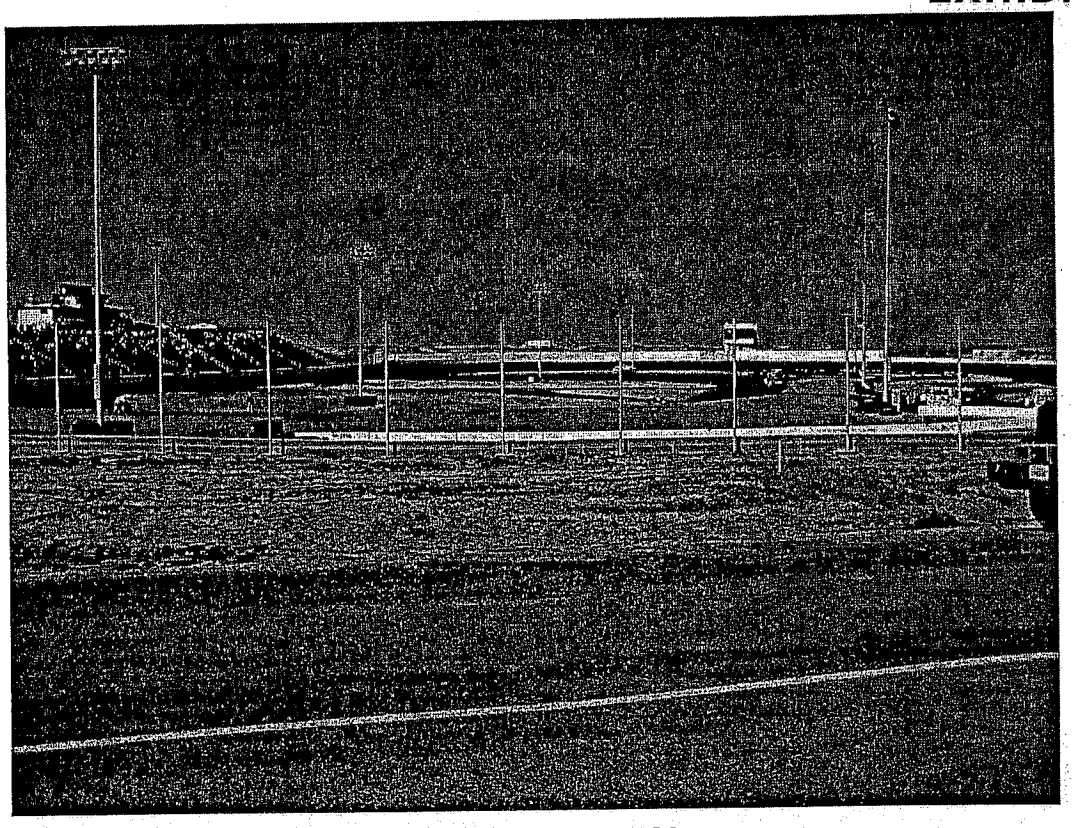
EXHIBIT 7

VIEW FROM POSITION 6

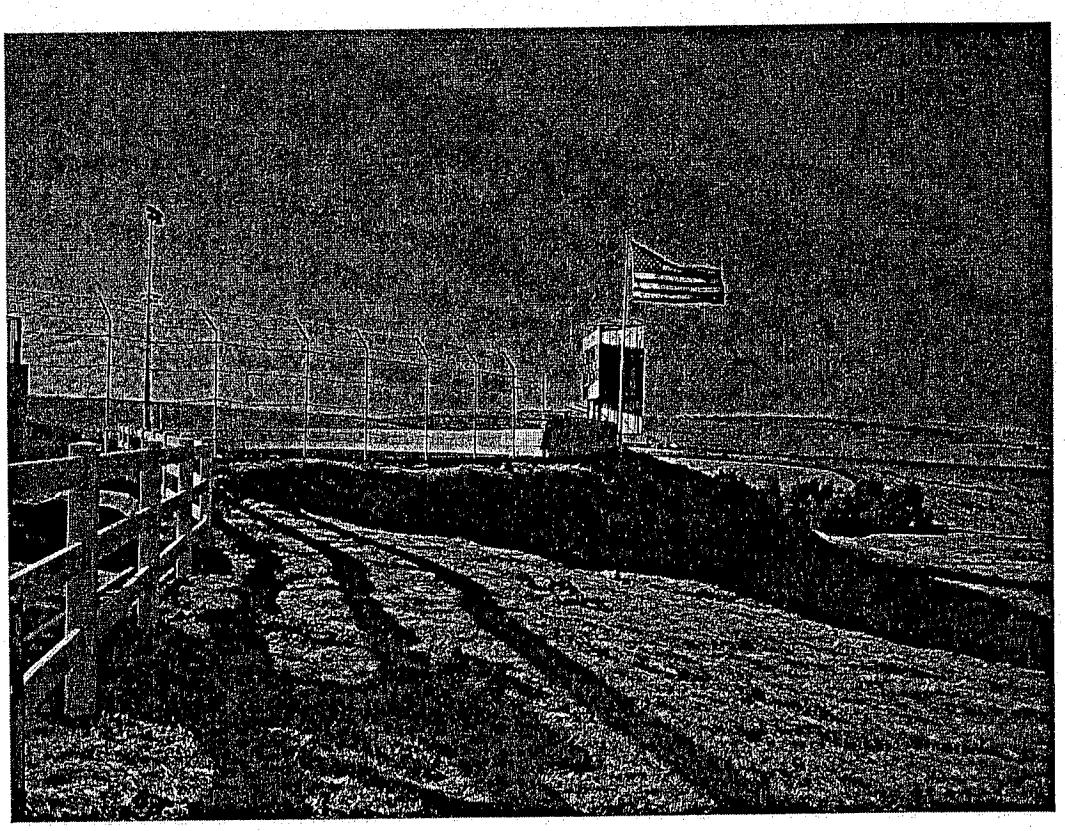


VIEW FROM POSITION 7

EXHIBIT 8



VIEW FROM POSITION 8



VIEW OF TRACK FLAGPOLE

EXHIBIT 9

STATISTICAL DISTRIBUTION OF SOUND LEVELS
AT FIELD POSITIONS P2 THROUGH P7

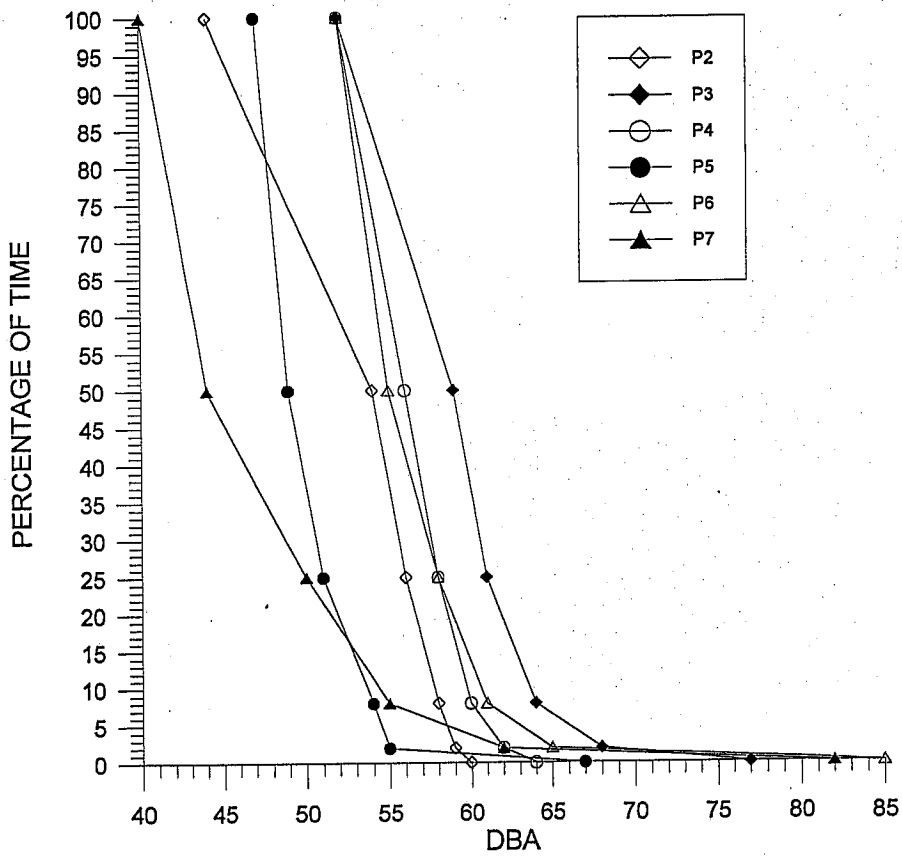


EXHIBIT 10

ALAMEDA COUNTY NOISE ORDINANCE DAYTIME LIMITS COMPARED TO ALTAMONT MOTORSPORTS PARK AT POSITION 2 FROM 5 TO 6 P.M. ON 10/14/06 AND 10/15/06

