1.0 Introduction and Purpose

This document summarizes the technical analysis included in the following reports:

Proposed Noise Standard Noise Analysis, Auto Club Speedway, County of San Bernardino. Prepared by Gordon Bricken & Associates. November 14, 2007.

Measurement Results, California Speedway, County of San Bernardino. Prepared by Gordon Bricken & Associates. December 17, 2007.

Response to Two Questions from HDR Pertaining to the Track – County of San Bernardino. Prepared by Gordon Bricken & Associates. May 6, 2008.

Noise Contours Auto Club Speedway, County of San Bernardino. Prepared by Gordon Bricken & Associates. January 8, 2009

Reply to Inquiry about Protocol Modification at Auto Club Speedway -- Fontana. Prepared by Gordon Bricken & Associates. March 25, 2009.

Specification for the Measurement of Sound in Compliance with the California Speedway and Auto Club Drag Strip Standards. Prepared by Gordon Bricken & Associates. March 25, 2009

Noise Contours Auto Club Speedway County of San Bernardino. Prepared by Gordon Bricken & Associates. April 29, 2009

1.1 Proposed Noise Standard

The Auto Club Speedway (formerly known as the California Speedway) proposes to revise the existing nuisance-based noise standard, which was adopted in the 1995 California Speedway Planned Development to a health based standard. As shown in Table 1 below, the current noise standard was customized to land uses adjacent to the Speedway so that noise generated from the Speedway would not be perceived as annoying to the receptor.

Table 1. Day Noise Ordinance Limits for the Auto Club Speedway

Duration	Land Use			
	Residential	Commercial	Industrial	Symbol
30 minutes	65	65	70	L50
15 minutes	70	70	75	L25
5 minutes	75	75	80	L8
1 minute	80	80	85	L2
Anytime	85	85	90	Lmax

Notes: Day = 7:00 AM to 10:00 PM
Duration based on one hour

The health-based standard proposed for the Auto Club Speedway is as follows:

> Operations at the Auto Club Speedway shall not exceed 100 dBA Lmax based on samples of the source taken at 550 feet from the property line of the Speedway.

Along with changing the dBA standard for noise generated at the speedway from avoiding nuisances to protecting the health of users of adjacent properties, the proposed standard would change the location at which compliance with the standard is to be measured. The existing noise standard is measured at the property line of individual receptors, whereas the proposed standard would be measured at 550 feet from the Speedway's property line. This change was made so that monitoring could be done at locations that are accessible for measurement, including streets, accessible parking lots, and the few vacant lots that still remain in the area. The closest residences (the most sensitive receptors in the project vicinity) to the Speedway facilities lie 570 feet north of the Speedway property line northeast of the intersection of Whittram Avenue and Calabash Avenue. As indicated, these residences are located 550 feet or further from the Speedway. According to noise contours developed for a representative sample of drag strip vehicles, the residences would not experience noise levels in excess of 100 dBA.

1.2 Purpose of this Report

The purpose of this Noise Study is to evaluate whether the Speedway can, in fact, meet the proposed standard, and to assess whether noise meeting that standard will have any adverse health effects on users of adjacent properties. The report will show that based on extensive noise monitoring, the revised standard can be met by the Speedway and that there would be no adverse health effects on adjacent properties. The report discusses the various methods of defining noise impact, the various concepts for noise regulations and the practical problems of implementation and enforcement of regulations.

2.0 Forms of Noise Measurement

Sound levels are expressed on a logarithmic scale of decibels (abbreviated as dB), in which a change of 10 units on the decibel scale reflects a 10-fold increase in sound energy. A 10-fold increase in sound energy roughly translates to a doubling of perceived loudness.

In evaluating human response to noise, acousticians compensate for the response of people to varying frequency or pitch components of sound. The human ear is most sensitive to sounds in the middle frequency range used for human speech, and is less sensitive to lower and higher-pitched sounds. The "A" weighting scale is used to account for this sensitivity. Thus, most community noise standards are expressed in decibels on the "A"-weighted scale, abbreviated dBA. Zero on the decibel scale is set roughly at the threshold of human hearing. Common sounds in the environment include office background noise at about 50 dBA; human speech at 10 feet at about 60 to 70 dBA; passenger cars driving by at 50 feet at 65 to 70 dBA; trucks at 50 feet at 75 to 80 dBA; and aircraft overflights directly overhead a mile from the runway at about 95 to 100 dBA.

Although the A-weighted sound level may adequately indicate the level of environmental noise at any instant in time, community noise levels vary continuously. Most environmental noise includes a conglomeration of sounds from distant sources that create a relatively steady background noise in which no particular source is identifiable. For this type of noise, a single descriptor called the L_{eq} (or equivalent sound level) is used. L_{eq} is the energy-mean A-weighted sound level during a measured time interval. It is the 'equivalent' constant sound level that

would have to be produced by a given source to equal the average of the fluctuating level measured.

The community noise environment consists of wide varieties of sounds, some near and some far away, which vary over the 24-hour day. People respond to the 24-hour variation in noise but are most sensitive to noise at night. California standards for community noise use the Community Noise Equivalent Level (CNEL), in which a 5 dB penalty is added to the 7:00 PM to 10:00 PM period, and a 10 dB penalty to the 10:00 PM to 7 AM period. A similar measure is the Day-Night Noise Level, which is denoted by DNL or Ldn, which includes a penalty for noise between 10:00 PM and 7 AM only.

Another tool utilized to measure noise involves the statistical noise level, denoted by Lx. This measurement refers to the sound level exceeded over a specified period of time, where the "x" is the percentage of time exceeded. For example, L50 refers to the noise level exceeded 50% of the time, or 30 minutes per hour. The term L8 refers to the noise level exceeded 8% of the time, or 5 minutes per hour. A similar concept is the term Lmax, which is the maximum noise level measured over the monitoring period. The term Lmin refers to the minimum noise level.

The proposed standard is based on the maximum noise level (Lmax). Because the area around the Speedway is heavily industrialized with significant traffic, rail, and industrial noise, it can be difficult to assess the speedway noise independent of the ambient contribution. In fact, more often than not, the only parameter that can be reliably measured without the complications of subtracting out the ambient contribution is the maximum sound level.

The proposed Lmax measurement was selected for the proposed noise standard because it can be reliably measured. There are clear intervals when the ambient maximum sound level and the track maximum sound levels do not overlap and the track source level can easily be identified as being at least ten dBA higher than the ambient level slightly before and slightly after the source reading. One difficulty with a maximum noise level is that ambient noise in the Speedway vicinity sometimes exceeds the standard. Alternatively, a single uncontrollable event at the Speedway, such as an emergency situation; i.e., engine blow-out, could skew the monitoring results. The proposed noise standard measurement protocol includes exceptions for such events.

3.0 Adverse Health Effects on Adjacent Properties

The primary health issue is hearing loss. Hearing loss occurs through a combination of sound level and length of exposure. There are different criteria available upon which to base a minimum health based criterion, discussed below.

The Environmental Protection Agency (EPA) hearing protection criteria sets allowed combinations of level and length of exposure to insure that hearing loss is minimized after 40 years of exposure. The EPA's recommended average annual noise level to protect the community from hearing loss is 71.4 dBA Leq.

Many federal, state, and local governments base their standards for acceptable noise exposure on DNL. The DNL represents a type of average noise level over a 24-hour period and penalizes events that occur from 10 PM to 7AM. The DNL is based on long-term exposure and the calculation is based on the average of 365 days of operations converted into an average daily

value. The usual requirement for industrial zoned areas, such as those that occur around the Speedway, is for levels not to exceed 75 dBA DNL. Lower limits are set for residential and commercial uses. These lower levels also take into consideration some nuisance aspects of the noise impact.

The Occupational Safety and Health Administration (OSHA) also set standards to protect the community from hearing loss. The OSHA standard establishes a set of combinations of allowed sound thresholds and allowed durations. Conditions must be chronic, that is occurring everyday for at least one year. These standards are designed to allow relatively short term verification in a field setting without the necessity of long-term monitoring. Inspectors have to be certain that the conditions being examined occur on a regular basis and are not unique to a particular day, time or type of industrial production that is infrequent.

San Bernardino County has noise performance standards similar to OSHA but it applies different standards to different uses, even though adjacent parcels may have multiple uses. For example the Day Noise Ordinance limit set currently for the Speedway has an Lmax of 85 for residential uses but an Lmax of 95 for industrial uses (referred to as the industrial performance standard below).

Each of the various criteria surveyed, EPA, DNL, OSHA and the County's Industrial Performance Standard are in a different form, making comparison between them difficult. For purposes of this report, each criterion was converted into the average noise level based on an eight hour operation where the variables are the combinations of duration and level. Table 2 below demonstrates the differences between the criteria

Table 2. Comparison of Criteria for Eight Hours Per Day Each Day for a Year

Criteria	Annualized Daily Average (dBA)
DNL	76
EPA	76
OSHA	85
County Industrial Performance Standard	78

DNL= Day Night Level
EPA= Environmental Protection Agency
OSHA= Occupational Safety and Health Administration

As shown in Table 2, the EPA and DNL criteria are the minimum health based criteria and will serve as the basis of the proposed standard. The challenge with using DNL as a noise standard is that it requires a continuous measurement for 365 days and it is difficult to discern difference between ambient noise and a specific noise event. Therefore, the proposed standard is based on the EPA criteria for minimum hearing loss of 71.4 dBA Leq. The goal of the proposed noise standards is to establish a single number that can be related back to the health based annual average level of 71.4 dBA Leq.

The Speedway does not generate noise continuously. The oval track operates 1,872 hours a year and the drag strip operates 935 hours per year. However, the actual hours of noise production is considerably less than the hours of operation. The track is not used for racing during the weekdays with the exception of eleven days associated with professional NASCAR

events. Weekday usage is limited to testing and trial runs and is estimated to generate no more than 50 hours of annual noise production. Weekend racing is dedicated to professional and club events when racing is not continuous. The actual hours of noise production are based on the time of the actual runs. Table 3 below lists the typical annual conditions.

Table 3. Weekend Operations Model

Type of Cars	Runs/Day	Time/Run	Daily Hours	Annual Hours
Alcohol Dragsters	32	6 seconds	0.05	5.5
Gas Dragsters	240	15 seconds	1.00	104.0
Club Racers	n/a	n/a	4.00	416.0
Professional Events	n/a	n/a	4.00	24.0

Notes: The annual hours are based on 104 days except for professional events. Professional events are six days per year.

The actual hours of noise are less than the operating time. Also, oval and drag strip operations overlap. When these two factors are taken into account, each hour of noise production could be operated at 84 dBA Leq to remain under the annual average level maximum of 71.4 dBA Leq, which is the EPA's recommended average annual noise level to protect the community from hearing loss.

In theory, a criteria based on an annual average could be accepted as a noise standard. However, to do so, would require continuous measurement 365 days a year, which does not yield real time results that can be verified in the field at the time of an event. Furthermore, it is challenging to differentiate between ambient noise and the noise source event with an average annual noise standard. Therefore, the objective of the proposed noise standard is to establish a single number that can be verified in the field and related back to the EPA health based annual average level of 71.4 dBA Leq. Based on extensive monitoring and documentation of the hourly average value of the four main types of vehicle operations at the track, Table 4 shows the dBA Leq value that would correspond with Lmax values from 90 dBA Lmax to 105 dBA Lmax. For all car types, with a maximum level of 100 dBA, the Leq value of all cars would be 83 dBA, which is less than the 84 dBA Leq required to maintain the EPA's average annual noise level. Therefore, if the Speedway or Drag Strip operations do not result in noise exceeding 100 dBA, the EPA's recommended average annual noise level of 71.4 dBA Leq will be maintained to protect a community from hearing loss.

Table 4. Relationship of Annual Leq to Lmax

			Leq of Lmax Values			
Type of Car	Leq Formula	Annual Hours	90	95	100	105
Alcohol Dragster	Lmax- 30	5.5	28	33	38	43
Gas Dragsters	Lmax-10	104.0	61	66	71	76
Club Racers	Lmax-5	416.0	72	77	82	**87**
Professional Event	Lmax-5	24.0	59	64	69	74
All Cars	n/a	549.5	73	77	83	**88**

Notes: Leq values greater than 84 dBA shown in bold.

4.0 Meeting the Proposed Standard

This report demonstrates that the Speedway can meet the proposed 100 dBA Lmax based on previous noise measurements. Measurements were conducted on seven occasions of the operations on the drag strip and the oval. That program consisted of 1,348 drag strip runs and a Nextel NASCAR event at a location on the north curb of Whittram Avenue. As demonstrated below, the results show that none of the events at the Speedway, including the oval and the drag strip, exceeded the proposed 100 dBA Lmax standard (see Gordon Bricken & Associates December 2007 Measurement Results California Speedway report for summary of noise monitoring results). No attenuation measures are needed and none are proposed.

4.1 Measurement Results

A series of measurements were conducted on September 16, and 28, 2006 and March 24, April 12 and May 5, 2007 to document the noise levels of the types of cars and events using the drag strip and oval. The drag strip events included street legal cars, gas powered non-street legal cars, alcohol funny cars, alcohol dragsters and A-Fuel dragsters. The A-Fuel dragster is a non-supercharged nitromethane fuel car. The oval measurements were for the NASCAR Nextel Cup cars.

Generally, measurements covered a period from 10:00 AM to 5:00 PM. At the primary location on Whittram, the racing levels were masked at times by the local traffic on Whittram Avenue. Therefore, individual readings were taken when the drag strip event was not masked by the local traffic. There were 1,348 drag strip runs taken over the six visits. The distribution of the levels from the drag strip is shown by the bar chart plot in Exhibit 2 of Appendix 2 of the Gordon Bricken & Associates December 2007 Measurement Results California Speedway report attached. While all the drag strip events were measured at below 100 dBA Lmax, 77 percent of the time, the runs measured below 85 dBA.

The oval does not lend itself to the measurement of individual cars at the distance of the measurement location. The readings tend to include the contribution of several cars which are on the south side of the oval. The highest level recorded for the NASCAR event was 85 dBA.

In addition, contours were taken for four representative vehicles including the street legal car, the gasoline-powered non-street legal car, the alcohol fuel car, and the A-Dragster. The contours demonstrate that the top noise producing vehicle of these four, the A-Dragster, will result in a maximum of 100 dBA at 550 feet from the Speedway property line, consistent with the proposed noise standard. Contours were also taken for noise levels generated by the oval track and for the oval and drag strip when events occur on the same day. According to these contours, even when operating simultaneously, noise levels would not exceed 100 dBA at 550 feet from the Speedway property.

In summary, the monitoring results show that none of the events at the Speedway, including the oval and the drag strip, exceeded the 100 dBA Lmax standard regardless of type of vehicle. Therefore, the Speedway would be able to meet the proposed standard of 100 dBA Lmax and no attenuation measures are required. As discussed above, meeting the proposed standard would prevent the Speedway operations from resulting in adverse health effects.

5.0 Implementation of the Proposed Noise Standard

The current noise standard for the Speedway is an amalgamation of five combinations of sound level and duration measured over an hour. In actual field settings it is nearly impossible to collect the data for all five combinations. As a result only the maximum event level can be reliably determined from operations at the Speedway. Monitoring will verify that the following standard is being met: The noise levels outside the Complex due to racing activities shall not exceed a maximum of 100 dBA at 550 feet. This standard eases implementation because it reduces the measurement requirement to just the maximum sound level. Monitoring should occur quarterly depending on Speedway event schedule. The full protocol for measuring compliance is included in the attached March 2009 Specification for the Measurement of Sound in Compliance with the California Speedway and Auto Club Drag Strip Standards.

