



**Assessment of
Community Reaction
to Proposed Club Racetrack**

NOISE-CON 2005

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**Study sponsored by
The Tamworth Foundation, Tamworth, NH**



Presentation Outline

<http://www.hmmh.com/>

- **Issues**
- **Criteria**
- **Approach**
- **Results**
- **Recommendations**
- **Status update**



Issues

<http://www.hmmh.com/>

- **What is “club” racing?**
- **Why the developers like the mountains**
- **Why some residents of Tamworth are worried**
- **What The Tamworth Foundation wanted**



What is “Club” Racing?

<http://www.hmmh.com/>



What is "Club" Racing?



Why the Developers Like the Mountains

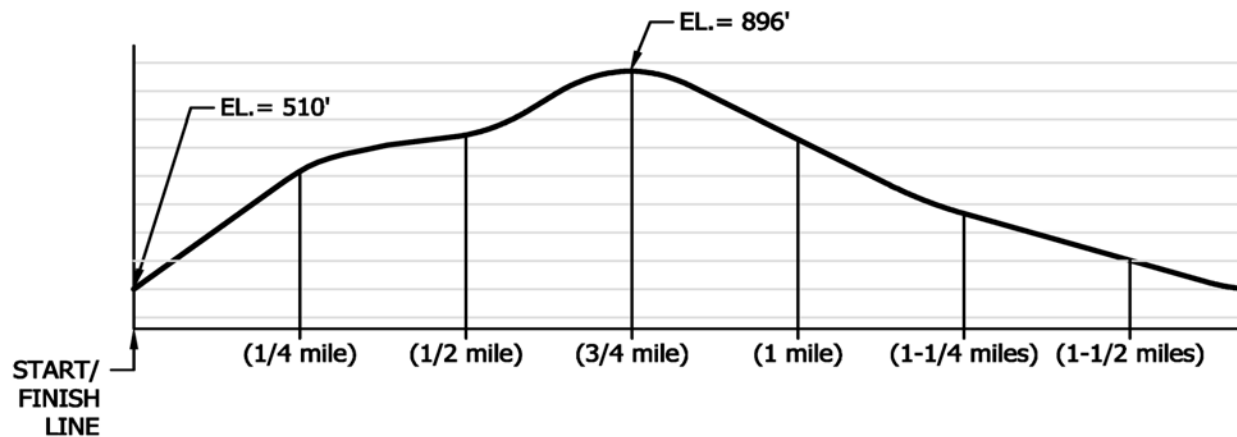
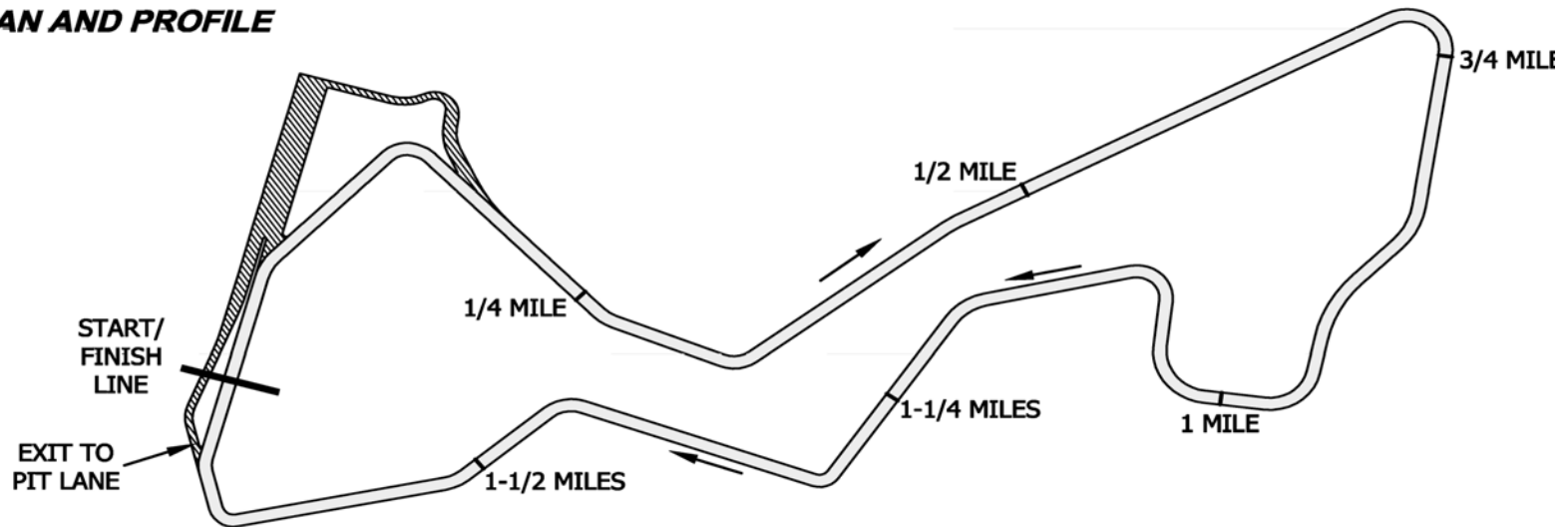
<http://www.hmmh.com/>



