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May 24, 2007

Angela Knish, P&Z Director
Waseca Co. Ct. Annex
300 N. State Street
Waseca, MN 56093

RE: May 10 deadline submissions

Dear Ms. Knish:

Thank you for making available the afternoon of May 17, 2007, for comment on the submissions up to the deadline of May 10, 2007 concerning the Borglum proposal. Making this response available to the Planning and Zoning Commission would be a great service to the Borglums. I wish that the additional submissions had not required any additional and expensive comments by the Borglums, but that was not to be the case.

1. Institute for Environmental Assessment (IEA) study by Paul Baer, CSP, dated May 10, 2007 entitled "Waseca Shooting Range Compliance with MN Chapter 87A" IEA Project Number 8386-0401"

This was a most interesting document. The entire submission should be disregarded as irrelevant, incompetent, and immaterial and as not conducted in accordance with the definitions, methodologies, and procedures specified in the law for shooting ranges. That submission appears to be an example of three old adages: 1) "To a carpenter, all problems look like a nail;" 2) "Figures don't lie, but liars do figure;" and 3) "If the facts are against you, pound on the law; if the law is against you, pound on the facts; and if they both are against you, pound on the table." This document is a classic example of "junk science."

A. One first notices that IEA professes an expertise in INDOOR environments, but engages in such indoor assessments on an OUTDOOR project: "IEA *Creating Solutions for Healthy INDOOR Environments (sm)" (*EMPHASIS SUPPLIED*).* IEA frankly admits that they did NOT engage in the assessment required by the law, Chapter 87A, but rather, later, applied an OSHA standard (See, item 4.0 Discussion, in their report), which does NOT apply, but with which they appear to be familiar and comfortable.

> "IEA has reviewed the law referenced above and has determined that law's intent is to set a standard to be used to evaluate existing shooting ranges. Since the shooting range does not currently exist, **IEA was not able to collect data that can be compared to the state noise regulation MN Chapter 87A.05**."

Transmission letter to Bradley Kletcher, Attorney at Law, dated May 10, 2007 (**Emphasis Supplied**). In other words, they answered a question which the law doesn't ask. They certainly don't explain the reason that they didn't apply the standards, methodology, and procedures EXPLICITLY specified in the law; they simply ignored them as irrelevant in their "determination." How convenient! They openly "compared apples to oranges." They should be 1) embarrassed, 2) forced to explain the reason they were "not able to"/wouldn't test/sample on the scientific basis that is applicable and comparable, and 3) to admit that they attempted to insult our collective intelligence. If they were not out there to collect relevant, comparable data, what were they doing?

B. Second, they explicitly state that a 24-hour monitoring study of noise levels at receptors around the proposed range needs to be performed to determine background levels of noise. Yet, they don't reveal what the background levels were when they conducted their alleged tests. Why? As long as they were sampling noise generation by firearms, nothing prevented them from sampling something they say is essential to measure. Background noise is also a factor that must be addressed in any sampling that is done by virtue of the requirements of Chapter 7030 of the Minnesota Rules, Part 7030.0060, Subpart 4(C). See, below. IEA's failure to address the issue when they were testing, and suggesting such an overbroad requirement (of, course, spending someone else's money), must be to generate some excess business or to impose extra costs on somebody else, because, at their relevant best, the background levels of noise would only apply during the hours of operation of the range, not 24 hours. If the background levels of noise are relevant to a study, why did they not disclose what those levels were for their study? What were they doing?

C. Third, IEA states that modeling software is available to predict expected future noise levels at nearby residences based on "noise level information" concerning firearms, which "can then be evaluated in terms of state/local noise control regulations". What did they generate in their tests/sampling on May 9, 2007 other than such noise level information; chopped liver? What were they doing?

D. They claim that "noise levels were recorded while firearms were being discharged to SIMULATE the presence of a firing range. PEAK noise levels were measured at seven locations." (EMPHASIS SUPPLIED). So, what they measured was "peak" noise levels. But, unfortunately, peak noise levels are not relevant noise control regulations, either steady state (Chapter 116 and Rules Part 7030) or impulsive (Chapter 87A and Rules Parts 7030.0010 to 7030.0080). Why are they taking these measurements and not relating them to anything relevant to the discussion? Why didn't they "simulate" a relevant analysis that corresponded to the title of the document submitted? What were they doing?