6.0 Cumulative Impacts

A cumulative noise impact is defined by the amount of noise exposure over a long period of time in which some permanent effect will occur. The time period is usually taken to be the exposure over at least one year and noise levels are calculated based on the average noise level. The generally accepted level at which changes in noise levels become “barely perceptible” typically occur at values of greater than 3 dBA. Changes of 5 dBA are defined as "readily perceptible" and 10 dBA is considered twice as loud. To be considered a cumulatively significant impact, revised noise standards at the Speedway must result in an average annual noise level increase in the area adjacent to the Speedway greater than 3 dBA.

For calculations, the cumulative noise level was based on the average daily operations on the assumption that the average occurs each day over a year. For direct measurement, samples were taken each day of the average daily noise level. Then the 365 individual days were summed and divided by 365 to arrive at the annualized average daily noise level. Then, new drag strip levels were superimposed on the existing ambient noise levels. Therefore, for purposes of this cumulative analysis, the existing ambient condition is defined as the noise produced by the existing Speedway oval track and the existing non-track (e.g. traffic noise) ambient conditions. This condition will vary with the location in the community. Because the nearest sensitive location is on the north side of Whittram Avenue, the calculations were based on noise levels at that location. The ambient condition is described below.

Table 3.1-14
Existing Ambient Noise Level 550 Feet North of the Speedway

Source	Annual Hours	Leq/Hour	Ldn
Speedway Oval	1,808	65	58.1
NASCAR	64	77	55.6
Whittram			72.0
Total			**72.3**

Source: Response to Two Questions from HDR Pertaining to the Track – County of San Bernardino. May 6, 2008. Gordon Bricken & Associates.

Notes: Ldn= Day Night Level
a. Speedway Oval and NASCAR Ldn calculations are based on field measurements of individual event average noise levels.
b. Whittram is based on actual 24 hour measurements for a single day.
c. The annual hours were provided by the Speedway
d. Trains were not included in these calculations

The proposed standard is a maximum level of 100 dBA. As shown in Table 3.1-12, the drag strip will operate for 935 hours per year. Of that, the actual noise producing time at the drag strip is 109.5 hours. If every event resulted in noise levels of 100 dBA, the daily level would be 62 dBA Ldn. However, the actual levels as measured in 2007 for several hundred runs on the drag strip averaged less than 100 dBA. Thus, in practice, the actual annual Ldn level would be less than 62 dBA Ldn. However, assuming that the worst case is 62 dBA Ldn, the combined levels of the drag strip and the ambient noise levels would be 72.7 dBA Ldn. Therefore, the Speedway would result in an increase of 0.4 dBA higher than the ambient conditions alone, which is below the 3 dBA threshold for cumulative noise impacts.

If the proposed noise standard is adopted, the Speedway will schedule approximately 35 days per year with top performing drag vehicles. Based on the measurements conducted at five (5) drag events in 2007, which included street legal cars, gas powered non-street legal cars, alcohol funny cars, alcohol dragsters and A-Fuel Dragsters, the majority of the events (77%) were measured below 85 dBA Lmax. Further, if non-gasoline powered vehicles with the potential to reach 100 dBA Lmax were permitted to run at the drag strip, the actual amount of noise reaching 100 dBA per day would be minimal. This is because the highest noise levels are generated during the first five (5) seconds of a race. In a typical race day, the total amount of noise exceeding 85 dBA and potentially reaching 100 dBA would be approximately one hour. (Personal Communication Gordon Bricken May 4, 2009). Therefore, Speedway noise levels would only exceed 85 dBA for a cumulative total of 35 hours per year and would never exceed 100 dBA.

There may be occasions when the drag strip is operating at the same time as a club event on the oval track. The drag strip will not operate during the Nextel Cup and similar NASCAR events because there is not enough parking to accommodate both operations. The drag strip can operate when club events, such as the Sports Car Club of America (SCCA) event, are taking place on the oval track because the club events do not draw as many spectators.

The attached noise contours depict the range of noise contours that occur when the track and drag strip are operating concurrently during the SCCA event with two (2) different vehicle types. The attached April 2009 Report shows the noise contours that result when the SCCA event takes place on the oval and a vehicle generating 85 dBA races on the drag strip. As shown,

09/082

GORDON BRICKEN & ASSOCIATES

ACOUSTICAL and ENERGY ENGINEERS

March 25, 2009

MR. MICHAEL YURICK
AUTO CLUB SPEEDWAY
9300 Cherry Avenue
Fontana, California 92335

SUBJECT: REPLY TO INQUIRY ABOUT PROTOCOL MODIFICATION AT AUTO CLUB SPEEDWAY -- FONTANA

Dear Mr. Yurick:

We are advised that the County wishes the measurement limit in the Protocol to be changed from an average of five samples taken at two minute intervals over no less than a 15 minute period, to a single sample taken at any time. The limit would remain at 100 dBA at 550 feet north of the dragstrip.

We have no objection to this change providing there are no other changes in the Protocol except those affected by this change. The Protocol will need to be revised to remove all elements related to the averaging process.

Singerely,

Gordon Bricken

1621 East Seventeenth Street, Suite K Santa Ana, California 92705-8518
Phone (714) 835-0249 FAX (714) 835-1957

GORDON BRICKEN & ASSOCIATES
ACOUSTICAL and ENERGY ENGINEERS

March 25, 2009

SPECIFICATION FOR THE MEASUREMENT OF SOUND IN COMPLIANCE WITH THE CALIFORNIA SPEEDWAY AND AUTO CLUB DRAG STRIP STANDARDS

Gordon Bricken and Associates Inc.,
1621 East 17th Street, Suite K
Santa Ana, California 92705
714-835-0249

TABLE OF CONTENTS

1.0 PURPOSE

This specification is intended to describe the methods to be employed, equipment to be used, and locations for measurements required to be conducted in accordance with the California Speedway Complex (herein after known as the Complex) noise standard.

2.0 APPLICABLE CRITERIA

2.1 NOISE

The noise levels outside the Complex due to racing activity shall not exceed a maximum of 100 dBA at 550 feet from the property line of the Auto Club Speedway Complex based on a single sample of cars at least five (5) dBA higher than the ambient level measured at this location in the same manner.

2.2 EXCEPTIONS

The only exceptions to the limits are emergencies, accidents and activities such as fireworks, aircraft, rail, airship and helicopter operations.

2.3 PROHIBITED ACTIVITY

There are no prohibited activities.

3.0 DEFINITIONS

Ambient -- The sound level that exists at a location other than that of the quantity being measured for compliance. In this case, it is any sound or assemblage of sounds that are present but not radiating from inside the private property line of the Complex. The ambient reading shall consist of samples of the prevailing noise sources. For example, the samples for traffic will be the maximum reading of passing cars.

Certified Acoustical Engineer -- A person who is a member of the Institute of Noise Control Engineers or who has been certified by the County.

County Planning Department -- The Planning Department of the County of San Bernardino.

Clean Measurement -- A Complex-specific measurement that exceeds the ambient by five (5) dBA.

Complex -- The Auto Club Speedway, including the drag strip, speedway oval, parking lots and ancillary facilities.

Compliance -- Compliance is defined to occur when the measurement result yields a value of 100 dBA or less at 550 feet from the property line of the Auto Club Speedway complex.

Emergency -- Any occurrence or set of circumstances involving actual or imminent physical trauma or property damage which demands immediate action.

Emergency Work -- Any work performed for the purpose of preventing or alleviating an emergency.

Exempted Operations -- Emergencies, accidents and non-racing activities such as fireworks, railroads, aircraft, airships and helicopters.

Exterior Complex Boundary Property Line -- The boundary of the Complex.

Maximum Value -- The maximum value of a measurement is the highest "A" weighted decibel value reached during a measurement interval.

Measurement Frequency -- At least one time taken at any time the Complex is in operation.

Measurement Period -- One sample.

Measurement Sample -- An "A" weighted maximum reading taken in conformance with the measurement instructions.

Non-Compliance -- Any non-emergency Complex associated sound source producing an "A" weighted level exceeding 100 dBA (101 dBA or higher) at 550 feet from the property line of the Auto Club Speedway and at least 5 dBA above the ambient.

Ongoing Operations -- Any operation within the exterior complex boundary property line which can reasonably be construed to be part of the activities under the control of California Speedway Corporation.

Public Right-of-Way -- Any street, avenue, boulevard, highway, sidewalk, alley or similar place which is owned or controlled by a governmental agency.

Resolution -- The minimum increment which can be assigned to a measurement value.

Sound Level Meter -- An instrument which includes a microphone, amplifier, RMS detector, integrator or time averaging function, output meter and weighting networks used to measure sound pressure level and which conforms to a specification for Type 1 or Type 2 meters as defined by ANSI specification S1.4-1971, or later version.

Threshold -- The 100 dBA maximum measurement value except for exempted operations.

All acoustical terminology not defined above shall be in conformance with the applicable American National Standards Institute publications.

4.0 INSTRUMENTATION

The instrumentation to be used for the measurement shall consist, as a minimum, of the following:

1. A **sound level meter** conforming to the specification for Type 1 or Type 2 instruments as defined by the American National Standards Institute specification S1.4-1971, or the most recent update.

2. A **portable acoustic calibrator** with an accuracy of plus/minus 0.5 dB capable of producing a prescribed one (1) Kilohertz tone at a constant level.

3. A **windscreen** which does not affect the microphone response more than plus/minus one (1) dB for frequencies 63 to 4000 Hertz, and plus/minus 1.5 dB for frequencies above 4000 Hertz.

4. **Meteorological instruments** capable of measuring wind speed, wind direction, relative humidity and temperature with an accuracy of plus/minus ten percent (10%).

The sound level meter, calibrator and recording device shall carry calibration certificates showing calibration within the past 365 days by a laboratory traceable to the National Bureau of Standards.

5.0 SETTINGS

The measurement system shall be set as follows:

Weighting:	"A" Scale
Dynamic Response:	SLOW
Scale:	As appropriate to cover the range of the expected sound levels.

6.0 METEOROLOGICAL CONDITIONS

The following conditions must exist for there to be a valid measurement:

1.	Relative Humidity:	Higher than 30 percent.
2.	Temperature:	In excess of 45 degrees Fahrenheit.
3.	Wind:	Under ten miles per hour average.

7.0 MEASUREMENT REQUIREMENTS

1. The measurement resolution shall be taken to be one (1) decibel.

2. The microphone shall be no closer than ten (10) feet from any obstruction such as a wall, pole, fence, or any other object whose size, shape, and position could modify direct transmission of sound, or cause undesirable reflections of sound.

3. The microphone shall be set five (5) feet above the ground at the measurement location.

4. Each measurement shall be taken when the Complex tracks are in operation.

5. Fractional values are to be rounded up or down according to the convention that any value 0.5 or higher shall be rounded up to the nearest integer and any value 0.4 or less shall be rounded down to the nearest integer.

6. Any Complex noise emission value of 100 dBA Lmax or less shall constitute evidence of

compliance. Any value of 101 dBA or higher shall be considered possible evidence of noncompliance.

7. At the start and finish of each measurement interval at each location, the equipment shall be calibrated using the acoustic calibrator.

8. At each measurement location, the events being measured shall be recorded to the extent that it is feasible to identify the exact source.

9. The temperature, relative humidity, wind speed and wind direction shall be recorded at each measurement location.

10. Measurements shall be recorded on a form.

11. More than a single measurement is permitted.

8.0 CALCULATION PROCEDURE

Two types of measurements shall be conducted at each location. One measurement will be of the ambient sound without the project sound sources in operation. The second measurement will be made with the project sound sources in operation. Measurements will be conducted in the manner prescribed in Section 7.0.

First Question: Is Source more than 5 dBA above ambient?
Second Question: Is Source greater than 100 dBA?

If Source is more than 5 dBA above the ambient and if Source is greater than 100 dBA, then there is a violation of the condition of compliance. If one or both conditions are not met, then there is no violation.

In the event that the ambient sound cannot be suitably separated from the measurement record in conformance with the specification for a clean measurement of the project sound levels the location shall be determined to be in compliance.

9.0 REPORTING

When measurements are taken, a written report shall be filed with the County after any measurement period. The report shall contain the following information as a minimum:

1. Description of each measurement location and a map showing all such locations. Measurement locations shall be identified by a unique description

such as a number that shall not be repeated for any other location. Additional locations or relocation of a measurement point shall be assigned a new unique description in the same format as all others. No description may be used twice.

2. Date, start time and finish time of the measurement at each location.

3. Equipment settings as appropriate to the instrumentation used.

4. A hard copy of the record at each location used for determining the levels, including identification of the selected samples.

5. A listing of ambient sound sources.

6. A description of the event being recorded at each location to the extent that is feasible.

7. The name of the person performing the measurements and the name of the author of the report.

8. A copy of the equipment calibration forms.

9. A certification that the measurements were performed in accordance with this specification.

The Certified Acoustical Engineer shall submit the written report to the County Planning Department within ten working days of the measurement.

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DRAFT

GORDON BRICKEN & ASSOCIATES

ACOUSTICAL and ENERGY ENGINEERS

November 12, 2007

SPECIFICATION ANALYSIS

CALIFORNIA SPEEDWAY

COUNTY OF SAN BERNARDINO

Prepared by:

Gordon Bricken
President

/mmb

Prepared for:

MR. MIKE YURICK
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GORDON BRICKEN & ASSOCIATES
ACOUSTICAL and ENERGY ENGINEERS

SUMMARY

This report addresses the development of a health based Noise Standard for the California Speedway Complex. The report discusses the various methods of defining noise impact, the various concepts for noise regulation and the practical problems of implementation and enforcement of regulations. As a result, it is recommended that a new single health based limit be adopted for the entire speedway complex, including the speedway oval and the drag strip. The proposed standard is a maximum of 100 dBA based on the arithmetic average of five samples of the source at intervals no closer than two minutes over no less than a 15 minute period at 550 feet or more from the property line of the Speedway.

This standard insures that as long as the noise level does not exceed 100 dBA from the Speedway or Drag Strip, then the annual average noise level will not exceed the EPA's annual recommended level of 71.4 dBA Leq.

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GORDON BRICKEN & ASSOCIATES
ACOUSTICAL and ENERGY ENGINEERS

1.0 INTRODUCTION

Over the years, many methods have been devised to define noise impacts. There has been some pattern of consistency in the definitions of impact, although the criteria implies more uniformity in human reaction to sound than actually occurs. Most all sound discussions contain the following basic ideas:

1. The basic goal is to minimize health effects on humans.

2. Human reaction to sound is related to a combination of sound level and duration of exposure. This combination is more familiar as "dosage" when applied to such subjects as sunlight exposure or pharmaceutical prescriptions.

3. Physical and physiological factors are much easier to quantify than are psychological factors. As a result, most studies have been done with those factors easiest to measure such as hearing loss.

4. The technical factors alone are not the only basis for communities to choose criteria. The criteria are often chosen based on the ease of data collection, the cost of collection, administrative implication to the enforcing agency, and the technological feasibility of mitigation.