Why the Developers Like the Mountains

<http://www.hmmh.com/>

WEST COURSE AN AND PROFILE



WEST ROAD COURSE PROFILE



Why Some of the Community is Worried

<http://www.hmmh.com/>



**Feed Your Need
For Speed!**



Why Some of the Community is Worried

<http://www.hmmh.com/>



Why Some of the Community is Worried

<http://www.hmmh.com/>



What The Tamworth Foundation Wanted

<http://www.hmmh.com/>

- 1. A neutral and balanced noise study**
 - No applicable noise regulations in Tamworth or New Hampshire
 - Early in the process – no noise studies yet
 - Half of town residents undecided
 - Other half of residents split for/against
 - Track developer to contribute to study cost
- 2. Noise provisions in a “Racetrack Ordinance” to protect the interests of the residents**



Assessment Criteria

<http://www.hmmh.com/>

- **“Normalized Day-Night Sound Level” from US EPA Levels Document: “Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare With an Adequate Margin of Safety” (1974).**
- **Speech and sleep interference**
- **Audibility regularity**



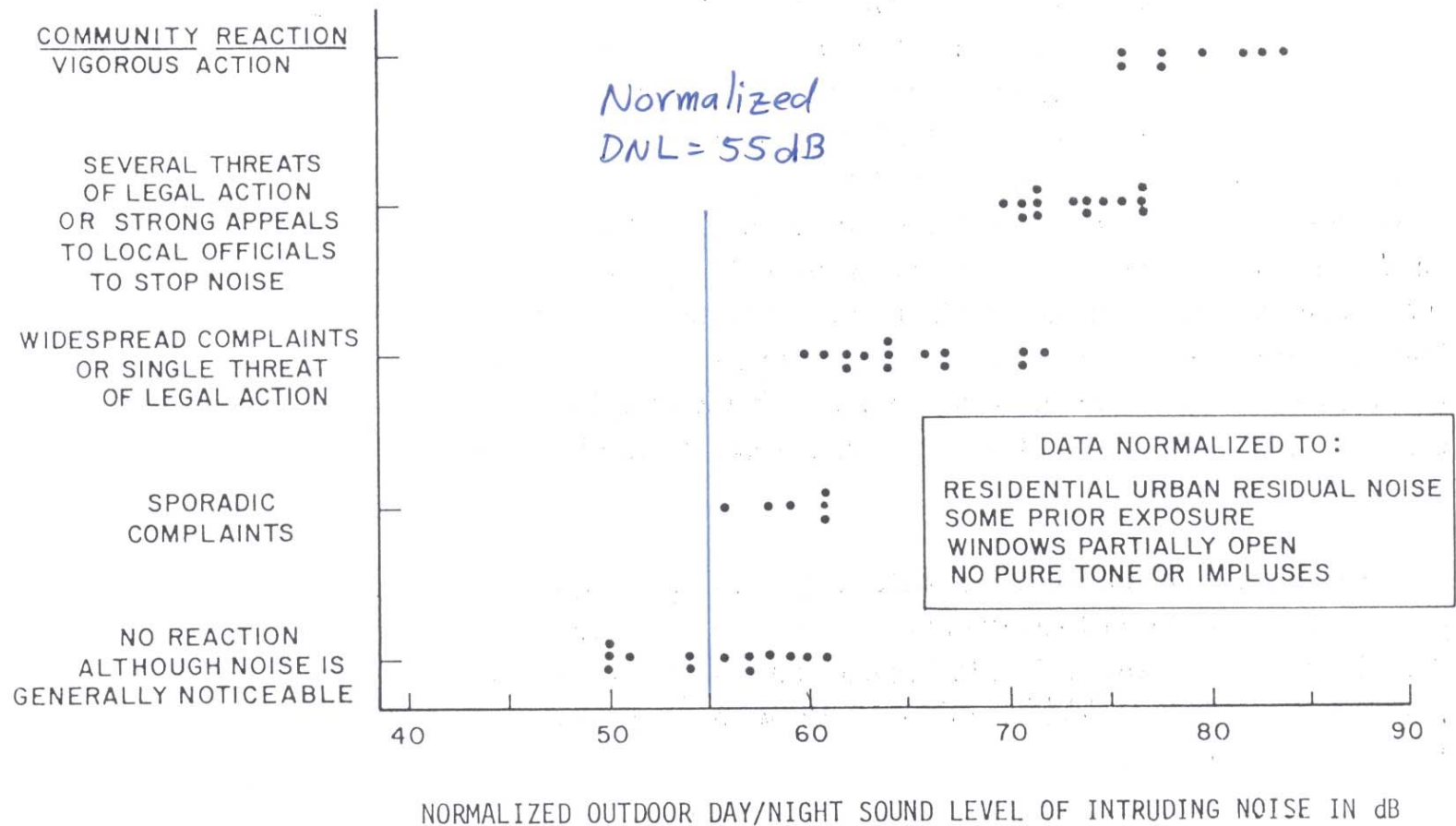
Assessment Criteria

<http://www.hmmh.com/>

- **EPA report summarizes Community Reaction to many different noise sources**
 - A common and well-founded method for assessing likely community reactions to new noise sources
 - “Normalized DNL” of intruding source is computed and compared with community responses
 - Annual Average DNL is usual approach except where significant seasonal population – as in Tamworth Summer Season DNL is preferred metric
- **Recent article by Schomer (2002) updates EPA approach**
 - No differences for Tamworth study



Assessment Criteria



Assessment Criteria

<http://www.hmmh.com/>

Corrections to be added to the DNL of the intruding noise to obtain Normalized DNL

Description of Correction	Amount to be added to DNL (dB)
Quiet suburban or rural community	10
No prior experience with the intruding noise	5
Pure tone character present	5



Existing Noise Environment

<http://www.hmmh.com/>

Measurements of Existing Daytime Noise Levels in Noise-Sensitive Areas in Tamworth