E. Measurement Methodology

The law that IEA supposedly references reads as follows:

87A.05 NOISE STANDARDS.

Allowable noise levels for the operation of a shooting range are the levels determined by replacing the steady state noise L10 and L50 state standards for each period of time within each noise area's classification with a single Leq(h) standard for impulsive noise that is two dBA lower than that of the L10 level for steady state noise. **The noise level shall be measured outside of the range property at the location of the receiver's activity according to Minnesota Rules, parts 7030.0010 to 7030.0080, as in effect on May 28, 2005.** For purposes of this section, "Leq(h)" means the energy level that is equivalent to a steady state level that contains the same amount of sound energy as the time varying sound level for a 60-minute time period.

History: *2005 c 105 s 5*

(**Emphasis Supplied**). Could the explicit reference to the manner in which measurement is required by law to be conducted be any more clear? No, way!

The "Measurement Methodology" explicitly so referenced reads as follows:

7030.0060 MEASUREMENT METHODOLOGY.

Subpart 1. **Measurement location.** Measurement of sound must be made at or within the applicable NAC at the point of human activity which is nearest to the noise source. All measurements shall be made outdoors.

Subp. 2. **Equipment specifications.** All sound level measuring devices must meet Type O, I, II, or S specifications under American National Standards Institute S1.4-1983.

Subp. 3. **Calibration.** All sound level measuring devices must, at a minimum, be externally field calibrated before and after monitoring using a calibration device of known frequency and sound pressure level.

Subp. 4. **Measurement procedures.** The following procedures must be used to obtain representative sound level measurements:

A. Measurements must be made at least three feet off the ground or surface and away from natural or artificial structures which would prevent an accurate measurement.

B. Measurements must be made using the A-weighting and fast response characteristics of the sound measuring device as specified in American National Standards Institute S1.4-1983.

C. Measurements must not be made in sustained winds or in precipitation which results in a difference of less than ten decibels between the background noise level and the noise source being measured.

D. Measurements must be made using a microphone which is protected from ambient conditions which would prevent an accurate measurement.

Subp. 5. **Data documentation.** A summary sheet for all sound level measurements shall be completed and signed by the person making the measurements. At a minimum, the summary sheet shall include:

A. date;

B. time;
C. location;
D. noise source;
E. wind speed and direction;
F. temperature;
G. humidity;
H. make, model, and serial number of measuring equipment;
I. field calibration results;
J. monitored levels; and
K. site sketch indicating noise source, measurement location, directions, distances, and obstructions.
STAT AUTH: MS s 116.07 subds 2,4
HIST: 11 SR 43; 17 SR 1279; 18 SR 614
Current as of 12/12/03

IEA and Mr. Baer, despite any claims to the contrary, could NOT have "reviewed the law referenced above." If they had, they would not have performed as they did and reported what they did, as they did. IEA must have assumed that we ordinary mortals would be too stupid to understand. If, indeed, they determined that the intention of the law was to "set a standard to be used to evaluate existing shooting ranges," how do they explain the "allowable noise levels for the operation of a shooting range" language, especially when their stated job was to evaluate "compliance" and they claimed the ability to "predict," but did not? Not only did they claim these abilities, but also their meter's internal program apparently had the ability to generate, if they turned that feature on, the "Leq" readings which are the basis of measurement in the Shooting Range Protection Act. See, Attachment B - Monitoring Results. Pick any data sheet.

Let's see how they almost completely failed, in any technical sense, setting aside, only for the moment, any professional and/or ethical sense. One can easily make the argument that this document is intended to be misleading: i.e., fraudulent, as intentionally performed incorrectly according to law. See, below.

1. Is anyone bothered by IEA's claim to have trespassed upon the Borglum property in order to conduct this testing/sampling? No possessor of the Borglum property gave permission for any testing; nor was anyone asked for such permission. Neither Marie Borglum nor Tony Borglum was aware of any such activity on their property as claimed in the report.