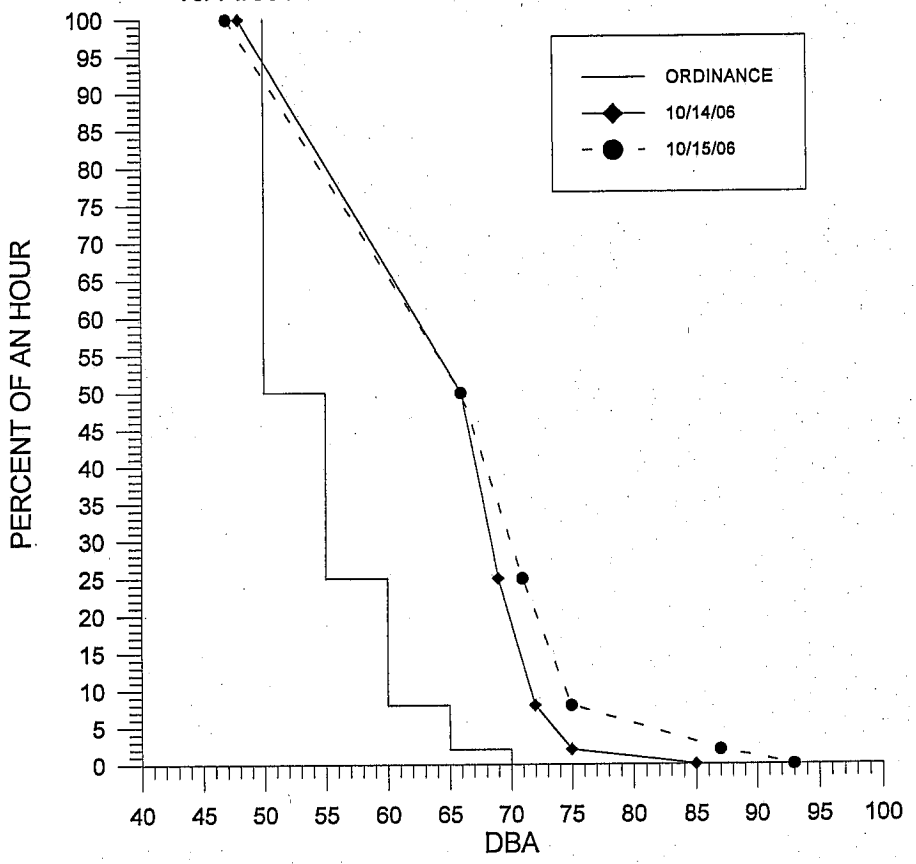


EXHIBIT 11

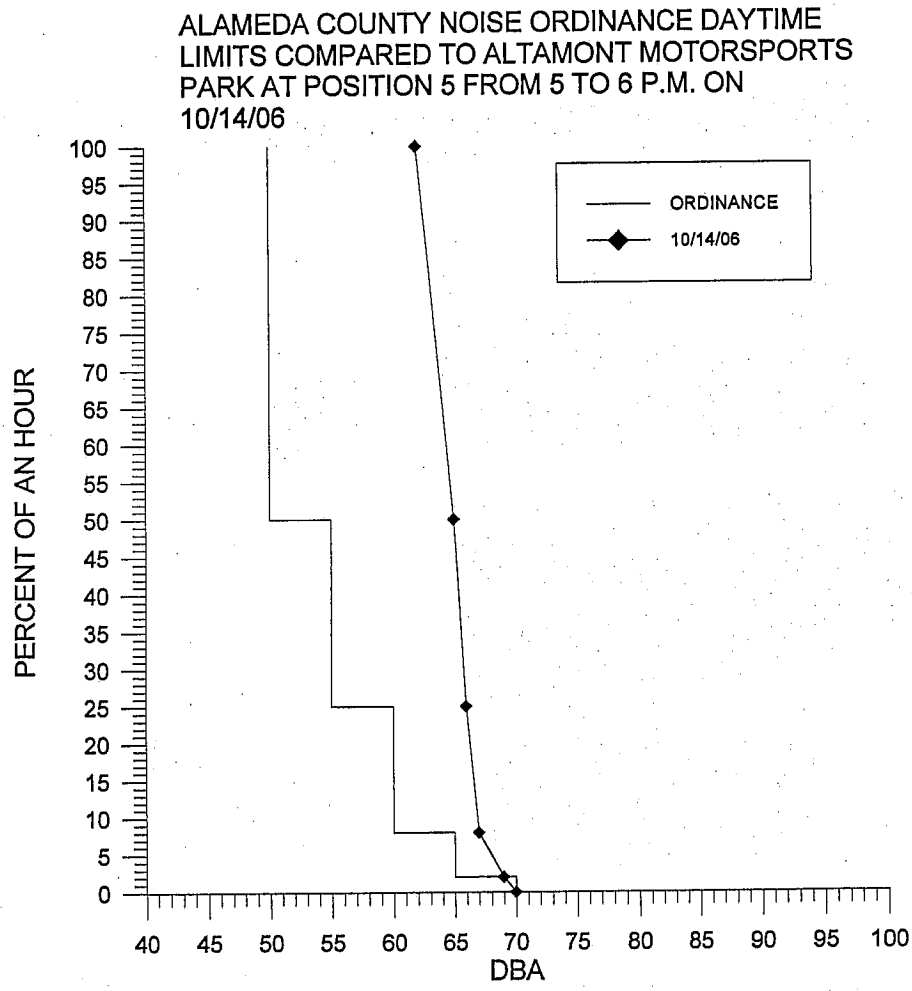
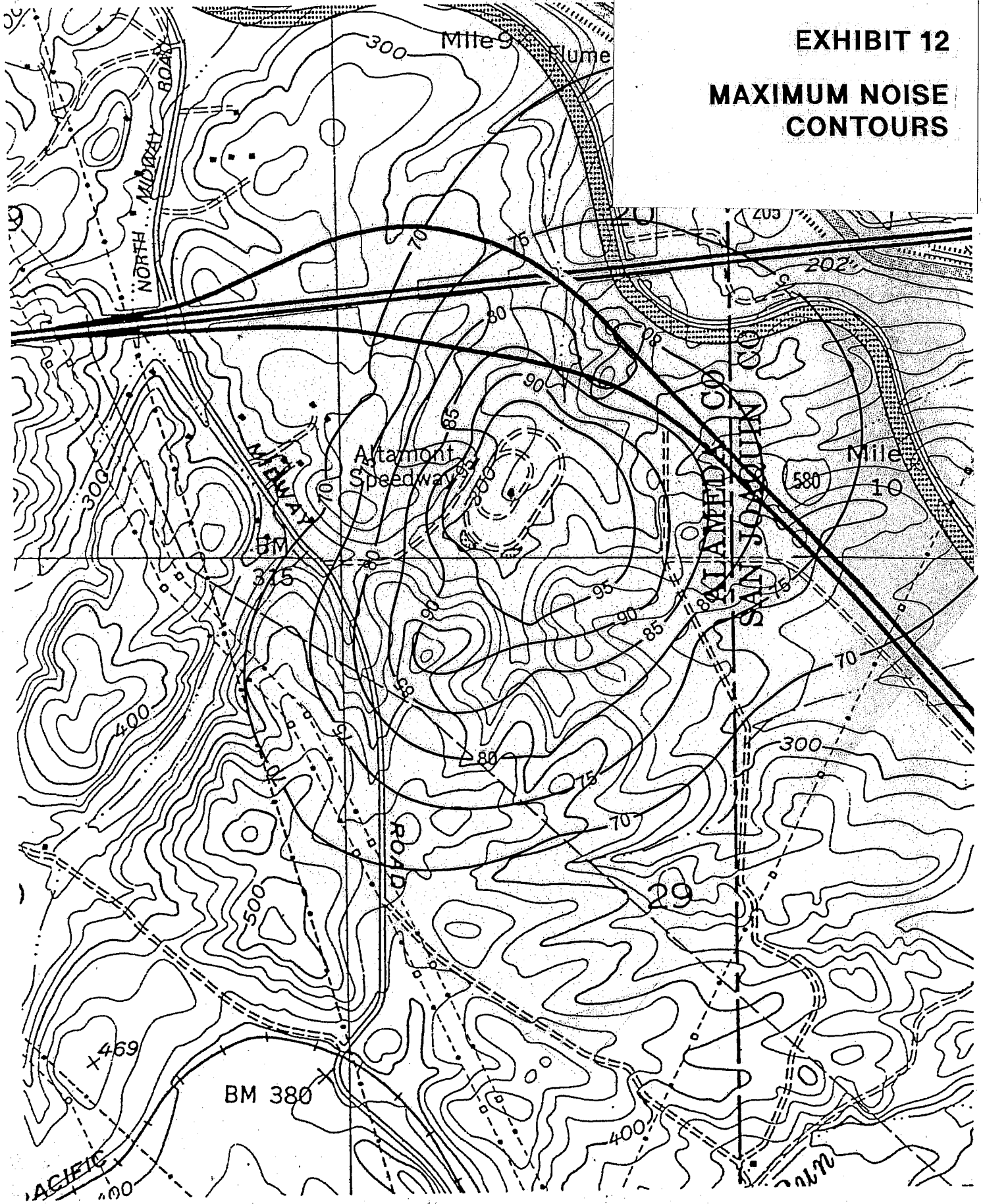