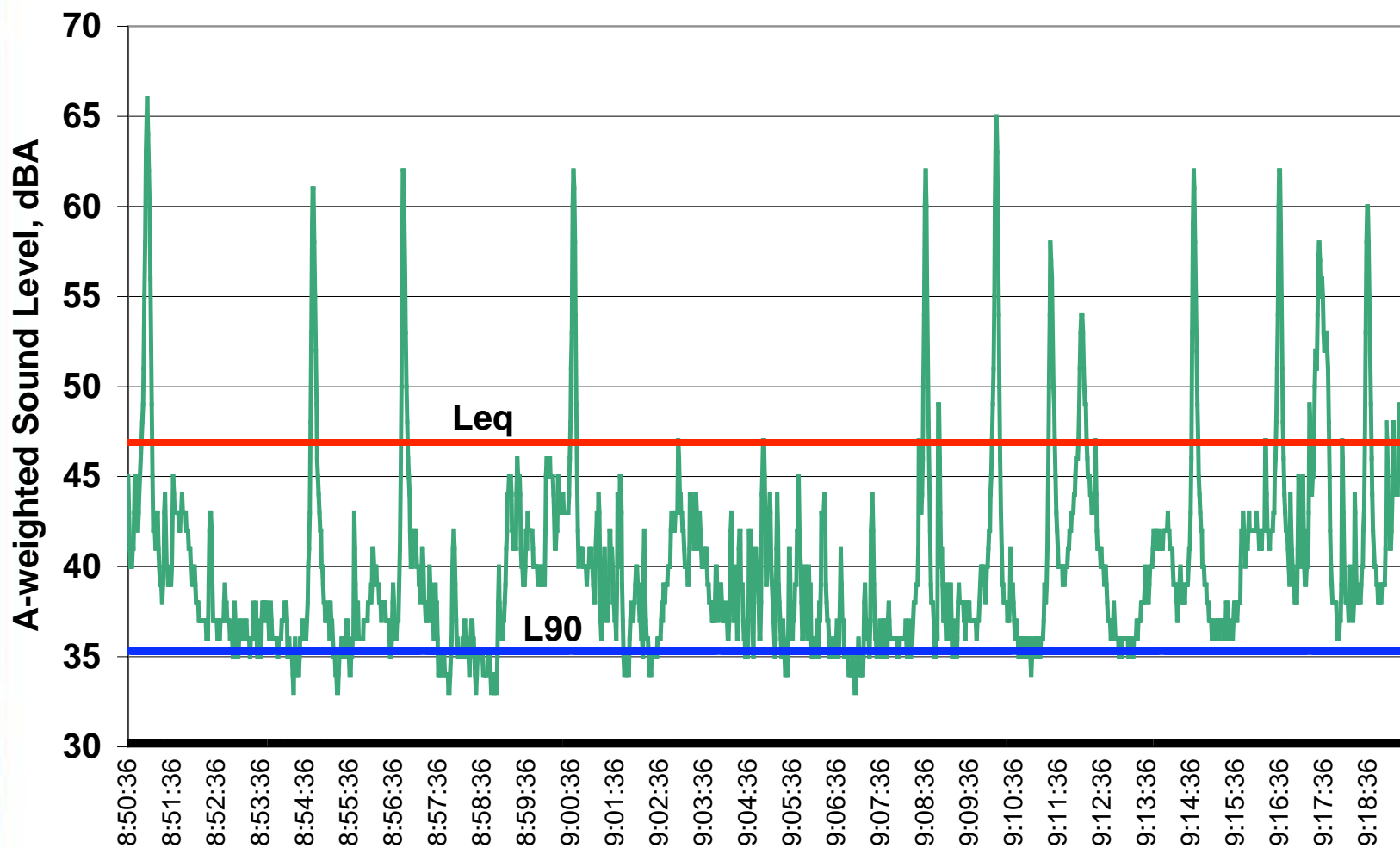
- Leq - 39 to 48 dBA
- L90 – 30 to 43 dBA