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2.0 CRITERIA

2.1 FORMS OF NOISE CRITERIA

There are three major forms of noise metrics used by communities, which are:

2.1.1 THE AVERAGE NOISE LEVEL(Leq)

The Environmental Protection Agency (EPA) has promulgated criteria recommending average noise levels to protect a community from hearing loss as a function of the duration of exposure over each year for a 40 year period. The formula for intermittent sounds is:

$$Leq(h) = 71.4 - 10*Log(h/8760) \quad (1)$$

where: h = annual hours of exposure

The calculation refers to sounds which are clearly present and not just to the operating hours of a sound source.

2.1.2 THE DAY-NIGHT NOISE LEVEL (DNL)

The Day-Night Noise Level (DNL) is a single number that represents a type of average noise level over a 24 hour period. The DNL penalizes events that occur from 10:00 P.M. to 7:00 A.M. Thus, the 24 hour DNL average number is usually higher than the actual 24 hour average noise level [Leq(24)]. The index is widely employed by agencies of the Federal, State and local governments as the measure for defining acceptable noise exposure. Since the calculation is usually based on 24 individual hourly average noise levels, individual average hour levels may be higher than the DNL number. Under other circumstances, the DNL value may be higher than any individual hour. For example, if every hour has the same average level, the DNL value will be six (6) dBA higher than any hour. However, if the sound levels occur only between 7:00 A.M. and 10:00 P.M., then, the 15 hour average can be two (2) dBA higher than the DNL number.

The usual requirement for industrial zoned areas, such as occur around the California Speedway, is for levels not to

exceed 75 dBA DNL. This would be considered to be the health based standard. Lower limits are set for residential and commercial uses. These lower levels take into consideration some nuisance aspects of the noise impact. For events occurring only between 7:00 A.M. and 10:00 P.M., the health based 15 hour average can be as high as 77 dBA Leq. Note, a variant of the DNL index is the Community Noise Equivalent Level (CNEL) that is used in California. The CNEL value is usually no more than one (1) dBA higher than the DNL value for the same noise source.

The DNL value is based on long-term exposure. The typical method of calculation is based on the average of 365 days of operations converted into an average daily value.

2.1.3 THE STATISTICAL DISTRIBUTION FORM [L(x)]

The statistical distribution form establishes a set of combinations of allowed sound thresholds and allowed durations. The most common illustration of this approach is the Occupational Safety and Health Administration's (OSHA) standard. The combinations are given in Table 1.

TABLE 1

OSHA HEARING CRITERIA(1)

ALLOWED LEVEL (DBA)	ALLOWED HOURS/DAY	L(%)
90	8.0	L(100)
92	6.0	L(75)
95	4.0	L(50)
97	3.0	L(37.5)
100	2.0	L(25)
102	1.5	L(18.8)
105	1.0	L(12.5)
110	0.5	L(0.6)
115	Maximum	L(max)

(1) a. The condition must be chronic, that is occurring everyday for at least one year.
b. L(%) = Percent of eight hours.

The steps are based on dividing the allowed time for each five dBA step in half. This is called the exchange rate. The formula for these steps is given by the form:

$$L(h) = 90 - 16.6*\text{Log}(h/8) \quad (2)$$

where: h = number of hours a day greater than zero.

The form of the regulation is designed to allow relatively short term verification in a field setting without the necessity of long-term monitoring. Inspectors have to be certain that the conditions being examined occur on a regular basis and are not unique to a particular day, time or type of industrial production that is infrequent.

The County Performance Standard is another example of the statistical format. However, it is not based on a fixed exchange rate formula, so the steps are unique to the format. The version adopted for certain events at the Speedway is given in Table 2.

TABLE 2

DAY NOISE ORDINANCE LIMITS FOR THE CALIFORNIA SPEEDWAY(1)

DURATION	LAND USE			SYMBOL
	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	
30 minutes	65	65	75	L50
15 minutes	70	70	80	L25
5 minutes	75	75	85	L8
1 minute	80	80	90	L2
Anytime	85	85	95	Lmax

(1) a. Day = 7:00 A.M. to 10:00 P.M.
b. Duration based on one hour.

The regulation applies different standards to different uses, even though adjacent parcels may have single uses and some parcels may have multiple uses. Any revision should consider shifting to a zoning based system since the areas most likely to be affected are within a single zone.

It is also interesting to note that the format can be converted into a single equivalent average noise level. The single average noise level would be 83 dBA Leq.

2.2 COMPARISON OF CRITERIA

Since each of the criteria is in a different form, it is not evident how each one compares to the other. So an example was devised that allows an illustration. The example is for the average noise level based on an eight hour operation where the variables are the combinations of duration and level. The EPA calculation uses Equation 1. The OSHA calculation is based on 90 dBA for eight hours. The Industrial Performance Standard assumes 83 dBA Leq for each hour. The results are illustrated in Table 3.

TABLE 3

COMPARISON OF CRITERIA FOR EIGHT HOURS PER DAY EACH DAY FOR A YEAR (1)

CRITERIA	ANNUALIZED DAILY AVERAGE (DBA)
DNL	76
EPA	76
OSHA	85
Industrial PS	78

(1) a. Based on operations of eight hours per day.
b. The ranges are based in the various combinations of levels and times in the OSHA and PS criteria.
c. PS = Performance Standard.

The OSHA limits are higher than the EPA hearing limits because OSHA allows a higher percentage of hearing loss.

2.3 CONCLUSION

The EPA criteria is the minimum health based criteria. It can serve as the basis of the noise standard.

3.0 APPLICATION OF THE EPA STANDARD TO THE TRACK

The hours of operation of the tracks are listed in Table 4.

TABLE 4

ANNUAL TRACK OPERATING HOURS (1)

TRACK	WEEKDAYS	WEEKENDS	TOTAL
Oval	468	1,404	1,872
Drag Strip	200	735	935

(1) The data was provided by the Speedway.

The actual hours of noise production is considerably less than the hours of operation. The track is not used for racing during the weekdays with the exception of two days associated with professional NASCAR events. Testing and some trial runs are all that use the track during the weekdays. This constitutes no more than a few runs a day with the longest run being 15 seconds. The daily weekday use would be no more than 50 hours of annual noise production. Weekdays are devoted to testing and other non-racing events which produce little noise. Weekends are devoted to racing, although most of this is in club events. Even then, the racing is not continuous. The actual hours of noise production are based on the time of the actual runs. Table 5 lists the typical annual conditions.

TABLE 5

WEEKEND OPERATIONS MODEL

TYPE OF CAR	RUNS/DAY	TIME/ RUN	DAILY HOURS	ANNUAL HOURS
Alcohol Dragster	32	6 secs	.05	5.5
Gas Dragsters	240	15 secs	1.00	104.0
Club Racers	n/a	n/a	4.00	416.0
Professional Event	n/a	n/a	4.00	24.0

(1) a. The annual hours are based on 104 days except for professional events.
b. Professional events are six days a year.

The following two factors apply in terms of actual hours of noise production:

1. The actual hours of noise are less than the operating time.

2. The oval and drag strip operate simultaneously on the weekends, so the actual hours are the larger of the two tracks which is the oval.

When the two factors are taken into account, the allowed annual average level base of Equation 1 would be 84 dBA Leq. This means that if each hour of noise production were operated at 84 dBA Leq, the annual average level would be 71.4 dBA Leq which is the EPA's recommended average annual noise level to protect the community from hearing loss.

4.0 CONSIDERATIONS FOR A COMMUNITY HEALTH BASED STANDARD

4.1 THE ISSUES

In theory, a criteria based on an annual average could be accepted as a noise regulation. However, to do so, would require continuous measurement 365 days a year. This is exactly what is done at many airports in California, including the nearby Ontario International Airport. The DNL value is measured at a number of locations each day. Each day's DNL readings are combined with those of the previous 364 days to produce the annual average at each location.

However, continuous measurement for 365 days does not yield real time results that can be verified in the field at the time of an event. It is for this reason that most local regulations are crafted to make measurements over relatively short periods.

4.2 THE PROBLEMS

The sampling time is but one of the problems faced in the application of a local noise regulation. The regulation must be crafted to account for practical considerations, which are as follows:

1. Who will do the enforcement?
2. How much will enforcement cost?
3. Will special training be needed?
4. Will special equipment be needed?
5. How difficult will measurements be?
6. What to do about the ambient?

The answers to the questions of enforcement policy depend on the complexity of the technical requirements. More than one jurisdiction has adopted noise regulations that they had neither the budget nor talent to enforce. Realistically, most jurisdictions do not have the budget to establish a special group to

perform noise enforcement, especially if the local regulations are technically complex. So, what often happens is that the enforcement either does not occur in the manner prescribed or occurs only when circumstances merit the hiring of an outside expert. A jurisdiction will frequently use a simplified version of their regulation procedure to screen a noise complaint as a probable violation. If it is determined that a violation is probable, the cost of actual verification is passed on to the person cited for the potential violation.

A good example of the difficulties of enforcement is found in the existing Performance Standard. The Performance Standard presents a sliding scale of allowed combinations of sound level and duration that are measured over a one hour period. In an ideal setting, this measurement can be accomplished directly. However, in practice, the measurement will always contain the source sound being measured and the ambient sounds from other sources. Therefore, it is not possible to separate the sound under study from the ambient contribution within the same time frame. Thus, several methods can be employed to address the problem.

The ideal method is to make a measurement of the ambient with the source off and a measurement of the ambient with the source on. If the total noise level is more than ten (10) dBA higher than the ambient alone, then the source contribution to the total level will only be 0.2 lower than the total level. This determination must be made for all five criteria in the Performance Standard. However, if the difference between the total level and the ambient is less than 10 dBA higher than the ambient, a special calculation must take place. The calculation involves subtracting the ambient contribution from the total level. This is a logarithmic calculation and is usually not done in the field. The longer the sampling time, the more difficult it is to perform the measurement exercise.

If the source cannot be shut off, then the approach can be the same as if it could be shut off if the source has some periodic form. The longer the sampling time, the less likely one can perform the measurement for periodic events occurring more than once in the prescribed sampling time. For example, the present Performance Standard has a one hour sampling time. The race track sounds can occur at periods lasting as short as six (6) seconds, or as long as several hours.

An alternate method for direct comparison of the ambient level to the total level is to pick a time

when the source is not operating and use the ambient values for that period as the ambient for the period when the source is operating. This approach requires some documentation to support that the ambient in two non-coincident time periods are approximately the same. This becomes somewhat difficult to prove when the ambient and the total levels are less than 10 dBA apart.

Another method is to locate the measurement point in a way that it is not affected by the local ambient noise. This method works if the object is to make a general study of noise in an area. However, it is not guaranteed to work if a specific location is the subject of the study. In that event, one would have to address the ambient contribution to the total measured level.

The area around California Speedway is heavily industrialized with significant traffic and industrial noise. The problem of assessing the ambient contribution to the total noise is real. In fact, more often than not, the only parameter that can be reliably measured without the complications of subtracting out the ambient contribution is the maximum sound level. The reason is that there are clear intervals when the ambient maximum sound level and the track maximum sound levels do not overlap and the track source level can easily be identified as being at least ten (10) dBA higher than the ambient level slightly before and slightly after the source reading.

The conclusion is that practical experience suggests a simplification of the measurement and the standard. Ideally, the objective is to establish a single number that can be related back to the health based annual average level of 71.4 dBA Leq.

5.0 THE PROPOSAL

The annual average level is based on the relationship between the hourly maximum value and the hourly average value of the four main types of vehicle operations. These operations have been measured extensively in the area outside the speedway oval and the drag strip. A series of trials was carried out and the results are given in Table 6 on the following page.

TABLE 6

RELATIONSHIP OF ANNUAL LEQ TO LAX

TYPE OF CAR	LEQ FORMULA	ANNUAL HOURS	LEQ OF LMAX VALUES 90	95	100	105
Alcohol Dragster	Lmax - 30	5.5	28	33	38	43
Gas Dragsters	Lmax - 10	104.0	61	66	71	76
Club Racers	Lmax - 5	416.0	72	77	82	87
Professional Event	Lmax - 5	24.0	59	64	69	74
All Cars	n/a	549.5	73	77	83	88

The allowed annual level is 84 dBA Leq based on the analysis of the hour of operation. Table 6 indicates that 84 dBA Leq occurs as long as the maximum level of 100 dBA is not exceeded. Therefore, if the Speedway or Drag Strip does not result in noise exceeding 100 dBA, then EPA's recommended average annual noise level of 71.4 dBA Leq will be maintained to protect a community from hearing loss.

6.0 APPLICATION OF THE STANDARD

The area around the track is largely industrial zoning with industrial uses and some residential uses. The nearby residential uses are non-conforming uses in many locations. The standard should be set up to apply to locations that are accessible for measurement. This tends to be along streets, accessible parking lots and in the few vacant lots that still remain. Most of these locations lie more than 550 feet from the boundary of the Speedway property. According to measurements to the north and east of the Speedway, the rate of decay with distance averages nine (9) dBA for each doubling of distance. Therefore, if the allowed limit was set at 100 dBA at 550 feet, any location at a greater distance would always be less than 100 dBA and the annual average level less than 83 dBA Leq. The 550 feet would be at Whittram Avenue at its nearest distance from the track and Cherry Avenue to the east.

Any standard based on the maximum noise level shall not be based on a single sample. A useful method is to base the result on a number of samples and to average the result of the samples. Five samples in a 15 minute period is a workable program.

7.0 CONCLUSION

The 100 dBA Lmax level constitutes a health based criteria tied to the EPA definition of an annual acceptable level of sound that will insure a reasonable level of hearing protection. The proposed standard will be a maximum of

100 dBA based on the arithmetic average of five (5) samples of the source at intervals no closer than two minutes over no less than a 15 minute period at 550 feet or more from the property line of the Speedway.

8.0 MEASUREMENT SPECIFICATION

The measurement in a given location shall be governed by a suitable published protocol that insures uniform measurement. That protocol is contained in Appendix 1.

REFERENCES

1. U.S. Environmental Protection Agency, "Information on Levels of Environmental Noise Requisite to Protect Health and Welfare with an Adequate Margin of Safety", EPA/ONAC 550/9-74-004, March, 1974.

2. U.S. Department of Labor Occupational Noise Exposure Standard, Code of Federal Regulations, Title 29, Chapter XVII, Part 1910, Subpart G, 36FR 10466, May 29, 1971.

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6. Beranek, L. L., Noise and Vibration Control, McGraw-Hill 1971.

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8. Berger, B. H. etal, Noise and Hearing Conservation Manual, American Industrial Hygiene Association, 1986.

GLOSSARY

Editors Note: The term decibel is so widely used when referring to sound levels that confusion will arise when discussing various ways in which sound is classified. General practice is that anytime a sound level is listed in decibels, the level represents the sum of all energy present at the time of the measurement or the total sound energy being emitted from a sound source at one point in time. Time averages, tones and other assemblies or subdivisions of sound energy have their own symbols or modifiers. However, these are frequently not used leading to confusion as to the meaning of a given number. There are also various accepted unit symbols employed for many terms which can lead to confusion. The text of this report follows the definitions in this glossary.

"A" Weighting ... A frequency dependent filter applied to sound measurements that approximates the way the human ear filters sound. The "A" weighted decibel unit symbol is DBA in this report, although it is variously listed also as dB(A), dB-A, and L_A in other texts. Unless otherwise qualified, the "A" Weighted level is the sum of all energy present at an instant of time.

Average Sound Level ... Variously defined as the spatial average, the spatial and time average and the time average. Contemporary usage in community sound studies is to interchange use of the term with the term Equivalent Sound Level. Sometimes written as Lavg.