ALAMEDA COUNTY NOISE ORDINANCE DAYTIME LIMITS COMPARED TO ALTAMONT MOTORSPORTS PARK AT POSITION 5 FROM 5 TO 6 P.M. ON 10/14/06
ORDINANCE
10/14/06
PERCENT OF AN HOUR
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
40
45
50
55
60
65
70
75
80
85
90
95
100
DBA

EXHIBIT 12

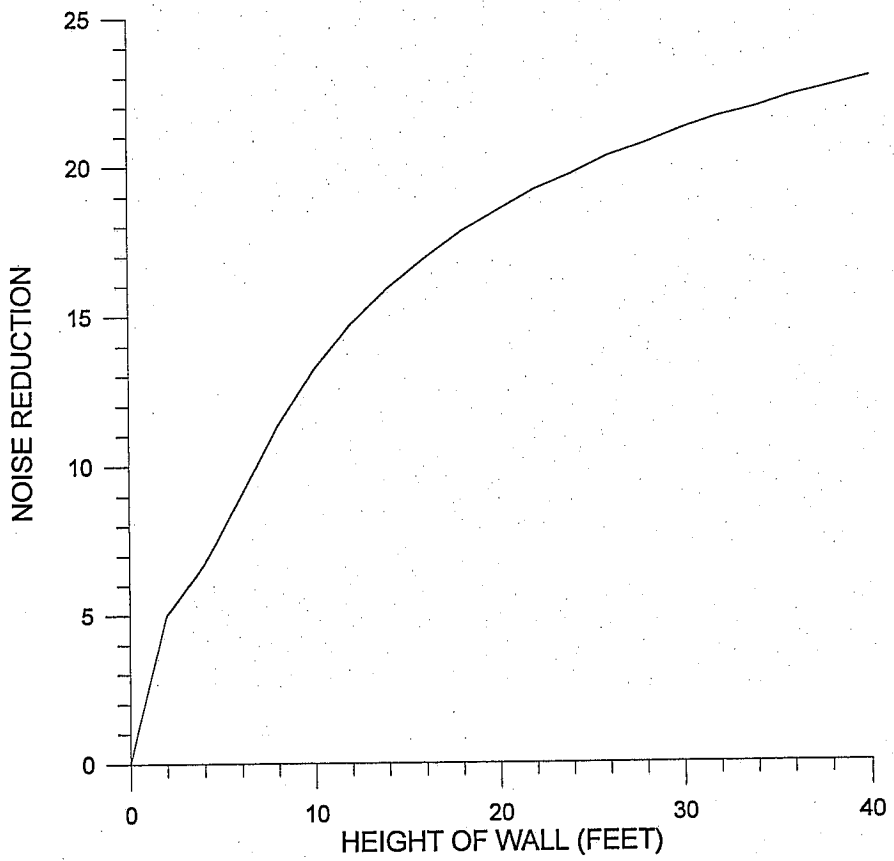
MAXIMUM NOISE CONTOURS



SCALE 1" = 1,000'

EXHIBIT 13

NOISE REDUCTION AT POSITION 2 AS
FUNCTION OF WALL HEIGHT LOCATED
ON THE WEST SIDE OF THE TRACK
(Distance to cars - 20 feet: Distance to P2 = 900 feet).



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APPENDIX 1

TRACK SCHEDULES

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Altamont
MOTORSPORTS PARK

Competition Event Schedule

$$$ LATE MODEL SHOOTOUT $$$
Saturday October 14, 2006

7:00 AM	Pit Gates Open/Registration
11:00 AM	Practice
11:00 AM	Figure 8 Sign In Open
1:00 PM	Practice Over
1:00 PM	Open Comp Figure 8 Practice (1/2 Hour)
2:30 PM	Qualifying (2 Cars at a time for 2 Laps)
4:30 PM	"D" Main (30 Laps) (if Necessary) NoPayout,Transferto"C"MainOnly
5:00 PM	"C" Main (40 Laps) TwoTransfers
6:00 PM	"B" Main (50 Laps) TwoTransfers
7:00 PM	Main Event (200 Laps with Break at 100 Laps)
10:00 PM	Penny Saver Open Comp Figure 8 (25 Laps)