Existing Noise Environment

<http://www.hmmh.com/>

Time History at St. Andrews in the Valley Church



Modeling Approach and Assumptions

<http://www.hmmh.com/>

Vehicle Noise Emissions

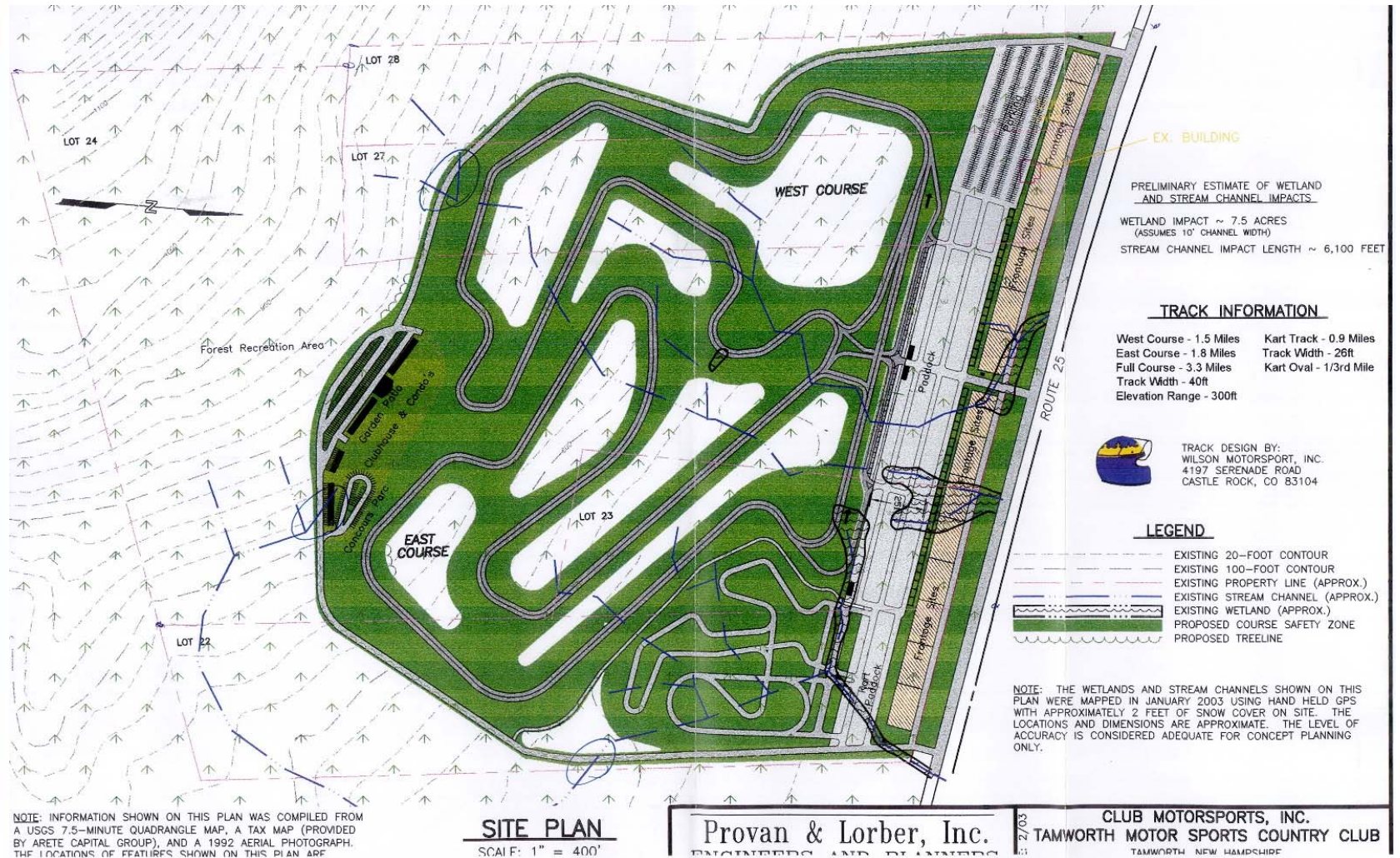
- **Initially used FHWA medium trucks and automobiles**
- **Measurements of 194 pass-bys at New Hampshire International Speedway – during a BMW Club event**
 - Three locations
 - Main straightaway – 80 to 90 mph
 - Turn – 60 to 70 mph
 - Turn & upgrade – 45 to 55 mph accelerating
 - Range of max noise levels at 50 ft: 70 dBA to 105 dBA
 - 1/3 of pass-bys measured 90 dBA or greater
 - Approx 20 cars on track during events, average of 10 cars over entire 7-1/2 hour period
- **Pure tone condition existed 42% time during event**