Day-Night Noise Index	...	The energy equivalent "A" Weighted continuous sound level compared to a 24-hour varying time level with a 10 dBA penalty added to nighttime sound levels between 10:00 P.M. and 7:00 A.M. Any Day-Night Noise Index unit symbol in this report is DBA LDN so as to distinguish the value from a simple "A" Weighted reading. However, it is also common to use only the term LDN as the modifier to a number. This term is also listed in texts as L_{dn} and DNL.
Decibel	...	The unit for measuring the volume of sound equal to ten times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure which is 20 micropascals. The decibel unit symbol is dB in this report, although some texts use db and DB.
Equivalent "A" Weighted Sound Level	...	A constant sound level (L) over a time interval (t) whose energy content is equivalent (eq) to the energy contained in a varying sound level over the same interval. Popular usage also calls this the average sound level over a specified time interval (t). The unit symbol is Leq. But, it is also listed in other texts as LEQ and L_{eq}.
Frequency	...	The number of times a second a phenomena repeats itself (this case sound). The older unit symbol was CPS for Cycles Per Second. The modern unit is Hertz (Hz) which corresponds to One (1) cycle per second.
Level	...	Same as Sound Level.
Noise	...	Any sound which annoys or disturbs humans or which causes or tends to cause an adverse psychological or physiological effect on humans. Sometimes defined as "Unwanted Sound".
Sound	...	An oscillation in pressure, particle displacement, particle velocity or other physical parameter, in a medium with internal forces which causes compression or rarefaction of that medium. The description of sound may include any characteristic of such sound including duration, intensity and frequency.

Sound Level ... In this study, the term means the sum of all sound energy present unless modified by terms designating an octave band in which event the sound level represents the sum of all sound energy in the particular band.

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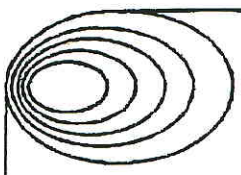
DRAFT

APPENDIX 1

MEASUREMENT SPECIFICATION



GORDON BRICKEN & ASSOCIATES

ACOUSTICAL and ENERGY ENGINEERS

SPECIFICATION FOR THE MEASUREMENT OF SOUND IN COMPLIANCE WITH THE CALIFORNIA SPEEDWAY AND AUTO CLUB DRAG STRIP STANDARDS

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TABLE OF CONTENTS

1.0 PURPOSE

This specification is intended to describe the methods to be employed, equipment to be used, and locations for measurements required to be conducted in accordance with the California Speedway Complex (herein after known as the Complex) noise standard.

2.0 APPLICABLE CRITERIA

2.1 NOISE

The noise levels outside the Complex due to racing activity shall not exceed an arithmetically averaged maximum of 100 dBA at 550 feet based on five (5) samples of cars taken no closer than two minutes apart over a period of at least fifteen (15) minutes for events, and five (5) dBA higher than the ambient measured in the same manner.

2.2 EXCEPTIONS

The only exceptions to the limits are emergencies and accidents and activities such as fireworks, aircraft, airship and helicopter operations.

2.3 PROHIBITED ACTIVITY

There are no prohibited activities.

3.0 DEFINITIONS

Ambient -- The sound level that exists at a location other than that of the quantity being measured for compliance. In this case, it is any sound or assemblage of sounds that are present but not radiating from inside the private property line of the Complex. The ambient reading shall consist of samples of the prevailing noise source. For example, for traffic, the samples will be the maximum reading of passing cars taken once each two

minute period until five samples are attained in a 15 minute period.

Certified Acoustical Engineer -- A person who is a member of the Institute of Noise Control Engineers or who has been certified by the County.

County Planning Department -- The Planning Department of the County of San Bernardino.

Clean Measurement -- A Complex-specific measurement that exceeds the ambient by five (5) dBA.

Compliance -- Compliance is defined to occur when the measurement result yields a value of 100 dBA or less.

Emergency -- Any occurrence or set of circumstances involving actual or imminent physical trauma or property damage which demands immediate action.

Emergency Work -- Any work performed for the purpose of preventing or alleviating an emergency.

Exempted Operations -- Emergencies, accidents and non-racing activities such as fireworks, aircraft, airships and helicopters.

Exterior Complex Boundary Property Line -- The boundary of the Complex.

Maximum Value -- The maximum value of a measurement is the highest decibel value reached during a measurement interval.

Measurement Frequency -- Five (5) samples taken at no less than two (2) minute intervals.

Measurement Period -- The measurement must be at least fifteen (15) minutes long.

Measurement Sample -- A maximum reading taken in conformance with the measurement instructions.

Ongoing Operations -- Any operation within the exterior complex boundary property line which can reasonably be construed to be part of the activities under the control of California Speedway Corporation.

Public Right-of-Way -- Any street, avenue, boulevard, highway, sidewalk, alley, or similar place which is owned or controlled by a governmental agency.

Resolution -- The minimum increment which can be assigned to a measurement value.

Sound Level Meter -- An instrument which includes a microphone, amplifier, RMS detector, integrator or time averager, output meter and weighting networks used to measure sound pressure level and which conforms to a specification for Type 1 or Type 2 meters as defined by ANSI specification S1.4-1971, or later version.

Threshold -- The 100 dBA maximum measurement value except for exempted operations.

All acoustical terminology not defined above shall be in conformance with the applicable American National Standards Institute publications.

4.0 INSTRUMENTATION

The instrumentation to be used for the measurement shall consist, as a minimum, of the following:

1. **Sound Level Meter** -- The meter will conform to the specification for Type 1 or Type 2 instruments as defined by the American National Standards Institute specification S1.4-1971, or the most recent update.

2. **Portable acoustic calibrator** with an accuracy of plus/minus 0.5 dB capable of producing a prescribed one (1) Kilohertz tone at a constant level.

3. **A windscreen** which does not affect the microphone response more than plus/minus one (1) dB for frequencies 63 to 4000 Hertz, and plus/minus 1.5 dB for frequencies above 4000 Hertz.

4. **Meteorological instruments** capable of measuring wind speed, wind direction, relative humidity and temperature with an accuracy of plus/minus ten percent (10%).

The sound level meter, calibrator and recording device shall carry calibration certificates showing calibration within the past 365 days by a laboratory traceable to the National Bureau of Standards.

5.0 SETTINGS

The measurement system shall be set as follows:

Weighting:	"A" Scale
Dynamic Response:	SLOW
Scale:	As appropriate to cover the range of expected sound levels

6.0 METEOROLOGICAL CONDITIONS

The following conditions must exist for there to be a valid measurement:

1.	Relative Humidity:	Higher than 30 percent.
2.	Temperature:	In excess of 45 degrees Fahrenheit.
3.	Wind:	Under ten miles per hour.

7.0 MEASUREMENT REQUIREMENTS

1. The measurement resolution shall be taken to be one (1) decibel.

2. The microphone shall be no closer than ten (10) feet from any obstruction such as a wall, pole, fence, or any other object whose size, shape, and position could modify direct transmission of sound, or cause undesirable reflections of sound.

3. The microphone shall be set five (5) feet above the ground at the measurement location.

4. Each measurement shall be taken at intervals no less than two minutes apart and the total time shall not exceed 15 minutes.

5. During the time interval of a measurement, there shall be identified five (5) readings taken at successive two minute intervals. If no noise emission sample is possible in the first two minute interval, the measurement shall continue in two minute increments for a period of not longer than 15 minutes. If less than five samples of noise emissions can be obtained in any 15 minute interval, then the noise emissions location shall be deemed to be in compliance.

6. The readings of noise emissions shall be arithmetically averaged and reported to the nearest integer value. Fractional values are to be

rounded up or down according to the convention that any average value 0.5 or higher shall be rounded up to the nearest integer and any average value 0.4 or less shall be rounded down to the nearest integer.

7. Any average Complex noise emissions value of 100 dBA Lmax or less shall constitute evidence of compliance. Any average value of 101 dBA or higher shall be considered possible evidence of noncompliance.

8. At the start and finish of each measurement interval at each location, the equipment shall be calibrated using the acoustic calibrator.

9. At each measurement location, the events being measured shall be recorded to the extent that it is feasible to identify the exact source.

10. The temperature, relative humidity, wind speed and wind direction shall be recorded at each measurement location.

11. Measurements shall be recorded on a form.

8.0 CALCULATION PROCEDURE

Two types of measurements shall be conducted at each location. One measurement will be of the ambient sound without the project sound sources in operation. The second measurement will be made with the project sound sources in operation. Measurements will be conducted in the manner prescribed in Section 7.0. The calculation procedure, based on a minimum of three samples taken at two minute intervals, is as follows:

Ambient Sample: (A1 + A2 + A3 + A4 + A5)/5 = Aavg
Source Sample: (S1 + S2 + S3 + S4 + S5)/5 = Savg

First Question: Is (Savg - Aavg) greater than 5 dBA?
Second Question: Is Savg greater than 90 dBA?

If (Savg - Aavg) is greater than 5 dBA and if Savg is greater than 100 dBA, then, there is a violation of the condition of compliance. If one or both conditions are not met, then, there is no violation.

In the event that the ambient sound cannot be suitably separated from the measurement record in conformance with the specification for a clean measurement of the project sound levels for the minimum number of samples, the location shall be determined to be in compliance.

9.0 REPORTING

When measurements are taken, a written report shall be filed with the County after any measurement period. The report shall contain the following information as a minimum:

1. Description of each measurement location and a map showing all the locations. Measurement locations shall be identified by a unique description such as a number that shall not be repeated for any other location. Additional locations or relocation of a measurement point shall be assigned a new unique description in the same format as all others. No description may be used twice.

2. Date, start time and finish time of the measurement at each location.

3. Equipment settings as appropriate to the instrumentation used.

4. A hard copy of the record at each location used for determining the levels including identification of the samples selected for averaging.

5. A listing of at least five (5) sample ambient maximum values taken at a minimum two (2) minute interval and the average of the five (5) values.

6. A listing of at least five (5) sample source maximum values taken at minimum two (2) minute intervals and the average of the five (5) values.

7. A description of the event being recorded at each location to the extent that is feasible.

8. The name of the person performing the measurements and the name of the author of the report.

9. A copy of the equipment calibration forms.

10. A certification that the measurements were performed in accordance with this specification.

The Certified Acoustical Engineer shall submit the written report to the County Planning Department within ten working days of the measurement.

08/175

GORDON BRICKEN & ASSOCIATES

ACOUSTICAL and ENERGY ENGINEERS

May 6, 2008

MR. MIKE YURICK
CALIFORNIA SPEEDWAY
9300 Cherry Avenue
Fontana, California 92335

SUBJECT: RESPONSES TO TWO QUESTIONS FROM HDR PERTAINING TO THE TRACK -- COUNTY OF SAN BERNARDINO

Dear Mr. Yurick:

HDR asked us to respond to the following two questions:

1. **What would be the effect of a twelve foot high wall located on the north side of the drag strip at the property line?**

A 15 foot high slope is already at the starting line of the drag strip. A twelve foot (12') wall would increase the overall slope and wall height to 27 feet. The slope already provides 10.6 dBA of noise reduction at 550 feet north of the property line, the north side of Whittram Avenue. The added twelve foot (12') wall would increase the overall reduction to 16.2 dBA, or 5.6 dBA more than the slope alone. The twelve foot (12') wall will have no effect on noise from the oval.

2. **What is the cumulative impact of the drag strip?**

In a noise analysis, the noise impact is defined by the amount of noise exposure over a long period of time in which some permanent effect will occur. The time period is usually taken to be the exposure over at least one year, although some Federal standards define it as being over a 40 year period.

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The measure of cumulative noise exposure is some version of the average noise level. This is either the Average Noise Level (Leq), or the Day-Night Noise Index (DNL). Either a calculation or direct measurement are employed to arrive at the cumulative noise levels depending on the noise source.

For calculations, the cumulative noise level is based on the average daily operations on the assumption that the average occurs each day over a year. For direct measurement, samples are taken each day of the average daily noise level, the 365 individual days are summed and divided by 365 to arrive at the annualized average daily noise level.

The new drag strip noise levels are superimposed on the existing ambient. The existing ambient is defined as the noise produced by the existing track and the non-track ambient. This condition will vary with the location in the community. The nearest sensitive location is on the north side of Whittram Avenue. In order to maintain a consistent data base, the calculations will be based on the Day-Night Noise Level.

The ambient condition is listed in Table 1.

TABLE 1

EXISTING AMBIENT NOISE LEVEL
550 FEET NORTH OF THE SPEEDWAY(1)

SOURCE	ANNUAL HOURS	LEQ/HR	DNL
Speedway Oval	1,808	65	58.1
NASCAR	64	77	55.6
Whittram	-----	--	72.0
TOTAL			72.3

(1) a. Speedway Oval and NASCAR DNL calculations are based on field measurements of individual event average noise levels.
b. Whittram is based on actual 24 hour measurements for a single day.
c. The annual hours were provided by the Speedway.
d. Trains were not included in these calculations.

The proposed standard is a maximum level of 100 dBA. There will be 935 hours of drag strip racing in a year. If every event in those 935 hours were 100 dBA the daily average level would 71.4 dBA Leq. This is equivalent to an average daily level of 62 dBA DNL. However, the actual levels as measured in 2007 for several hundred runs on the track averaged less than 100 dBA. Thus in practice, the actual annual DNL level would be less than 62 dBA DNL.

08/175

Assuming then, that the worst case is 62 dBA DNL, the combined levels of the drag strip and the ambient will be 72.7 dBA DNL, or 0.4 dBA higher than the ambient alone.

Even though the tracks will at times produce sound levels higher than those produced by Whittram Avenue, the fact is that the total hours of racetrack noise production is only 32 percent of the total hours of noise produced by Whittram Avenue. This makes the annual impact of the tracks less than the annual impact of Whittram Avenue.

Thank you, and if you have any questions, please do not hesitate to call.

Prepared by:

Gordon Bricken
President

/mmb

08/180

GORDON BRICKEN & ASSOCIATES
ACOUSTICAL and ENERGY ENGINEERS

May 7, 2008

MR. MIKE YURICK
CALIFORNIA SPEEDWAY
9300 Cherry Avenue
Fontana, California 92335

SUBJECT: REVISION TO EFFECT OF SOUND WALL AT AUTO CLUB DRAGSTRIP -- SAN BERNARDINO COUNTY

Dear Mr. Yurick:

At your request we have revised our calculations based on the sound wall design specified at Section C-C of Exhibit 1 and 2 as specified in the calculations in Appendix 1. The noise reduction to a point 550 feet from the north property line will be 7.6 dBA without the wall and 16.9 dBA with the wall for a net change of 9.3 dBA.

Thank you, and if there are any further questions, please do not hesitate to call.