Schedule subject to change

Altamont
MOTORSPORTS PARK

Competition Event Schedule

NASCAR AutoZone Grand National West Series

STREET STOCK OPEN SHOW
SUPERMOTOUSA

ScheduleofeventsForOctober15,2006

NASCAR

6:00 AM	GNW Registration Opens/Haulers Enter
7:00 AM	GWW Inspections Begins
8 AM	Street Stocks Registration Opens Haulers Enter
8AM	SupermotoGatesOpen
9 AM	GNW Mandatory Rookie Driver's Meeting
9:15 AM	GNW Drawing to Determine Qualifying Order
9:30 AM	GNW Mandatory Driver/Crew Chief's Meeting
9:45 AM	GNW Mandatory Spotters Meeting
9:50–10:25	SupermotoPractice
10:30 – 11:15	GNW Practice
11:15 – 11:40	Street Stocks Practice
11:45 – 12:45	GNW Practice
12:45 – 1 PM	Street Stock Practice
1:00 PM	**OpeningCeremonies**
1:00PM	**SupermotoUSARaces(RoadCourse)**
2:00 PM	GNW Mandatory Scorer's Meeting
2:30 PM	Street Stock Qualifying (2 Laps/2Cars at a Time) Fastest 18 in Main
3:30 PM	GNW Qualifying (2 laps)
4:20 PM	Street Stock "B" Main (15 Laps or 25 Minutes) 2 Transfers
4:50 PM	GNW Driver Introductions/
5 PM	**The _____ _____ "200"** Half way break at 100 Laps
7 PM	**Street Stock Open Show 50 Laps ¼ Mile**

Schedule subject to change.

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A P P E N D I X 2

15 MINUTE LMAX & L50 GRAPHS

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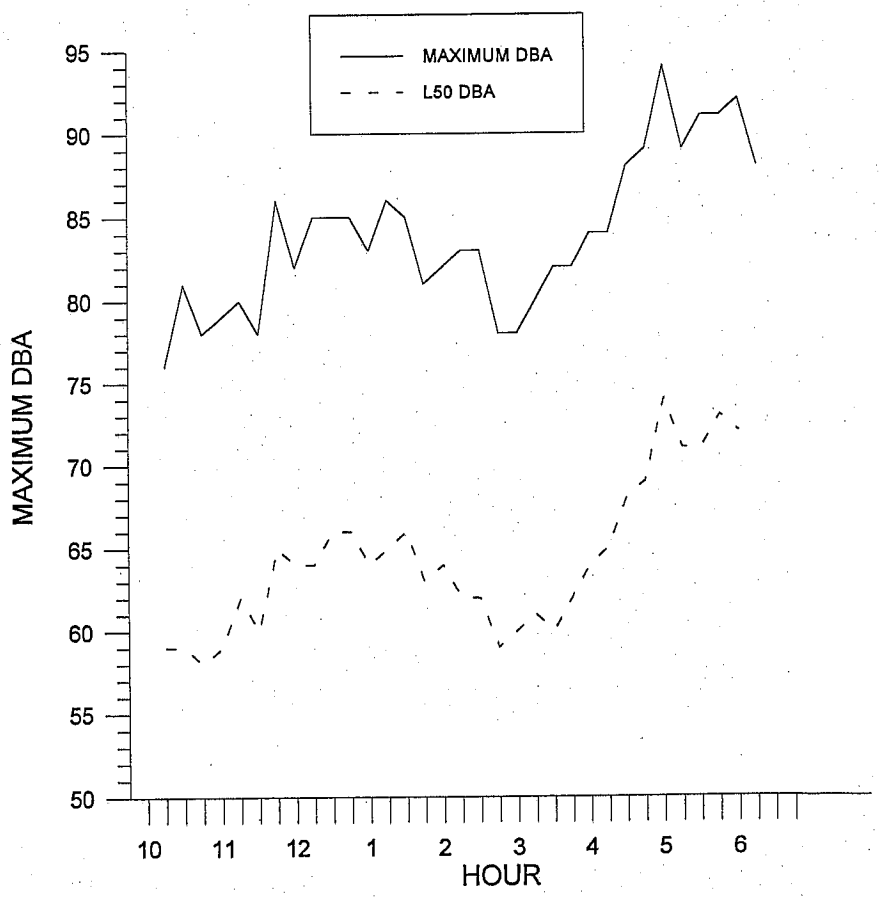
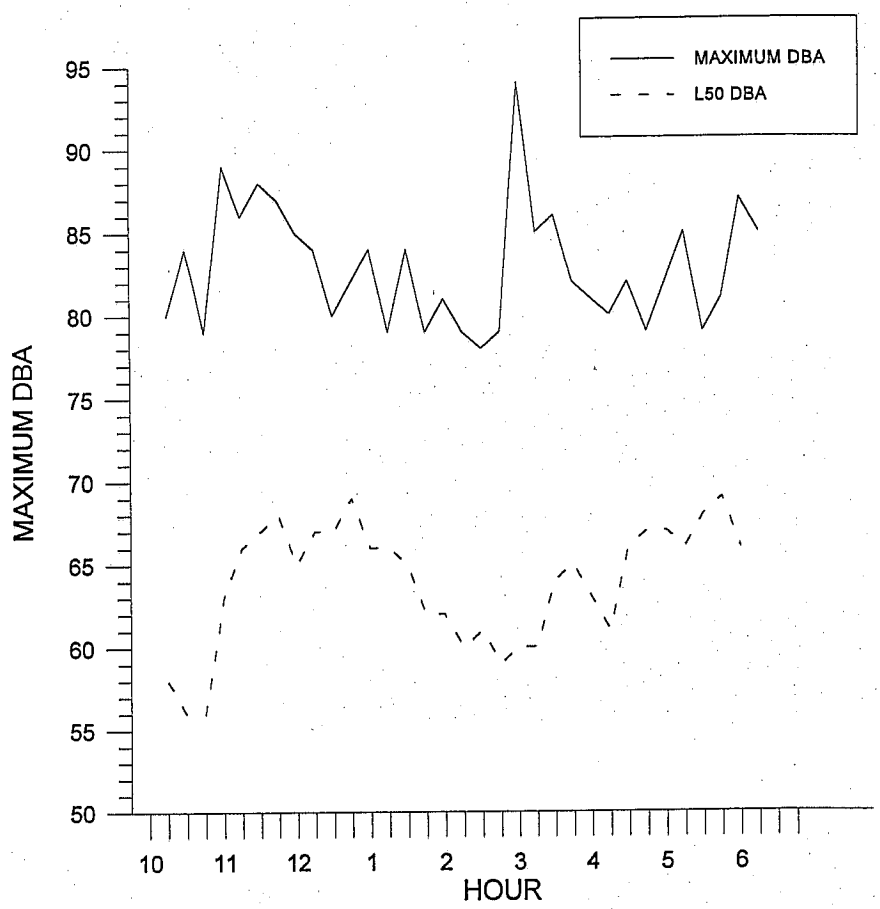
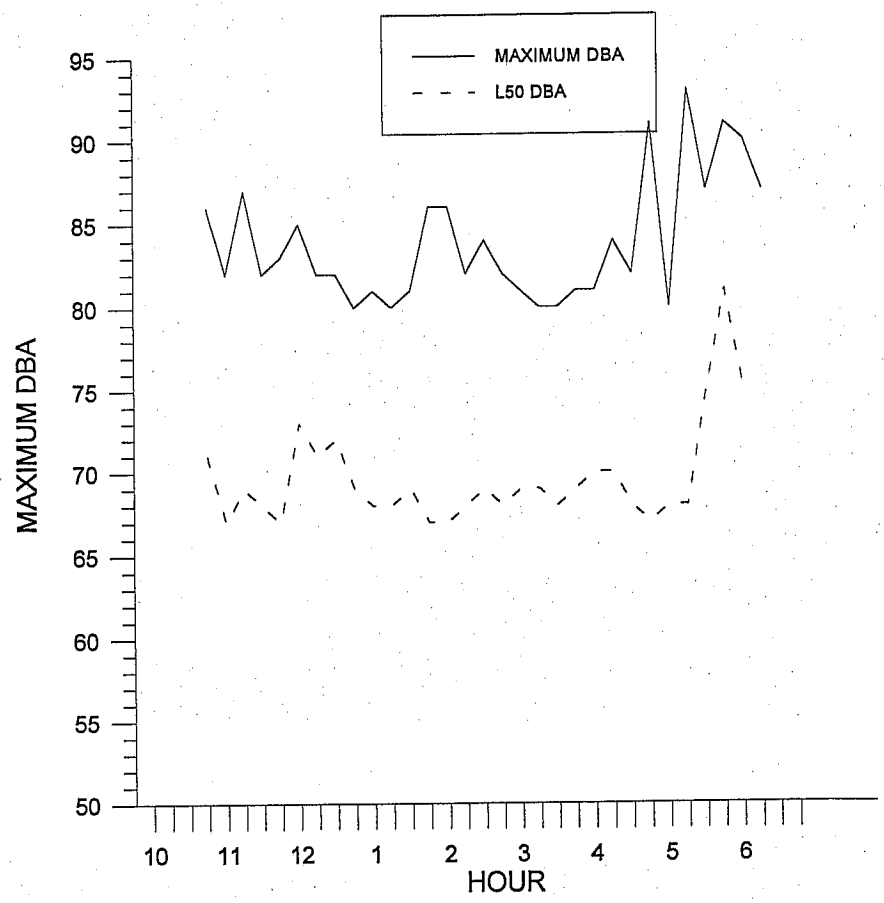
POSITION 5 ON 10/14/06 IN 15 MINUTE INCREMENTS