Modeling Approach and Assumptions

<http://www.hmmh.com/>

Track Layout – preliminary plans



Modeling Approach and Assumptions

<http://www.hmmh.com/>

Track Utilization Assumptions

- Average day assessment – assumed 10 vehicles on the track continuously for 12 hours per day, 7 days per week
- Busy period assessment - 30 vehicles at one time
- Average vehicle speed – 68 mph – from developer
- Range of speeds – 48 to 88 mph based on speeds observed at NHIS



Modeling Approach and Assumptions

<http://www.hmmh.com/>

Sound Propagation Model

- **SoundPLAN® Noise Model**
- **Sound propagation based on ISO 9613-2 “Attenuation of sound during propagation outdoors”**
 - Average propagation conditions for average day assessment (for Normalized DNL)
 - Downwind propagation conditions for worst-case busy period assessment (for audibility and activity interference)

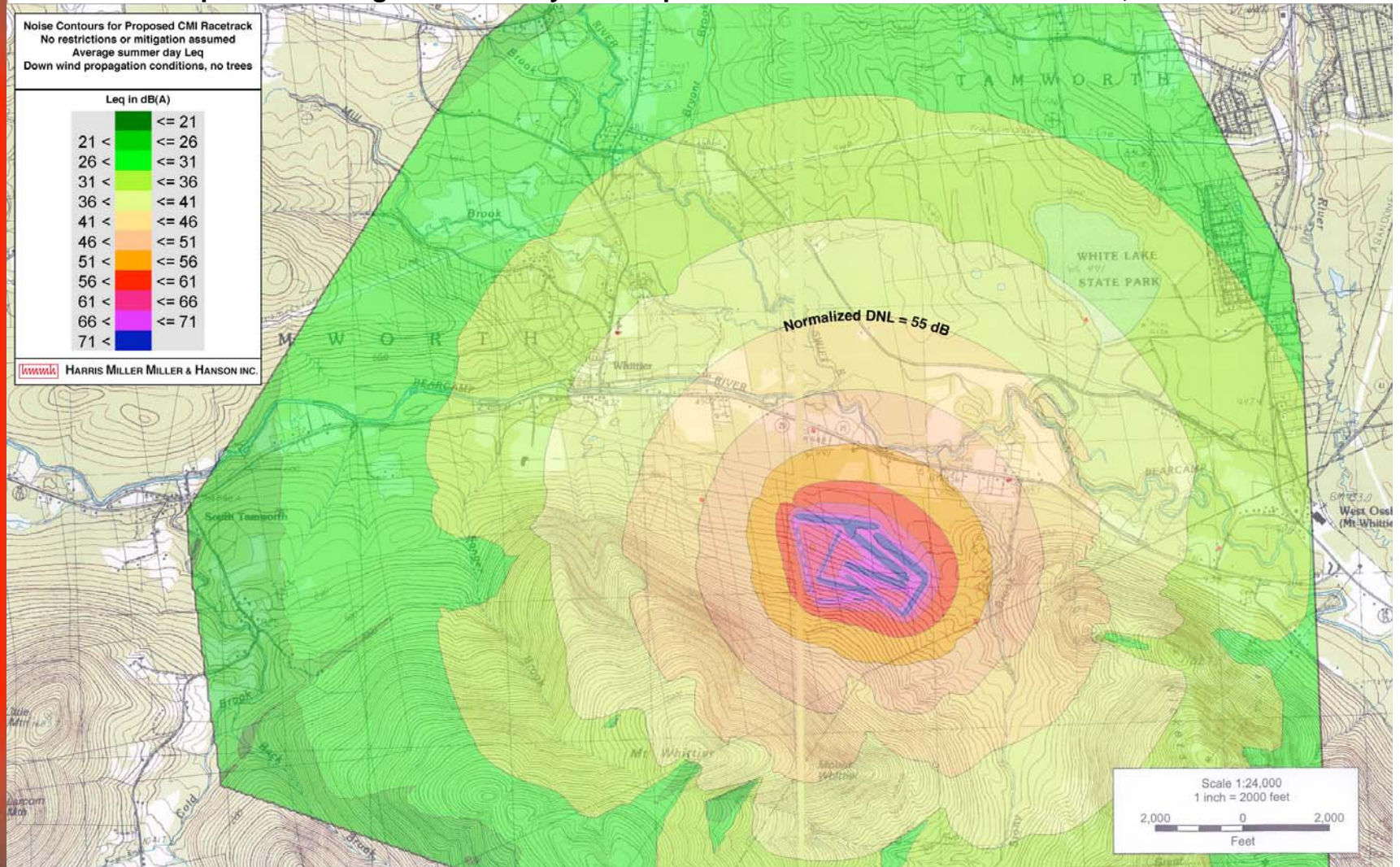


Noise Contour Map – Racetrack noise only

No restrictions or abatement

<http://www.hmmh.com/>

Contours represent average summer daytime Leq under downwind weather conditions, without trees