Prepared by:

Gordon Bricken
President

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EXHIBIT 1

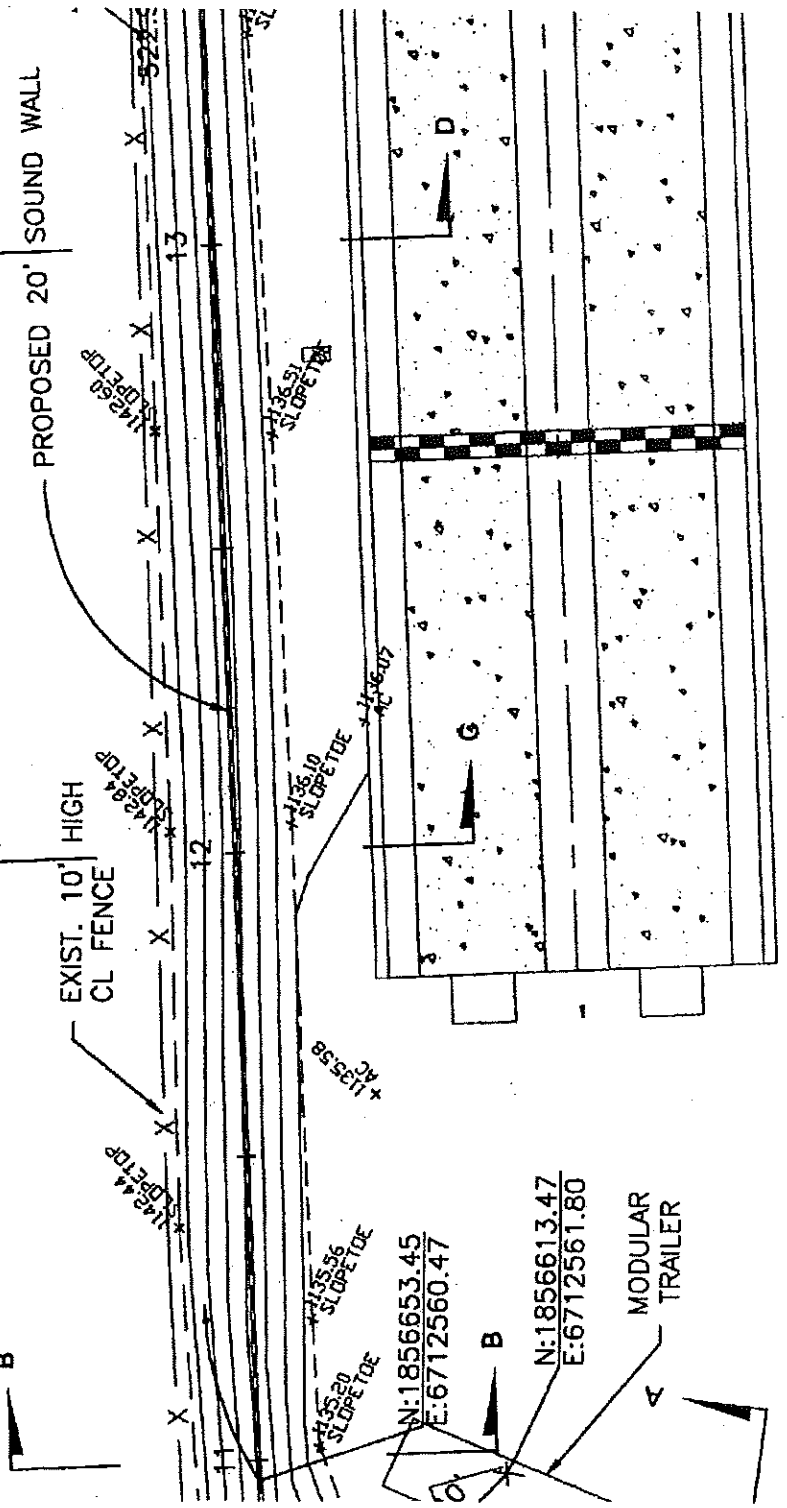
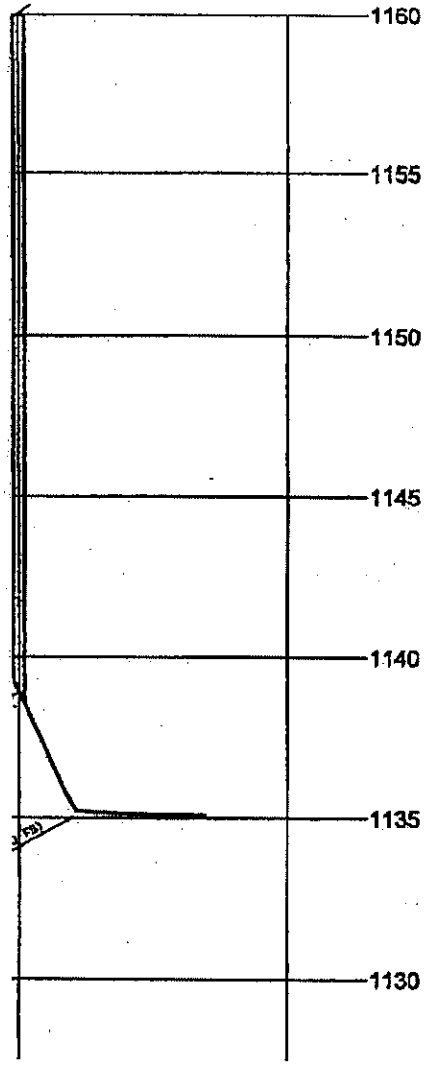
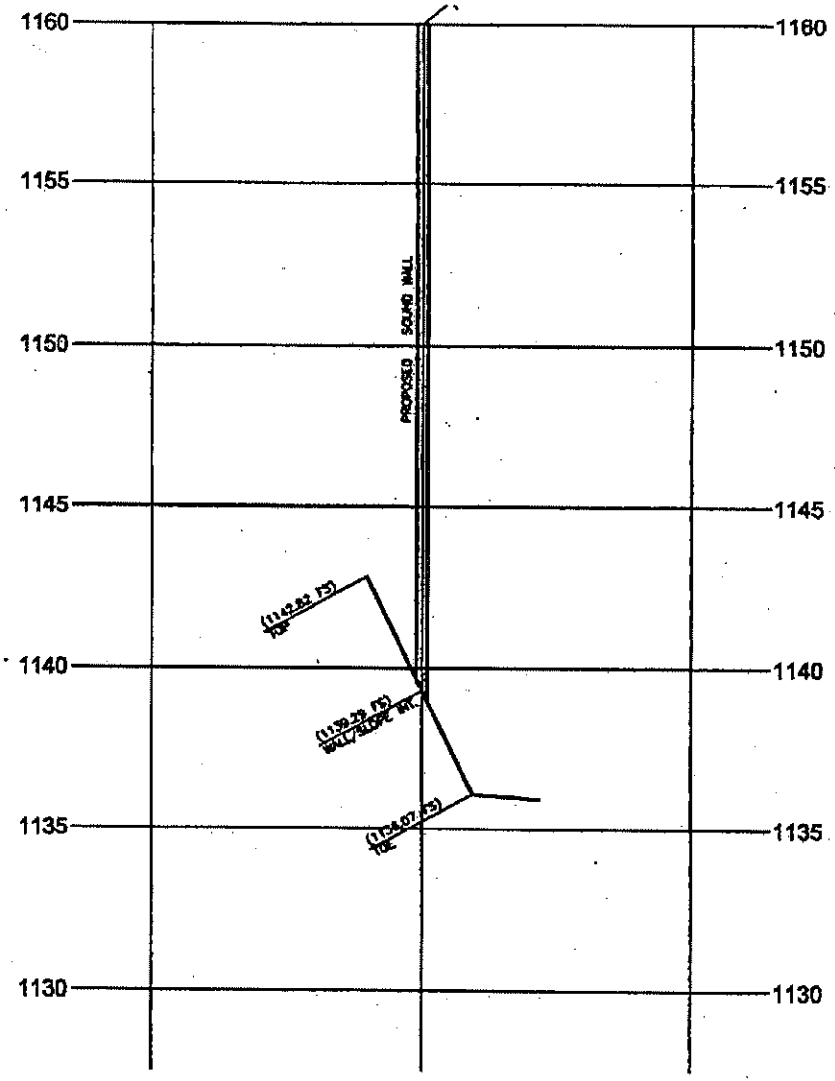

PROPOSED 20' SOUND WALL
EXIST. 10' HIGH CL FENCE
N:1856653.45
E:6712560.47
N:1856613.47
E:6712561.80
MODULAR TRAILER
SLOPE TOE
SLOPE TOP
A
B
C
D
G
11
12
13

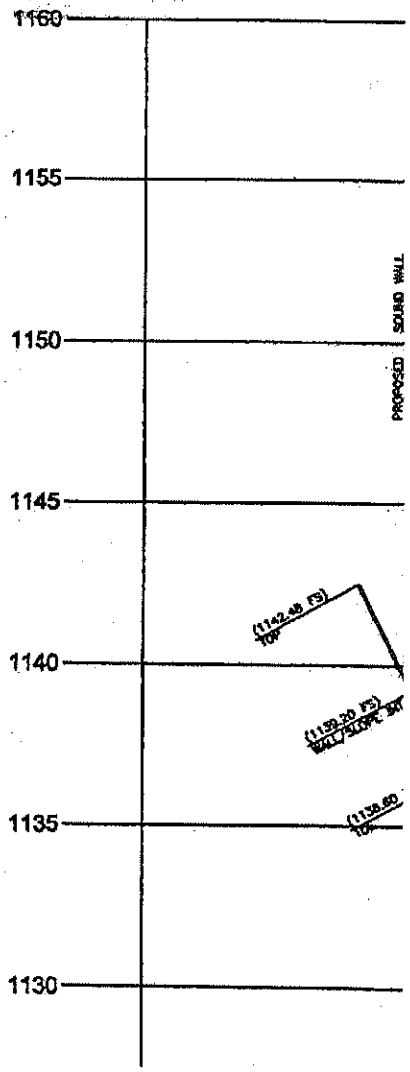
EXHIBIT 2



ION B-B
11+00
HOR: 1"=30'



SECTION C-C
STA 12+00
VER: 1"=5' HOR: 1"=30'



SECTI
STA
VER: 1"=5'

GORDON BRICKEN & ASSOCIATES
ACOUSTICAL and ENERGY ENGINEERS

A P P E N D I X 1

WALL CALCULATIONS

1621 East Seventeenth Street, Suite K Santa Ana, California 92705-8518
Phone (714) 835-0249 FAX (714) 835-1957

POINT SOURCE BARRIER REDUCTION, WALL HEIGHT VARIABLE

50 FT. SOURCE REFERENCE LEVEL.....= 120

PROJECT.....DRAGSTRIP
DESCRIPTION..20 FOOT SOUND WALL
SOURCE HEIGHT..... 0
SOURCE ELEVATION..... 1136
RECEIVER ELEVATION..... 1142
BARRIER ELEVATION..... 1139
RECEIVER HEIGHT..... 5
DISTANCE TO SOURCE..... 60
DISTANCE TO RECEIVER... 550
NOISE LEVEL AT RECEIVER W/O BARRIER..... 98.3

WALL HEIGHT		TNL	TIL
0.0	92.7	92.7	5.6
FN	0.0334		
20.0	81.4	81.4	16.9
FN	4.2841		

POINT SOURCE BARRIER REDUCTION, WALL HEIGHT VARIABLE

50 FT. SOURCE REFERENCE LEVEL.....= 120

PROJECT.....DRAGSTRIP
DESCRIPTION..EXISTING BERM
SOURCE HEIGHT..... 0
SOURCE ELEVATION..... 1136
RECEIVER ELEVATION..... 1142
BARRIER ELEVATION..... 1142
RECEIVER HEIGHT..... 5
DISTANCE TO SOURCE..... 60
DISTANCE TO RECEIVER... 550
NOISE LEVEL AT RECEIVER W/O BARRIER..... 98.3

WALL HEIGHT		TNL	TIL
0.0	90.7	90.7	7.6
FN	0.2217		
1.0	90.0	90.0	8.3
FN	0.3209		

GORDON BRICKEN & ASSOCIATES
ACOUSTICAL and ENERGY ENGINEERS

December 17, 2007

MEASUREMENT RESULTS

CALIFORNIA SPEEDWAY

COUNTY OF SAN BERNARDINO

Prepared by:

Gordon Bricken
President

/mmb

Prepared for:

MR. MIKE YURICK
Senior Director of Operations
California Speedway
9300 Cherry Avenue
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GORDON BRICKEN & ASSOCIATES
ACOUSTICAL and ENERGY ENGINEERS

S U M M A R Y

Measurements were conducted on seven occasions of the operations on the Auto Club Drag Strip and the Speedway Oval. That program consisted of 1,348 drag strip runs and a Nextel NASCAR event at a location on the north curb of Whittram Avenue. The results show that 77 percent of all data was 85 dBA, or less, and no event exceeded 100 dBA.

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GORDON BRICKEN & ASSOCIATES
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1.0 INTRODUCTION

This report will present the results of a series of noise measurements pertaining to the operation of the Auto Club Drag Strip and the California Speedway oval track. The drag strip is located on the north side of the California Speedway Oval. The location of the facilities are shown on Exhibit 1. The site, as well as the surrounding area, is flat. There are mixed residential, commercial and industrial land uses in the areas north and east of the site. The area north of the track is rapidly becoming more industrialized.

2.0 MEASUREMENT DESCRIPTION

The drag strip was measured on six occasions. These were August 19, September 16 and September 28 of 2006, as well as March 24, April 12 and May 5 of 2007. The Speedway Oval was measured on February 25, 2006 for the NASCAR Nextel Cup event. The primary location for the measurements was at the north curb of Whittram Avenue just slightly east of Calabash Avenue. This location is at the nearest living unit to the Speedway.

The measurements consisted of full-time individual maximum sound level car measurements for the drag strip. This is because each pair of runs is a distinct event. Individual vehicle measurements cannot be done at the location since the cars are in constant motion on the track. The best that can be done is to cite the highest level produced by the track event during the course of the event. It is impossible to collect data at the measurement location for all events due to the traffic noise from Whittram Avenue which is frequently higher than most drag strip and Speedway levels and masks the track levels.