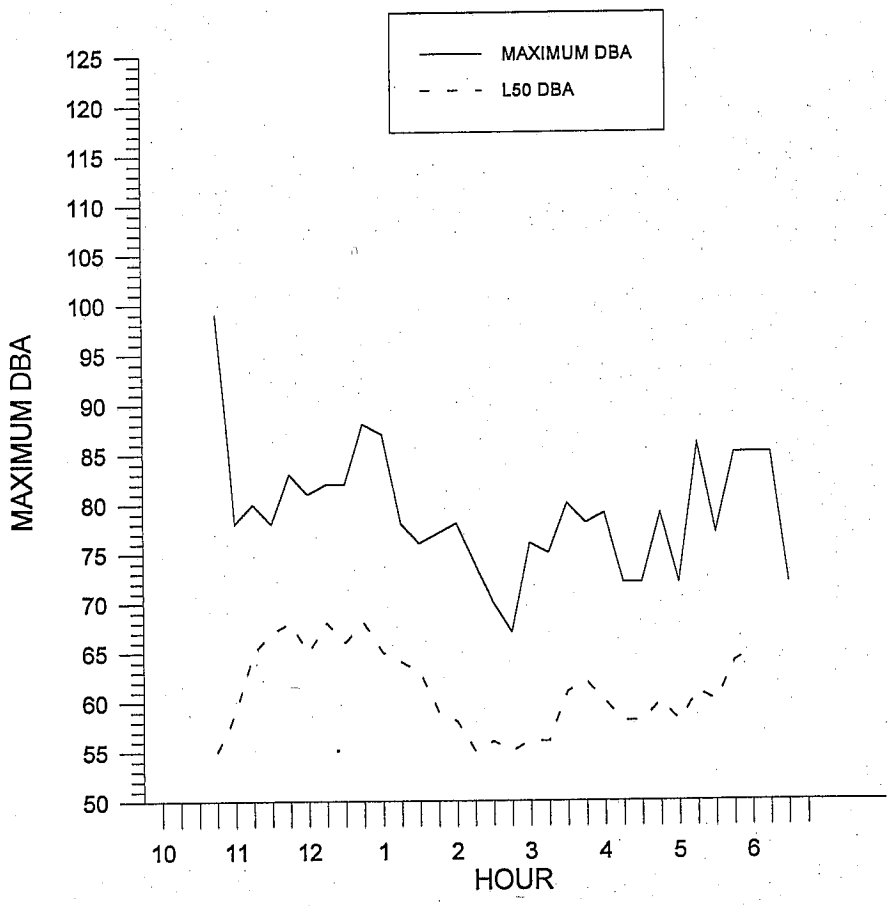
POSITION 4 ON 10/14/06 IN 15 MINUTE INCREMENTS