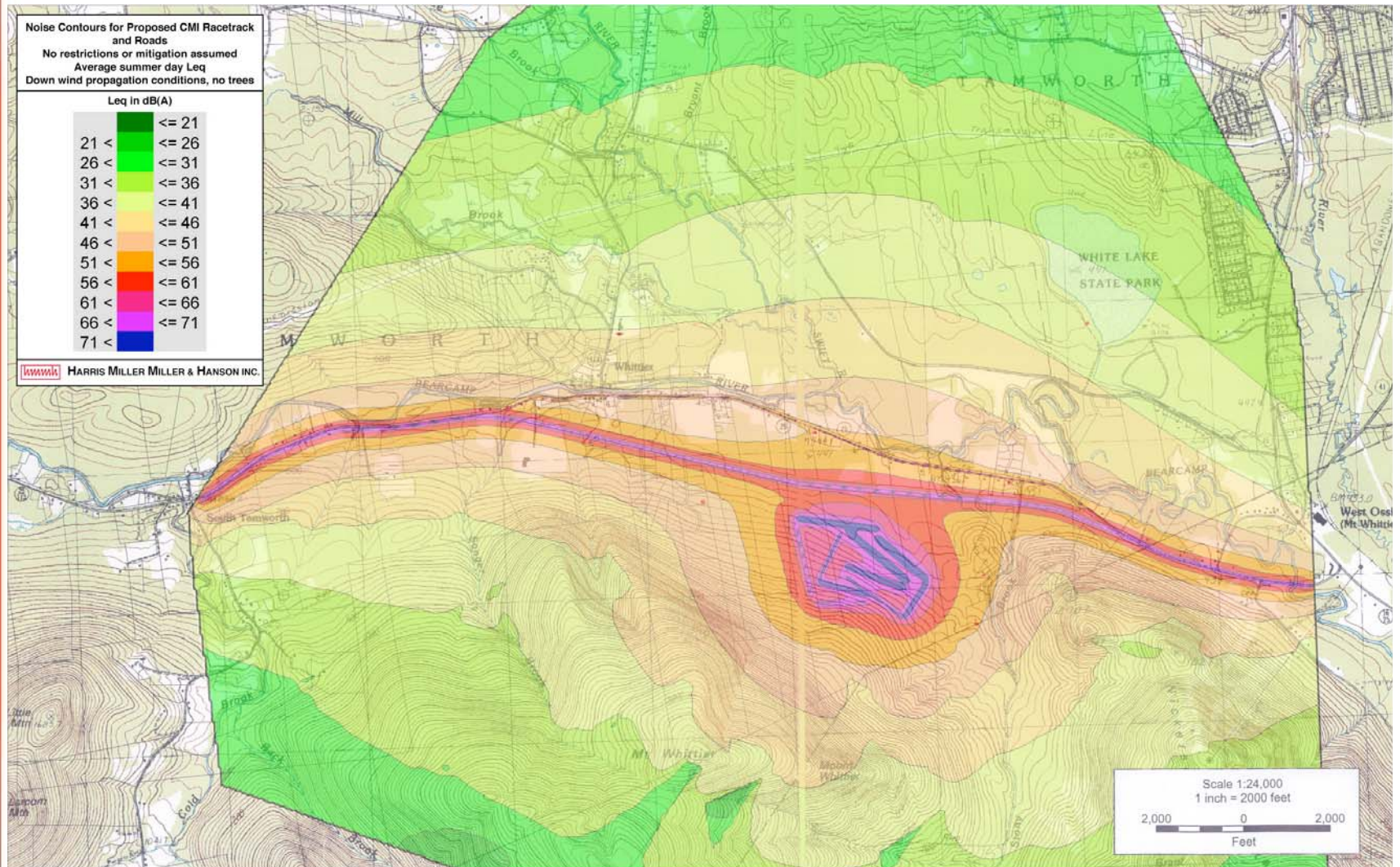
August 27, 2003

Noise Contour Map – Racetrack and local roads

No restrictions or abatement

<http://www.hmmh.com/>

Contours represent average summer daytime Leq under downwind weather conditions, without trees



August 27, 2003

Results

No restrictions or abatement

<http://www.hmmh.com/>

Noise Impact Assessment

- **Approximately 73 homes would be impacted with Normalized DNL of 55 dB or greater**
- **Maximum noise levels at the property line could exceed 80 dBA with loud vehicles operating**
- **Noise from racing operations would be audible at significant distances**



Results

No restrictions or abatement

<http://www.hmmh.com/>

Noise Impact Assessment

- **Normalized DNL – Specific point analysis**
 - Computed Normalized DNL from 55 to 63 dB in nearest surrounding noise-sensitive areas
 - Need 8 dB of noise reduction to achieve Normalized DNL of 55 dB in all areas
- **Audibility**
 - Racetrack Leq 10 to 20 dB higher than existing L90 during busy periods – audible much of the time
- **Activity interference**
 - No speech interference – Leq less than 60 dBA
 - No sleep interference – no nighttime operation



Recommendations

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Three requirements to achieve Normalized DNL of 55 dB or less at surrounding residential properties:

- **Property-line noise limits**
- **Restrictions to limit the loudest vehicles**
- **Noise abatement measures such as berms or walls to reduce noise at property line and in the valley**



Recommendations

<http://www.hmmh.com/>

Recommended Ordinance Provisions

- 1. “Trackside” vehicle noise emission limit of 89 dBA Lmax at 50 ft (15m)**
- 2. Property-line limits of 69 dBA Lmax, except 61 dBA on Sunday mornings**
- 3. Operator responsible for monitoring to insure compliance. Data from monitoring available to the Town.**



Update on Project Status

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- **Town passed the Racetrack Ordinance, but state Senate passed a law soon after to negate it by redefining the proposed track as an “instructional driving course”**
- **Developer hired own noise consultant**
- **Some town residents formed coalition (“FOCUS Tamworth”) to challenge the development and various permit applications**
- **Army Corps of Engineers commissioned an independent noise study from a third acoustical consultant**
- **ACOE issued permit with vehicle noise emission limit of 99 dBA at 50 ft (15m) – restricts only a few % of vehicles**
- **Town wetlands permit is required next**
- **Track construction planning continues**