3.0 MEASUREMENT RESULTS

The major purpose of the measurements was to document the noise levels of the types of cars and events using the drag strip and Speedway Oval. The drag strip events included street legal cars, gas powered non-street legal cars, alcohol funny

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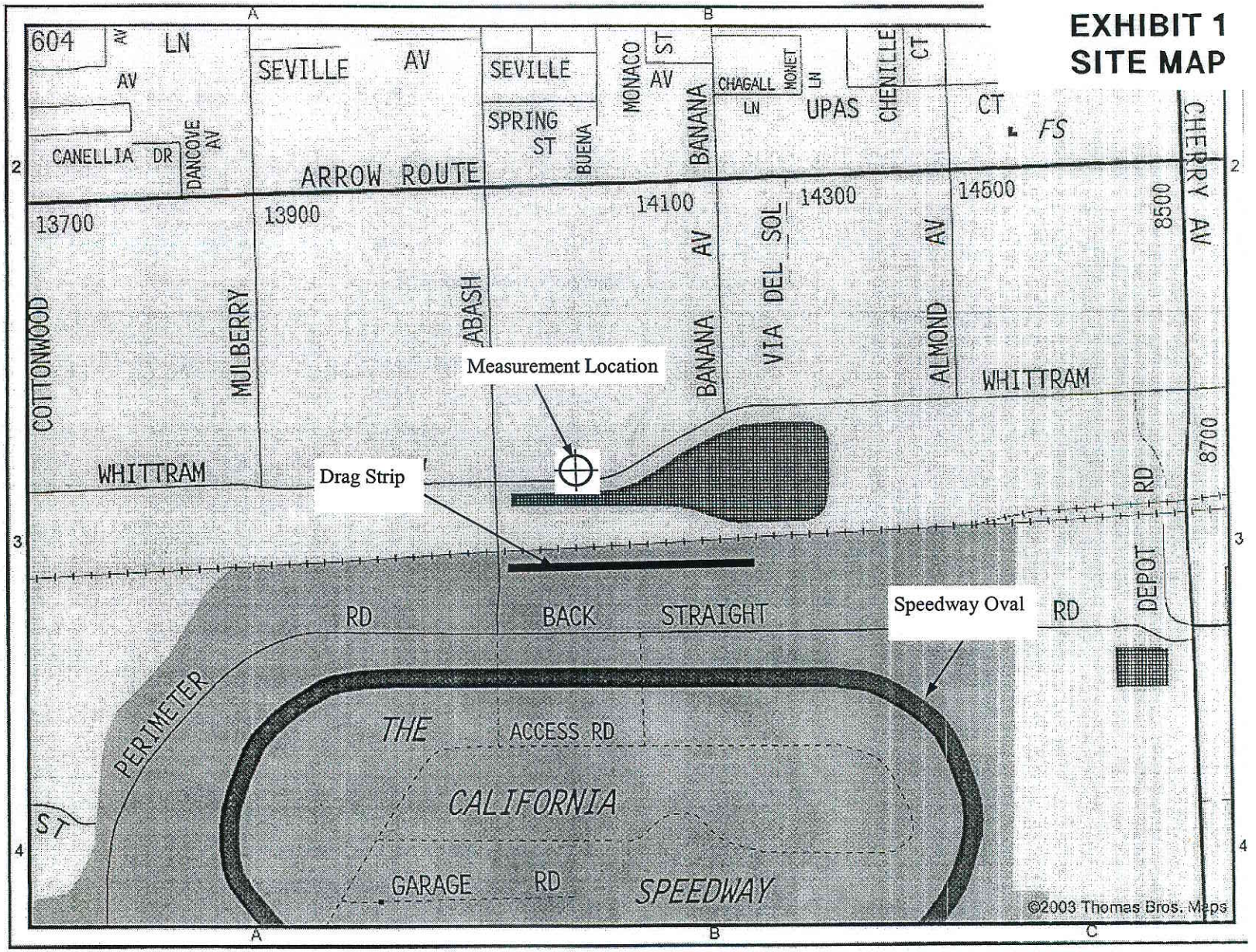
cars, alcohol dragsters and A-Fuel dragsters. The A-Fuel dragster is an non-supercharged nitromethane fuel car. The Speedway Oval measurements were for NASCAR Nextel Cup cars.

Generally, measurements covered a period from 10:00 A.M. to 5:00 P.M. At the primary location on Whittram, the racing levels are masked at times by the local traffic on Whittram Avenue. Therefore, individual readings were taken when the drag strip event was not masked by the local traffic.

There were 1,348 drag strip runs taken over the six visitations. The distribution of the levels from the drag strip are shown by the bar chart plot on Exhibit 2. The gas powered runs are all below 85 dBA. This is 77 percent of all the runs.

The Speedway Oval event does not lend itself to the measurement of individual cars at the distance of the measurement location. The readings tend to include the contribution of several cars which are on the south side of the Speedway Oval. The highest level recorded for the NASCAR events was 85 dBA.

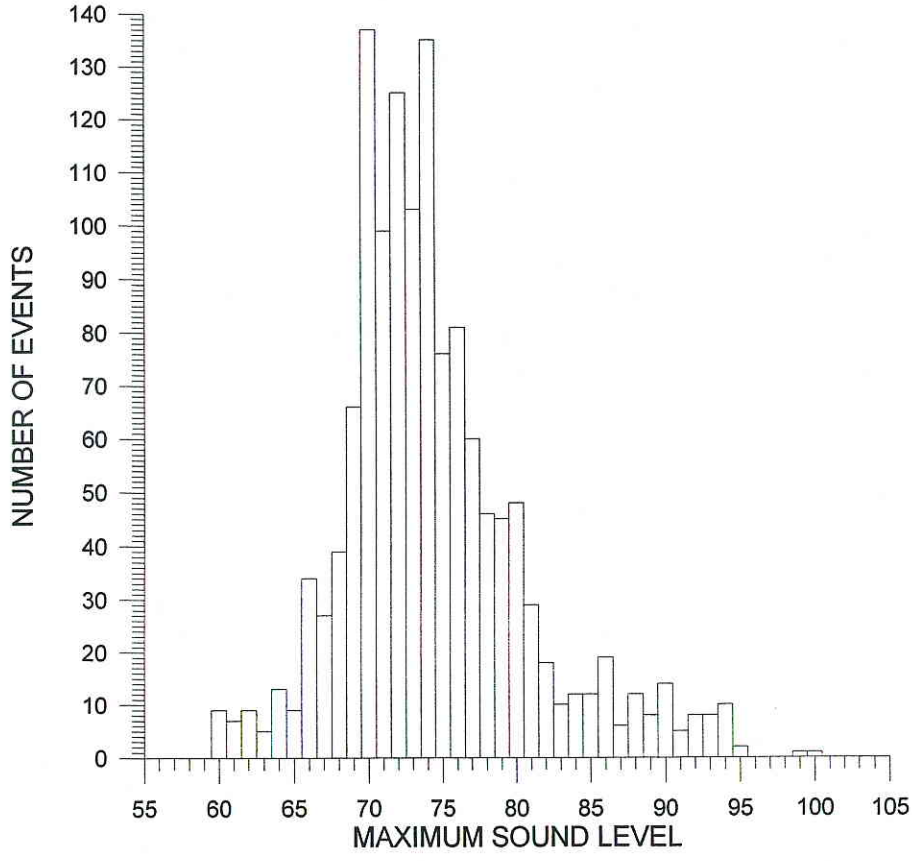
EXHIBIT 1
SITE MAP



SCALE I INCH = 850 FEET

EXHIBIT 2

DISTRIBUTION OF THE MAXIMUM SOUND LEVEL
OF 1348 RUNS AT THE AUTO CLUB DRAGSTRIP
AT THE NORTH CURB OF WHITTRAM AVENUE
(Median Level = 73 dBA)



GORDON BRICKEN & ASSOCIATES
ACOUSTICAL and ENERGY ENGINEERS

January 8, 2009

NOISE CONTOURS

AUTO CLUB SPEEDWAY

COUNTY OF SAN BERNARDINO

Prepared by:

Gordon Bricken
President

/mmb

Prepared for:

MR. MIKE YURICK
Senior Director of Operations
AUTO CLUB SPEEDWAY
9300 Cherry Avenue
Fontana, California 92335

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GORDON BRICKEN & ASSOCIATES
ACOUSTICAL and ENERGY ENGINEERS

1.0 INTRODUCTION

This document contains the response to the request for noise contours representing the classes of vehicles that use the dragstrip. Two facts need to be recognized when discussing the operation of dragstrips.

First, there are a variety of vehicles which use a drag strip. These are classed by engine displacement and fuel utilization. The terminology is often confusing as are the classification systems. For example, the National Hot Rod Association (NHRA) defines 13 competition classes. However, there are as many as 81 separate designations within some classes based on combinations of weight, year of origin, displacement of the engine, transmission and several other factors. Even so, the classes tend to produce fairly uniform sound levels and so they need not be subdivided further than the thirteen categories. Seven of the classes are variations on stock cars and run mostly in bracket racing.

Bracket racing is a handicapping system that allows fast and slow cars to compete equally on a course. Cars are assigned run time values called indexes. The slower car (higher index), is given a head start equal to the difference between his index and the other car. This system allows fast and slow cars to compete against each other. Some classes, subtitled "Comp" for "Competition" have fixed indexes and the winner is the car closest to the index, not necessarily the first one across the finish line. Some classes allow the drivers to set an index and then the winner is the car closest to the index, not necessarily the first car across the finish line. Professional classes have no indexes. First car across the finish line wins.

In addition to NHRA official classes, local drag strips, such as Auto Club, produce a myriad of specialty classes and names which are very regional in nature and sometimes unique to a track. Virtually all these specialty names are gas powered stock cars.

The time history of a drag race follows a very routine configuration. There are usually two cars to a run. Each car is permitted a brief and short trial start (called a burn-out) prior

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to the actual race. Each burn-out is normally around two seconds in duration, although the two burnouts can occur simultaneously. The actual run will vary with the class of car. Gas powered stock cars run anywhere from 9 to 17 seconds in a quarter mile. Alcohol powered vehicles range from 6 to 7 seconds in a quarter mile. Nitro-
methane fuel powered vehicles run in under a six (6) second range.

While the runs are of short duration, the rate of flow of cars varies. Stock cars are lined up behind the starting line in a queue. Each pair can be positioned at the starting line immediately after the pair ahead leaves the starting line. The typical local drag strip events run cars at 30 second intervals. Professional stock cars cycle at about one (1) minute intervals. Alcohol and fuel cars will cycle at two minute intervals. The longer intervals are mainly due to safety considerations.

The broad definitions of NHRA classes are listed as follows:

Top Fuel Dragster

Nitro-methane fueled, supercharged, rear engined, open wheel rail dragsters. Capable of 300-plus miles per hour (MPH) and elapsed times of 4.5 to 5 seconds in a quarter mile.

Top Fuel Funny Car

Nitro-methane fueled, supercharged, front engined, full-bodied dragsters. Capable of about 300-plus MPH and elapsed times just about five (5) seconds in a quarter mile.

A-Fuel Dragster

Nitro-methane fueled, normally aspirated, rear engined, open wheel rail dragsters. Capable of 300-plus MPH and elapsed times of 4.5 to 5 seconds in a quarter mile.

Top Alcohol Dragster

Alcohol fueled, supercharged, rear engined, open wheel dragsters. Capable of about 250 MPH and elapsed times just under six (6) seconds in a quarter mile.

Top Alcohol Funny Car

Alcohol fueled, supercharged, front engined, full-bodied dragsters. Capable of about 250 MPH and elapsed times just under six (6)
seconds in a quarter mile.

Pro-stock Eliminator

Tube frame, gas powered, full-bodied cars. Capable of 200 MPH and elapsed times just under seven (7) seconds in a
quarter mile.

Pro-Stock Bike

Especially prepared production based motorcycle. Capable of about 180 MPH and an elapsed time of 7.5 seconds in quarter mile.

Competition Eliminator

This is the broadest of the stock classes. Officials set the index (or handicap) and the first car across finish line wins. Any gas powered dragster or production based car can compete. Typical speeds are 140 to 220 MPH with elapsed times in the 7 to 8 second range.

Super Comp

Gas powered dragster and production based car variations running a fixed index of 8.9 seconds. Fifty-six sub-classes. Speeds range from 140 to 200 MPH. Elapsed times range from 7 to 9 seconds

Super Gas

Gas powered production based car variations running an index of 9.9 seconds. Typical speeds are around 140 MPH. Typical elapsed times are about nine (9) seconds.

Stock Eliminator

Reserved for 1960 or newer, gas powered, factory production based cars running dial-in indexes set by the driver. Typical indexes are 12 to 13 seconds. Typical speeds are 90 to 120 MPH. There are 80 subclasses in this category.

Super Stock Eliminator

Reserved for foreign and domestic factory production based cars. Gas powered, production based car variations running dial-in indexes are 10 to 11 seconds. Speeds range from 100 to 140 MPH in a quarter mile. There are 80 subclasses in this category.

Super Street

Gas powered, production based car variations running an index of 10.9 seconds. Typical speeds are around 130 MPH. Typical elapsed times are about 10 seconds.

Junior Dragsters

Small tube frame dragster configurations rear engined with Briggs and Statton engines. Basically a class for youngsters under 16.

In addition to the NHRA classes, local tracks will run a wide variety of events associated with some local or regional competition. Examples include such names as Test and Tune, Quick 8 Door slammers, 10" tire Pro Stock, Modified Super Stocks, Outlaw Super Stocks, Gamblers Race, Mustangs, GM/Ford Challenge, Stick Shift Nationals, Power Wheel Standing Championships, TTC Tournament of Speed, Super Chevy, Street Legal and Brackets. The various names and groupings are mostly promotional in nature. All these events are either combinations of street legal cars and motorcycles or some variation on NHRA classes. They can all be classified under the general designation of "stock car."

With some exceptions, almost all cars in all classes can run without mufflers and a large number of them do so. Muffled cars vary in output as a function of the muffler design.

The second point concerns the sound level of cars. Measurements taken over a long number of years and those specifically taken at the Auto Club Dragstrip show that the professional fuel classes will exhibit small noticeable differences in the sound level. Stock classes, especially street legal cars, can exhibit large differences in sound level because of the differences in engine displacements and level of modifications. Therefore, there is no single number that applies to any class of car especially away from the track.

2.0 NOISE CONTOURS

The request was made that the noise contours be for gas powered, street legal cars, gas powered, non-street legal cars, alcohol fuel cars, and A-Dragsters. Street legal cars are not necessarily driven to the track on public roads. Many are trailered. The street legal designation generally means that the cars are equipped with bumpers, head and tail lights and mufflers. However, some cars that are street legal become non-street legal by removing equipment for the runs. For purposes of this report, street legal cars are assumed to remain in that form. The noise level will be based on the highest recorded level at the reference point, which is 550 feet north of the track's northern boundary. The noise contours are based on the source noise levels

as produced at the starting line.

The non-street legal classification will be based on the measurement data of what is thought to be the highest recorded level for these cars at the reference point of 550 feet north of the track's northern boundary.

The alcohol and A-fuel dragster levels will be based on the measurement data of what is thought to be the highest recorded level for these cars at the reference point of 550 feet north of the track's northern boundary.

The contours take into account the shielding provided by the embankments, the Speedway Oval and the general building distribution north of the dragstrip. The pattern of building distribution only provides a general reduction. Specific locations in the area north of the track may have higher noise reductions that are depicted by the contours. The contours are contained in Appendix 1.