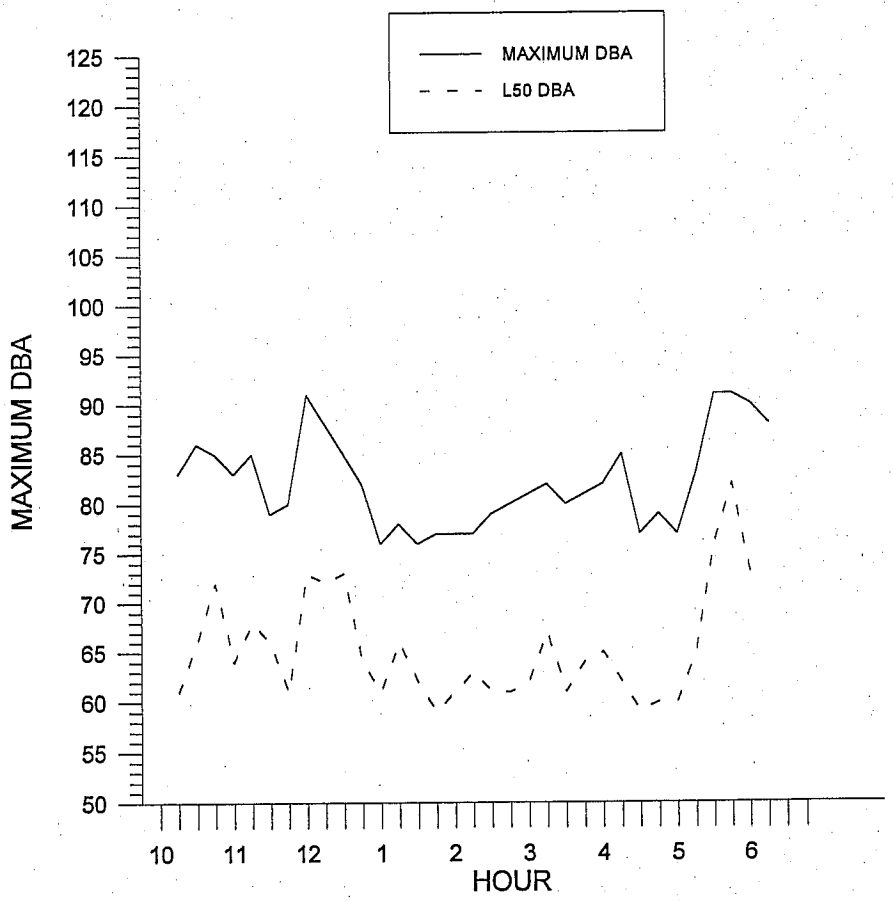
POSITION 4 ON 10/15/06 IN 15 MINUTE INCREMENTS



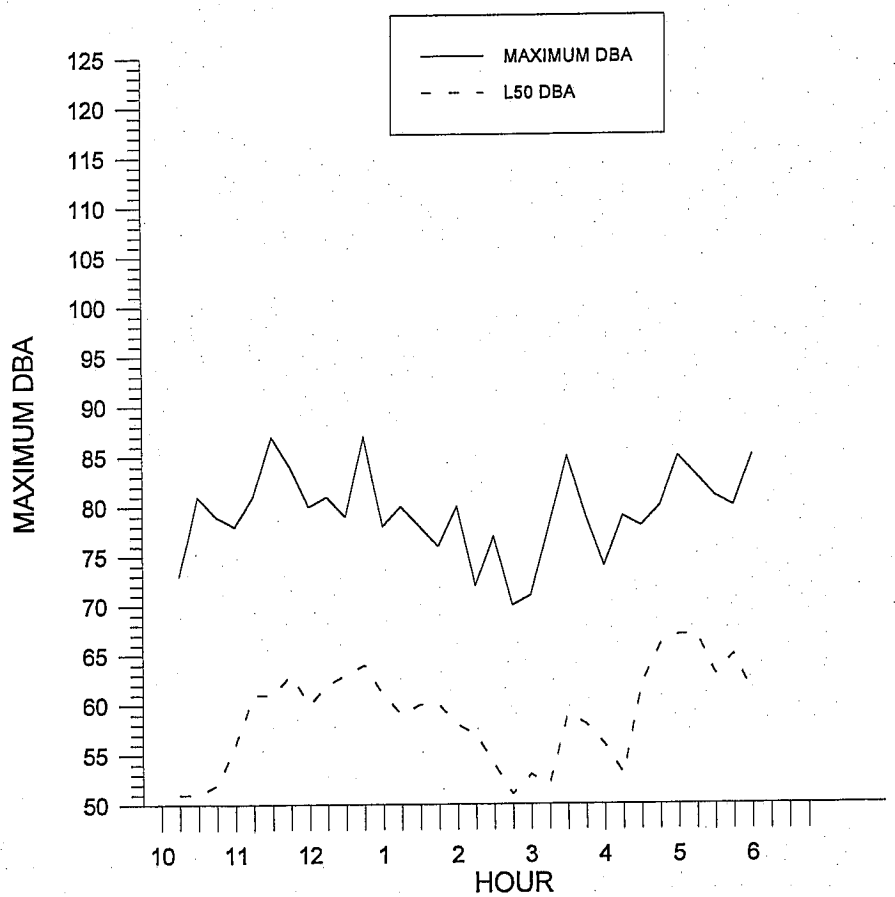
POSITION 3 ON 10/14/06 IN 15 MINUTE INCREMENTS



