

February 7, 2006

Geomatrix Project Number 12006.000.0

Gary Strode  
MXGP, Inc.  
11411 116<sup>th</sup> Place SE  
Kirkland, WA 98034

Subject: SEPA Checklist  
Section 7b) Noise

Dear Mr. Strode:

At your request, Geomatrix has completed a review of potential noise impacts and proposed mitigation related to the construction and operation of the MXGP motocross race track in Snohomish County, WA. The review was completed to fulfill the requirements of the Washington Department of Ecology's State Environmental Policy Act (SEPA). Following is the complete text submitted by Geomatrix to MXGP, outlining potential noise sources, impacts, and proposed mitigation, suitable for inclusion into the project's SEPA document.

**7 b) Noise**

**1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?**

The existing noise environment is typical of a quiet rural setting, with occasional noise from a gravel pit located on the existing project site. The proposed motocross track contains no noise-sensitive uses, and the existing noise in the area would not affect the project.


**2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.**

*Short-term Construction Noise*

During construction, equipment associated with excavating, material hauling, erecting, and grading would generate noise audible at adjacent rural receivers. Construction would be limited to daytime hours as defined by Snohomish County (7 a.m. to 10 p.m. weekdays

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and 9 a.m. to 10 p.m. weekends) and would be exempt from the County noise limits. The limited duration of the construction activities coupled with the restriction of this activity to daytime hours would reduce or minimize any potential construction noise impacts.

#### *Long-term Operational Noise*

Operation of the motocross track would result in sounds primarily from motocross bikes using the track during practice sessions or races. Noise from operation of the track would vary depending on the type of use (i.e. practices or races) and on the type and size of motocross bikes used in the events (e.g., 4-stroke, 2-stroke, 250cc, 175cc, etc). Generally, races produce more noise than practice sessions, and bikes with larger engines produce more noise than bikes with smaller engines. Other miscellaneous noise sources would include traffic traveling to and from the site, voices, and bike maintenance activities. However, these sources are expected to be relatively minor.


Motocross bikes generally produce the loudest noise levels when accelerating or revving hard, which typically occurs at the starting line of a race, when bikes accelerate out of curves or down long straight stretches of track, and when bikes accelerate up the base of a tall jump. These loudest levels occur for short periods but could occur multiple times during a race or practice session.

Sound level measurements taken of a single motocross bike with a 250cc four-stroke engine riding two cycles around a hilly track and driven by an experienced rider resulted in a maximum level ( $L_{max}$ ) of 88 dBA at a distance of 100 feet from the track. The measured  $L_{max}$  is representative of the sound level that could occur from the acceleration or revving of motocross bikes at the proposed track facility. The maximum sound level of two motorbikes accelerating in the same portion of the track at the same time is 91 dBA at 100 feet. It is this maximum sound level that has the greatest potential to result in noise impacts at neighboring properties.

The track would operate between 7 a.m. and 10 p.m. weekdays and between 9 a.m. and 10 p.m. weekends, and would be subject to Snohomish County's daytime noise limits. Snohomish County's daytime noise limit for a rural noise source affecting a rural receiver is 49 dBA. This level can be exceeded by up to 15 dBA for short periods of time, resulting in a not-to-be-exceeded maximum noise limit (i.e.,  $L_{max}$ ) of 64 dBA.

The motocross track, as proposed, would be constructed at the base of an existing gravel pit slated to be relocated prior to construction of the track. Locating the track at such a location and elevation would result in the existing sides of the gravel pit acting as natural noise barriers for some of the motocross track noise. In addition to placing the track at the base of the pit, the track developer is proposing to construct a 25-foot high earthen berm around the perimeter of the race track.

The rural properties north, east, and west of the site are located far enough away (between approximately 380 and 1,100 feet) from the track, and sufficiently below the grade of the site (between approximately 25 and 100 feet below the top edge of the gravel pit), that the natural barrier effects of intervening terrain combined with the proposed 25-foot berm would likely reduce race track noise to levels well within Snohomish County limits.



The nearest and most potentially affected property to the motocross facility is a tree farm abutting the south side of the project site, about 335 feet from the nearest portion of the proposed track and about 360 feet from the nearest elevated portion (i.e., jump) of the track. A residence on the tree farm is located at the southeast corner of the property, approximately 900 feet from the track. Although the most potential for noise impact would occur at the residence and not in the tree farm portion of the property, the Snohomish County noise limits apply at the property boundary.

Using the maximum measured sound level from two motorbikes as discussed above, standard distance attenuation calculations (i.e., a reduction of 6 dBA for every doubling of distance from the source), and standard noise barrier reduction calculations, the maximum noise level from a motocross bike traveling up a jump was predicted at the nearest property to the south. The calculated level of 61 dBA would meet the Snohomish County daytime noise limit for the L<sub>max</sub> if these maximum events occurred for less than 90 seconds of any one-hour period and if no motorbikes were more than about 3 dBA louder than the motorbike used for the reference measurement.

In addition to individual motocross bikes accelerating loudly during a race or practice session, starting gates of races emit some of the loudest noise from a motocross track. At the starting gates, all of the bikes in a race concurrently emit high-throttle engine noise upon take-off. To help reduce the potential for noise impacts during the start of a race, the starting gate would direct engine noise west or north, away from the nearest neighbor to the south. The starting gates would also be placed near the base of the 25-foot high berm, decreasing the line of sight between source and receiver and increasing the effectiveness of the berm.

### **3) Proposed measures to reduce or control noise impacts, if any:**

The above calculated sound levels indicate that placing the motocross track at the base of a gravel pit and constructing a 25-foot high berm would reduce the maximum motocross noise to levels just below Snohomish County limits for the L<sub>max</sub>. However, these calculations were based on the measured sound levels of one bike and did not consider the potential for other louder bikes to operate on the track or for numerous bikes operating on the track concurrently, as would occur during a race. Therefore, additional mitigation measures may be necessary to ensure that all operating scenarios at the track are able to comply with the regulations stated in the Snohomish County Code. These additional mitigation measures could include the following:

- Increasing the height of the proposed 25-foot earthen berm by up to 5 feet
- Constructing an additional berm, running east-west along the southern property line, up to 15 feet above ground elevation
- Placing the race starting area such that the exhaust/engine noise is loudest to the north or west
- Constructing a noise barrier near the race starting area to shield noise from accelerating bikes
- Requiring the loudest motocross bikes that regularly use the track to install noise-reducing exhaust mufflers. If necessary, obtaining a Modified Standards Permit from Snohomish County for individual, large, scheduled races



With the above mitigation measures and during normal operation of the site, it is expected that noise generated from the motocross track can be effectively mitigated to comply with the noise limits establish by Snohomish County. During special events where levels of use may exceed that of normal operation, a Modified Standards Permit may be required to ensure compliance.

Please let me know if you have any questions regarding the above material or if you need any additional information.

Sincerely yours,  
GEOMATRIX CONSULTANTS, INC.

Kevin Warner  
Project Environmental Scientist