GORDON BRICKEN & ASSOCIATES
ACOUSTICAL and ENERGY ENGINEERS

APPENDIX 1

CONTOURS

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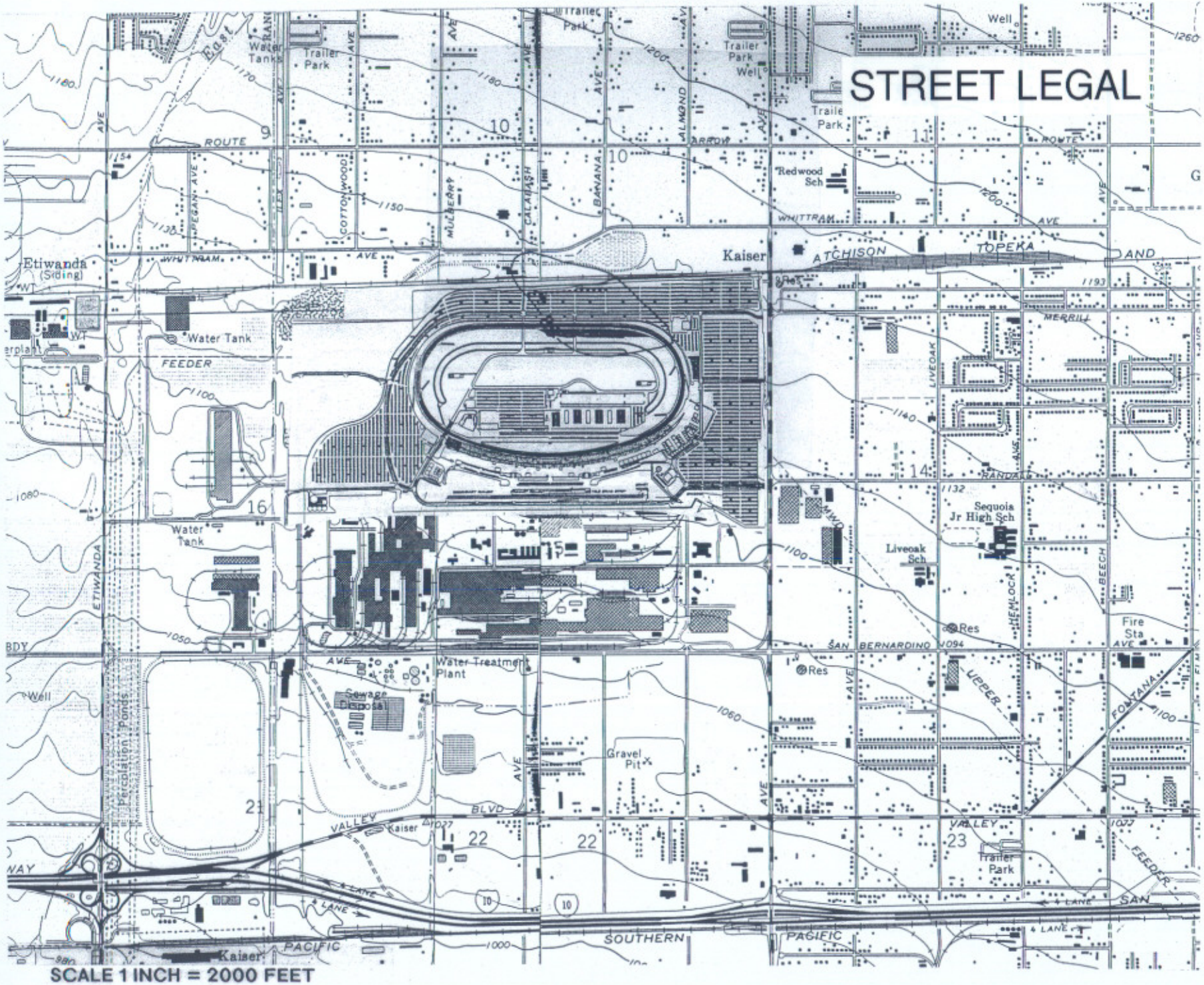
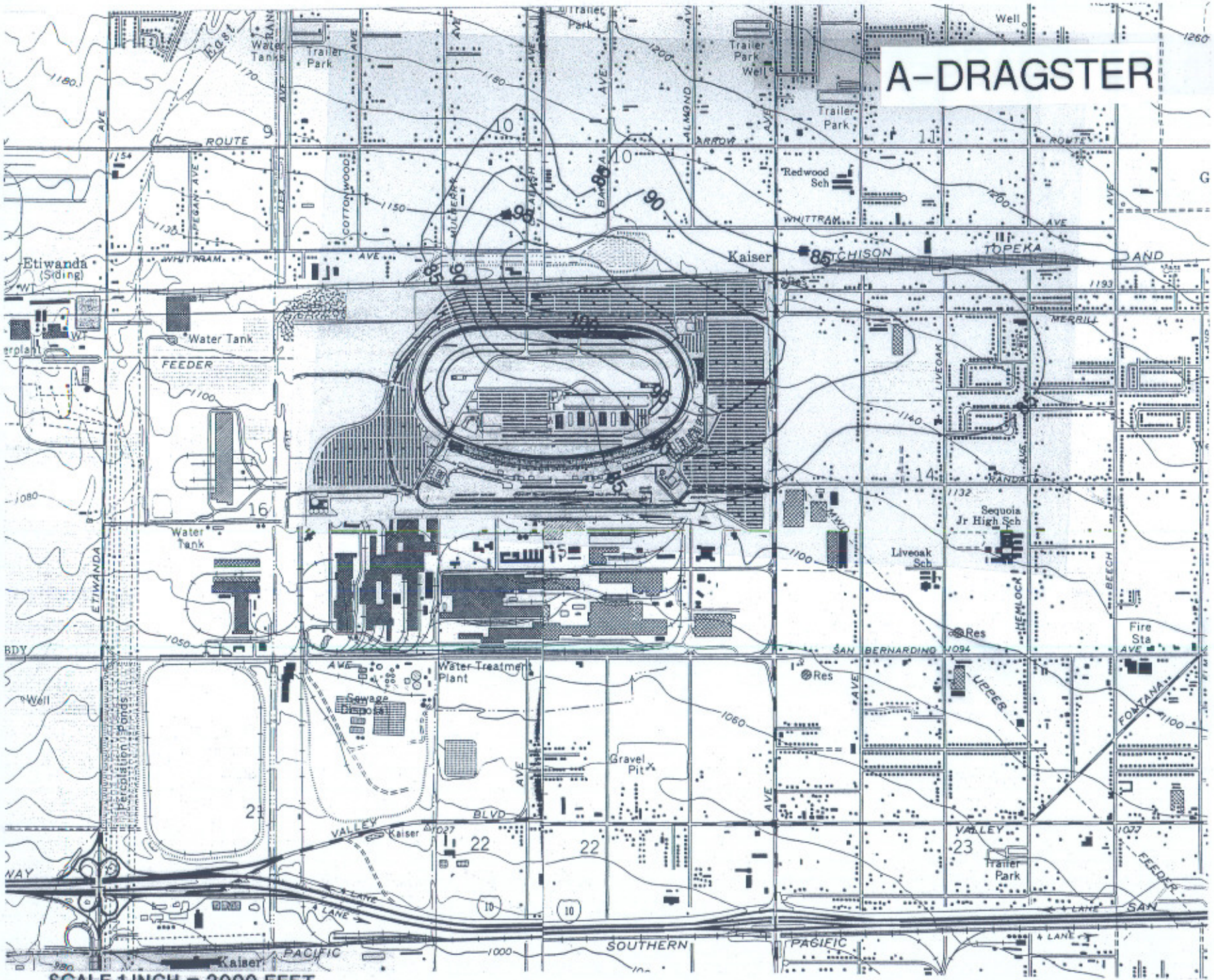

STREET LEGAL
Etiwanda
(Siding)
Water Tank
FEEDER
Water Tank
Water Tank
Water Treatment Plant
Sewage Disposal
Percolation Ponds
Well
Gravel Pit
Kaiser
Redwood Sch
Sequoia Jr High Sch
Liveoak Sch
Fire Sta
Trailer Park
Trailer Park
Trailer Park
Well
Well
Res
Res
ATCHISON TOPEKA AND
SAN BERNARDINO
SOUTHERN PACIFIC
4 LANE
ROUTE 9
ROUTE 10
ETIWANDA AVE
WHITTRAM AVE
MERRILL AVE
RANDALL AVE
BASELINE
VALLEY BLVD
SCALE 1 INCH = 2000 FEET


GAS-NON-STREET LEGAL
Etiwanda
(Siding)
Water Tank
FEEDER
Water Tank
Water Tank
Trailer Park
Trailer Park
Redwood Sch
Kaiser
ATCHISON
TOPEKA
Liveoak Sch
Sequoia Jr High Sch
Fire Sta
Water Treatment Plant
Sewage Disposal
Percolation Ponds
Gravel Pit
Trailer Park
Kaiser
PACIFIC
SOUTHERN
PACIFIC
SAN BERNARDINO
ROUTE 9
ROUTE 10
WHITTRAM AVE
MERRILL AVE
RANDALL AVE
VALLEY BLVD
SCALE 1 INCH = 2000 FEET


ALCOHOL FUEL
Etiwanda (Siding)
Water Tank
FEEDER
Water Tank
Water Treatment Plant
Sewage Disposal
Percolation Ponds
Well
Gravel Pit
Kaiser
Redwood Sch
Sequoia Jr High Sch
Liveoak Sch
Trailer Park
Fire Sta
Well
ATCHISON
TOPEKA
SAN BERNARDINO
SOUTHERN
PACIFIC
VALLEY
BLVD
ROUTE
WHITTRAM
MERRILL
ETIWANDA
LIVEOAK
BEECH
HEMLOCK
FONTANA
4 LANE
SCALE 1 INCH = 2000 FEET


A-DRAGSTER
Etiwanda
(Siding)
Water Tank
FEEDER
Water Tank
Water Treatment Plant
Sewage Disposal
Percolation Ponds
Well
Gravel Pit
Trailer Park
Redwood Sch
Kaiser
Sequoia Jr High Sch
Liveoak Sch
Fire Sta
Res
Trailer Park
Trailer Park
Trailer Park
Well
ROUTE
WHITTRAM AVE
TOPEKA
MERRILL
SAN BERNARDINO
VALLEY
BLVD
SOUTHERN PACIFIC
SAN
4 LANE
ETIWANDA
LIVEOAK
BEECH
HEMLOCK
FONTANA
ALMOND
ARROW
COTTONWOOD
JURUPA
SCALE 1 INCH = 2000 FEET

GORDON BRICKEN & ASSOCIATES

ACOUSTICAL and ENERGY ENGINEERS

April 29, 2009

N O I S E C O N T O U R S

A U T O C L U B S P E E D W A Y

C O U N T Y O F S A N B E R N A R D I N O

Prepared by:

Gordon Bricken
President

/mmb

Prepared for:

MR. MIKE YURICK
Senior Director of Operations
AUTO CLUB SPEEDWAY
9300 Cherry Avenue
Fontana, California 92335

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GORDON BRICKEN & ASSOCIATES
ACOUSTICAL and ENERGY ENGINEERS

SUMMARY

This report addresses six noise contour conditions that will occur at the Auto Club Dragstrip and Speedway based on the use of specific limits on noise emissions. The likely Oval operations that will occur during a simultaneous operation of the dragstrip have little effect on the maximum noise levels north of Whittram Avenue.

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ACOUSTICAL and ENERGY ENGINEERS

1.0 REFERENCE CONDITIONS

There are two limits being considered. One limit allows a maximum level of 100 dBA at a location on the north side of Whittram Avenue just east of Calabash Avenue. The other limit is a maximum of 85 dBA at the same location.

2.0 CONTOUR DESCRIPTIONS

There are six Exhibits, which are as follows:

1. Exhibit 1 -- This Exhibit depicts the condition for the Nextel Cup Race on the oval track. It is based on field measurements.

2. Exhibit 2 -- This Exhibit depicts the condition for a SCCA event on the oval track. The SCCA would be the highest level club-type event.

3. Exhibit 3 -- This Exhibit depicts the noise contours for a dragster that registers 100 dBA at the reference point on Whittram Avenue.

4. Exhibit 4 -- This Exhibit depicts the noise contours for a dragster that registers 85 dBA at the reference point on Whittram Avenue.

5. Exhibit 5 -- This Exhibit depicts the noise contours for the 100 dBA dragster and the SCCA event on the oval track operating at the same time. The drag strip will not operate during the Nextel Cup and similar events because there is not enough parking to accommodate the two operations. The dragstrip can operate when the club type events are on the oval track as the club type events do not draw a large number of spectators.

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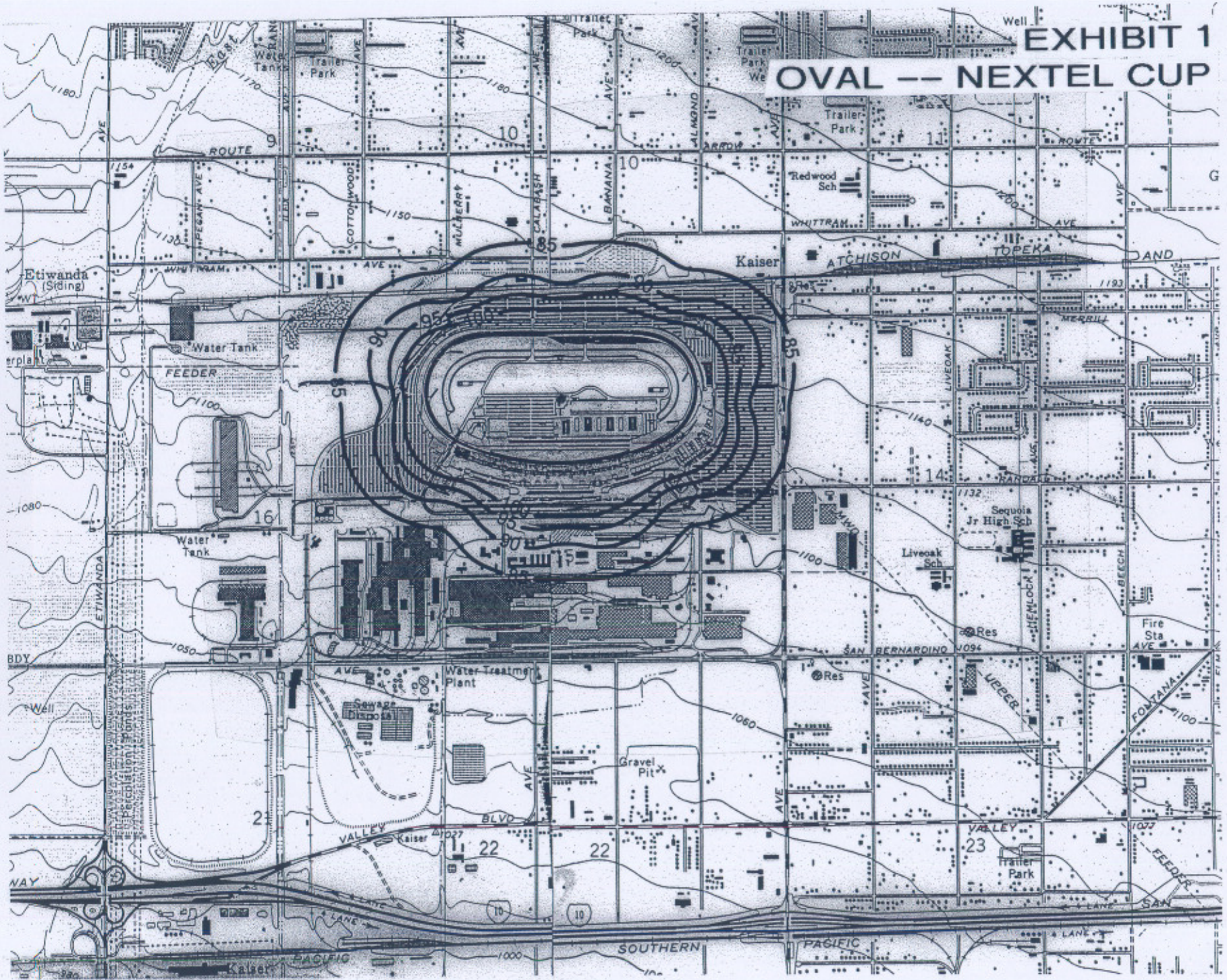
6. Exhibit 6 -- This Exhibit depicts the noise contours for the 85 dBA dragster and the SCCA event on the oval track operating at the same time.

There are occasions when the dragstrip is operating at the same time as testing on the oval track. Such testing might involve Nextel type cars. However, the testing event occurs at intervals and lasts a short time. Thus, there is no probability that a single dragster run and a single Oval car event will occur simultaneously. In the actual oval event, there are many cars and at least one will be opposite the drag strip during a run on the dragstrip. Therefore, for the Oval event and the dragstrip event to overlap, there must be continuous levels from the Oval. The likely Oval operations that will occur during a simultaneous operation of the dragstrip have little effect on the maximum noise levels north of Whittram Avenue.