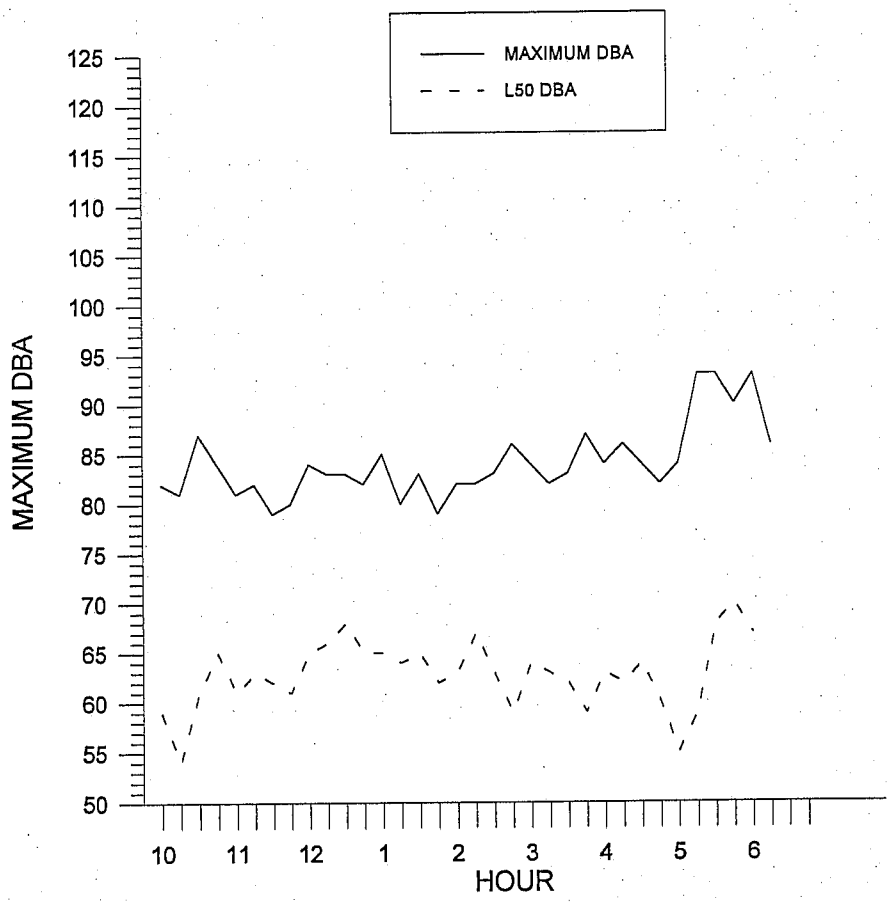
POSITION 3 ON 10/15/06 IN 15 MINUTE INCREMENTS



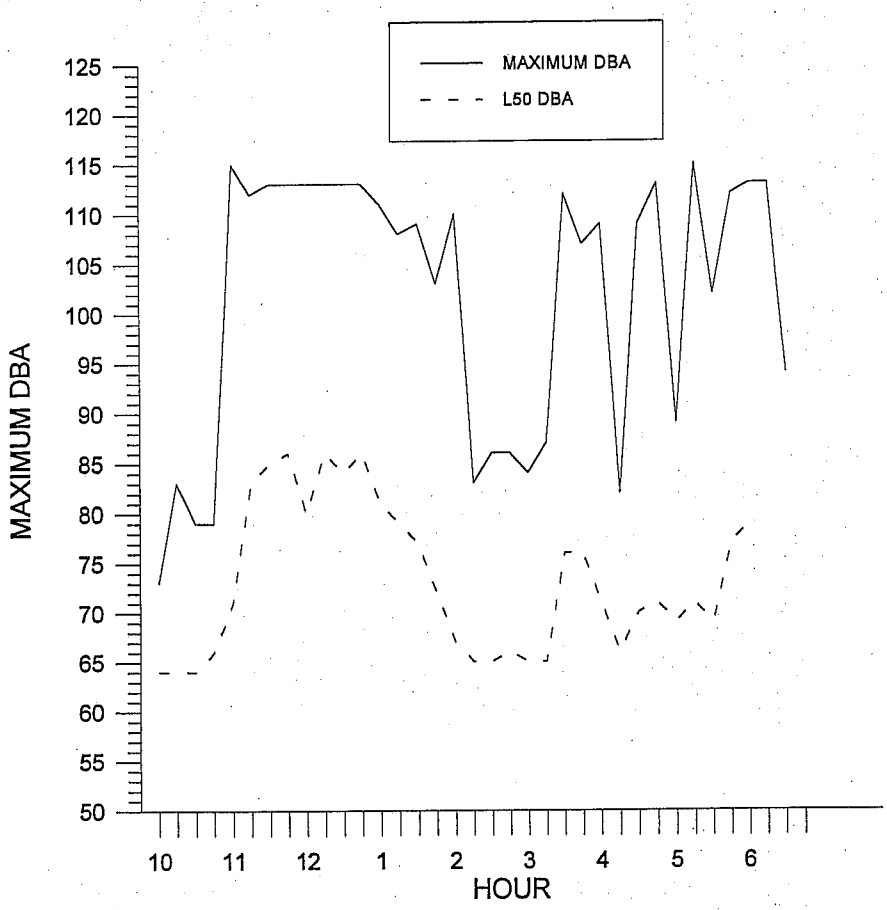
POSITION 2 ON 10/14/06 IN 15 MINUTE INCREMENTS



POSITION 2 ON 10/15/06 IN 15 MINUTE INCREMENTS



POSITION 1 ON 10/14/06 IN 15 MINUTE INCREMENTS



POSITION 1 ON 10/15/06 IN 15 MINUTE INCREMENTS