



Arizona Game and Fish
Mr. G.M. Merrill
2221 W Greenway Road
Phoenix, AZ 85023

February 12, 2007

Dear Mr. Merrill

Re: **NOISE STUDY FOR WILLARD SPRINGS SHOOTING RANGE**

ACS has been asked to comment on the noise assessment of a single shot versus multiple shots/shooters. Typical shooting range noise assessment protocol recommends measurement of single shots.

Guns fired sequentially simply increase the duration of the noise and not its loudness. It is unlikely that firearms will be fired simultaneously under actual range conditions. Thus the use of only single shots of the "loudest" firearm is required. (The National Rifle Association, NRA Range Development Division, *Protocol for Conducting Sound Level Measurements*, 1991)

A typical rifle shot lasts up to four milliseconds (4-thousandths of a second). The likelihood of two shots occurring simultaneous are very remote. If two shots were to occur exactly simultaneously, the noise level would only increase by 3 decibels (a "barely noticeable" increase). To have a noticeable noise level increase, 3 to 4 shots would need to occur exactly in the same 4 millisecond time frame. Even if this did occur, the duration of this noise level increase would be a small fraction of a second.

If you have any questions or concerns, please call me at (480) 827-1007.

Respectfully,

Tony Sola