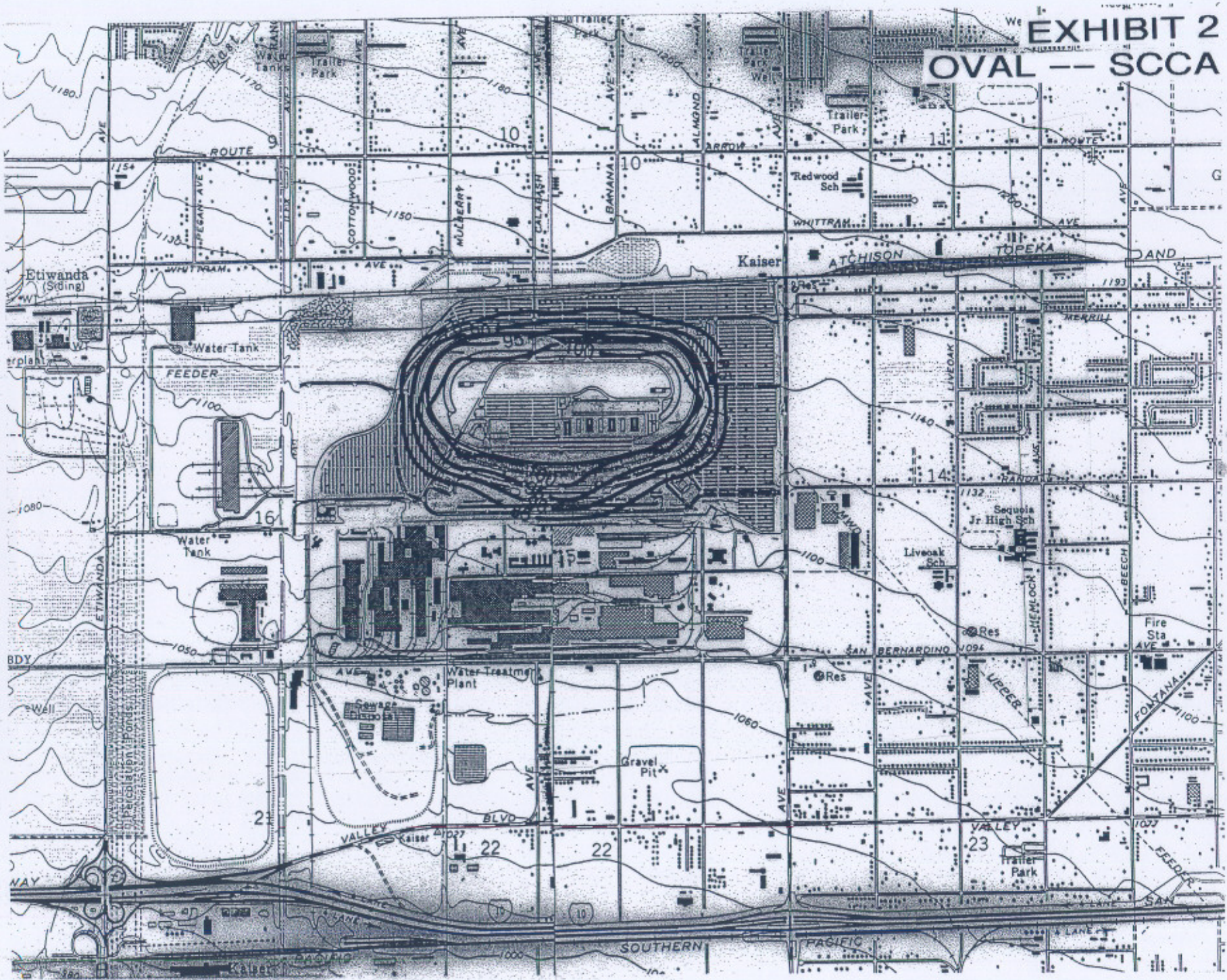
EXHIBIT 1

OVAL -- NEXTEL CUP



SCALE 1 INCH = 2000 FEET

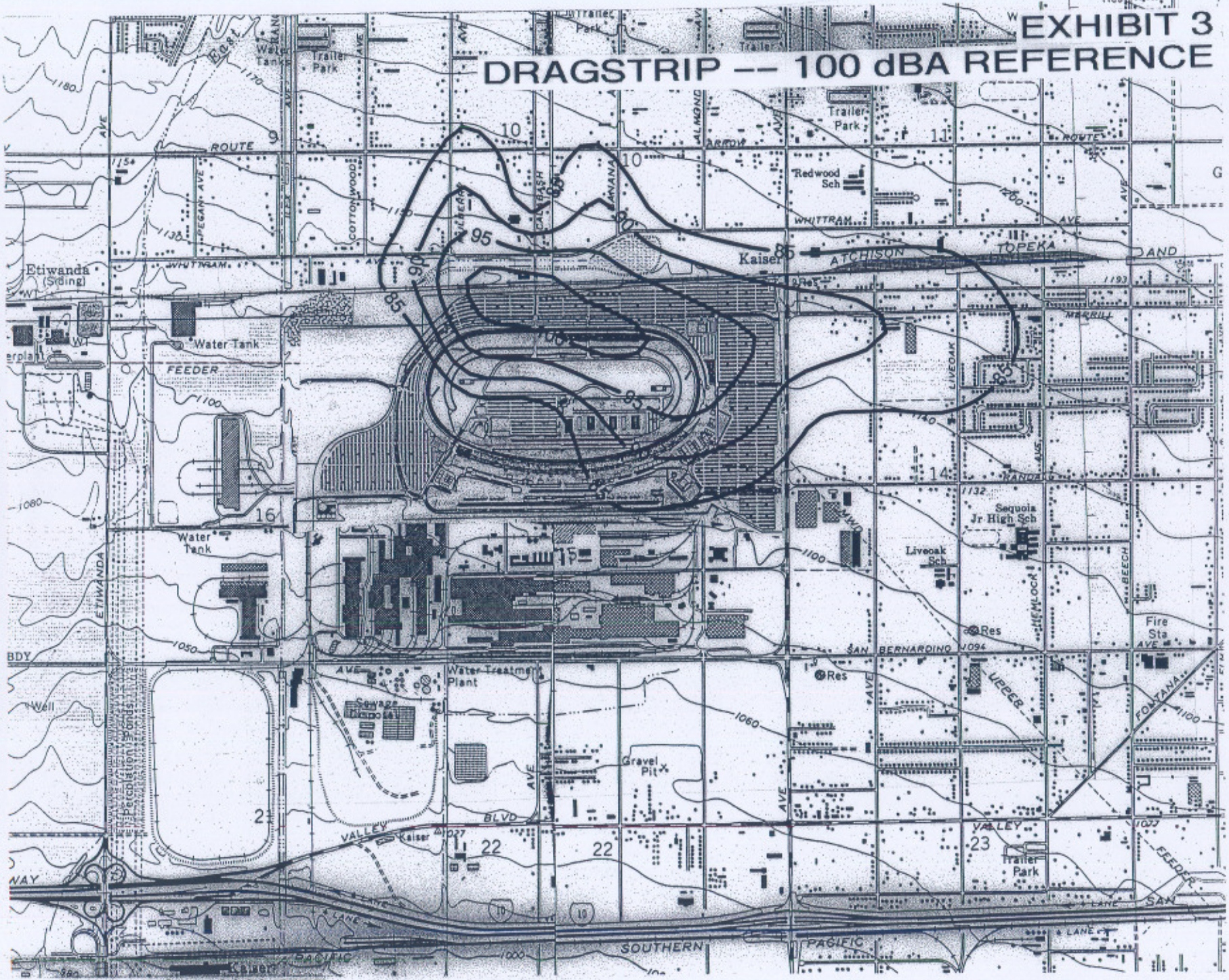
EXHIBIT 2
OVAL -- SCCA



SCALE 1 INCH = 2000 FEET

EXHIBIT 3

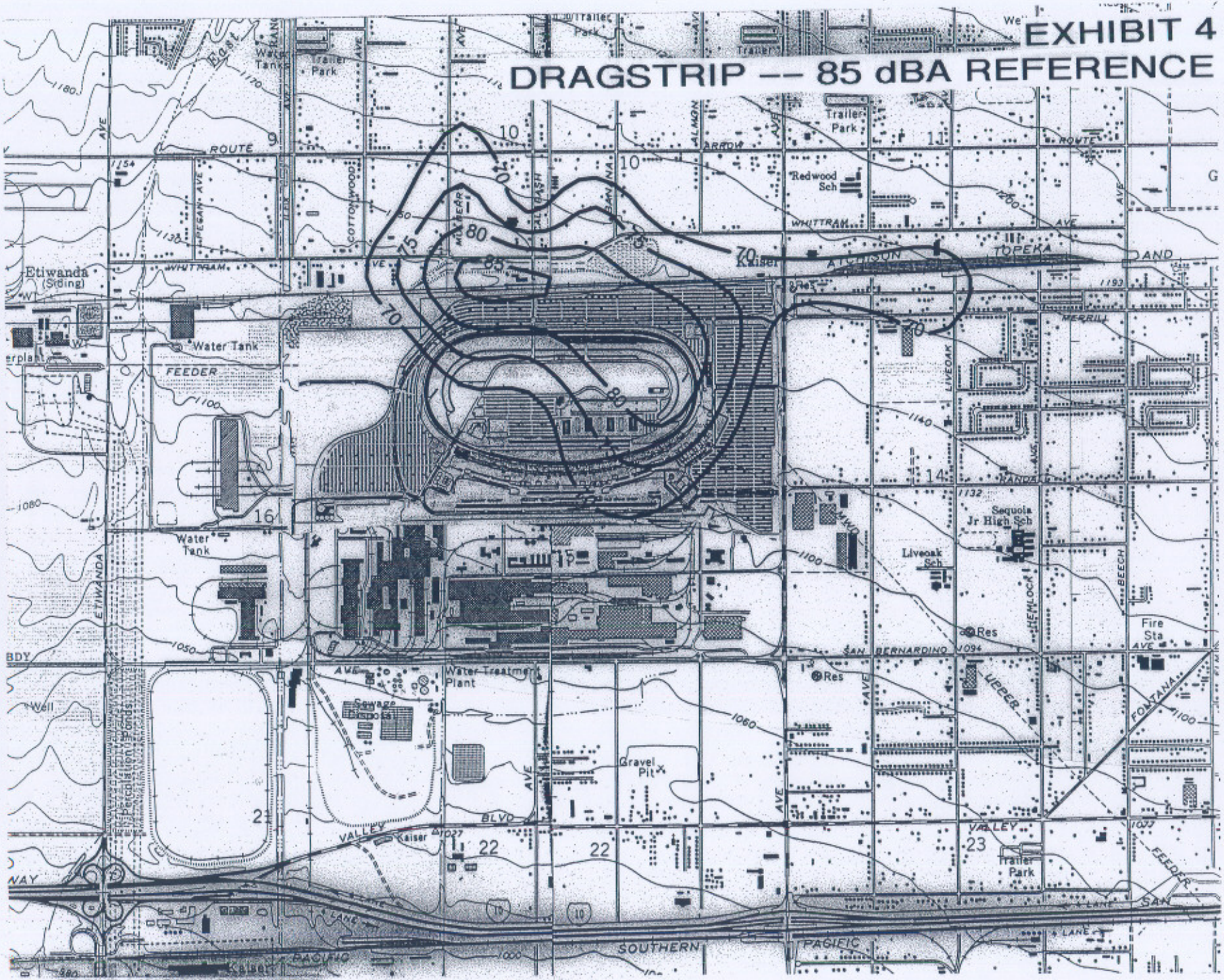
DRAGSTRIP -- 100 dBA REFERENCE



SCALE 1 INCH = 2000 FEET

EXHIBIT 4

DRAGSTRIP -- 85 dBA REFERENCE



SCALE 1 INCH = 2000 FEET

EXHIBIT 5

DRAGSTRIP -- 100 dBA REFERENCE PLUS SCCA OVAL

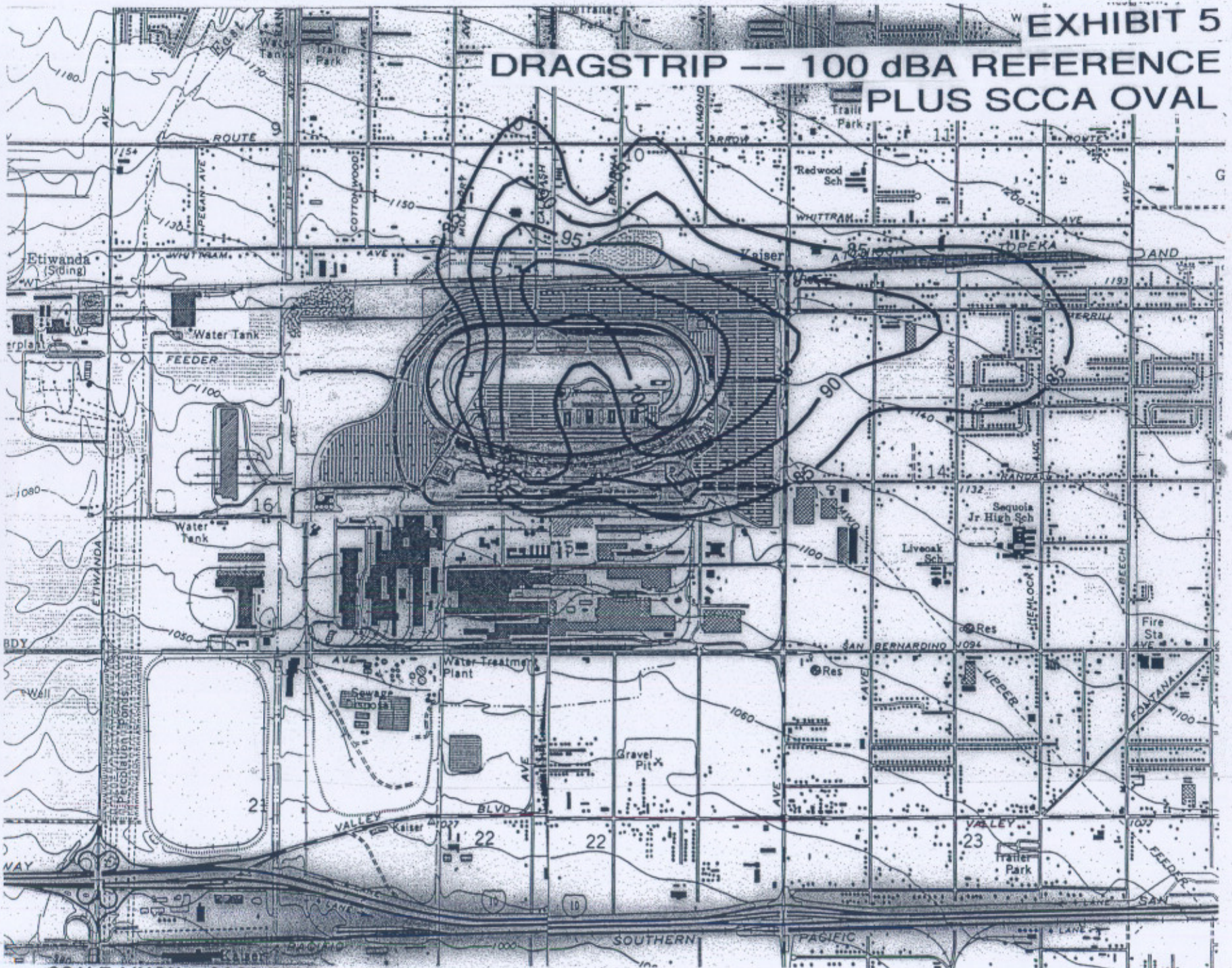


EXHIBIT 6

DRAGSTRIP -- 85 dBA REFERENCE PLUS SCCA OVAL