Marie Borglum and Tony Borglum were home the morning of May 9, 2007 during the time which IEA claims to have been 1) in the backyard and 2) shooting firearms over an approximately 45 minute period of time a total of at least 56 shots (actually IEA appears to report approximately 68 shots on 17 different Data Sheets). What did they use for a backstop? In what direction(s) were they shooting? How did the peak level of noise get to be the highest at the Davison home, when impliedly shooting on the Borglum property, where they claimed to be, would have put a 30-foot berm of earth between the firearms and the Davison home? How does the pistol shot data IEA reports seem to indicate greater noise than the rifles at the alleged same distances, when the pistols operate at much lower pressures and use between 10 and 25 percent

of the powder, at most, compared to the rifle loadings; so that the basic, simple physics of the situation is not capable of generating the energy and power to generate such sound pressure readings? Something doesn't make any sense, here.

> Subpart 1. **Measurement location.** Measurement of sound must be made at or within the applicable NAC at the **point of human activity** which is **nearest to the noise source**. All measurements shall be made outdoors.

Marie Borglum called and talked to Paul Baer the morning of May 21, 2007, after making an exhaustive search and inspection of the proposed range areas to see whether there had been any shooting done there. She could find no evidence of bullet impacts, certainly no impacts in any concentrated or controlled areas, or disturbed soils. She could find no spent cartridge casings, as from the 9mm pistol, which are semi-automatic and eject casings from the firearm automatically in preparation for chambering the next round to be fired. She had heard no such firearm discharges. Mr. Baer claimed not to know where the firearms were discharged, as all he did was to monitor the sound of the firings and did not know where the firearms, whatever they were, were being discharged. He claims that there were 8 people involved in the effort. He did not supervise the location or the procedures for the discharges. Therefore, his statement that "The seven testing locations ranged from 200 to 3000 feet from the proposed firearm practice range." MAY be technically correct concerning the distance from the RANGE; but any implication that the testing locations were IN FACT within those distances of THE ACTUAL FIRING CONDUCTED is either misleading or fraudulent. Mr. Baer, in fact, does not know, abandoning any usual and customary (and need I say, necessary?) professional control of the process or the others involved in the conduct of his testing in the ordinary course of his professional business.

It appears that either the persons involved in the test are admitted trespassers, or they are lying about where and when the "tests" were conducted. To avoid breaking the law, they would have had to have been on the Davison's (the people who hired them) side of the hill that is between the two properties, much higher in elevation, and providing a much more direct "line of sight" for the sound to travel without obstruction or deflection compared to the actual site of the proposed ranges. That would also account for the vast difference in sound pressures recorded as between the alleged Davison (P = 122.6) readings and the Steinhart (P = 110.1) readings, with the Steinhart residence being much closer (roughly 5 to 7 times closer), as well as differing directions of fire and the presence of obstructions. It is simply NOT physically possible, for example, for the Cain residence, which is around TWICE as far away from the proposed ranges as the Davision residence, to receive more noise from the rifle discharges (Cain = 112.3) than the Davison residence (Davison = 100.8). Sound intensity varies inversely as the square of the distance, all other things being equal (ceteris paribis). That's a law of physics, as well as common sense and common experience. See, part 2.0 of Mr. Baer's report/letter where he states, "Meteorological and physical conditions affect the rate of sound attenuation." Double the distance; get 1/4 the sound pressure with the same "exposure" to the source of the sound. This report simply does not pass a common sense "smell test." See, also A Guide to Noise Control in Minnesota, page 6, by the Minnesota Pollution Control Agency, revised 3/99, in the 3-ring binder submitted to you by Carol Overland for the EAW hearing, tab number 38.

Further, the Borglums are informed by Roger Cole that he was present at his craft and antique sales location during that period of time on May 9, 2007 and did not observe any persons present at the residence, which is about 150 feet away. Neither Mr. Cole, nor his renter, Dean Pertle, was asked or gave permission for the declared, documented trespass on that property.

Cole Sales Location and Residence

Steinhart storage shed/residence at lower right
Davison residence at upper right in the distance

Please notice that some of the Attachment B Monitoring Reports bear different dates (5/10/07 and 5/9/2007). Some of the locations vary even at the same residence (Steinhart, Cole, Dahl). For example, there is no "porch" for a driveway to be in front of at the Steinhart residence. That residence, as we have discussed, is converted from a permitted cold storage agricultural building.

2. Subp. 2. **Equipment specifications.** All sound level measuring devices must meet Type O, I, II, or S specifications under American National Standards Institute S1.4-1983.

Although Mr. Baer indicates that a Quest NoisePro DL dosimeter was used and that is was both factory and field calibrated[1], he failed to indicate whether it was of the proper type specifications. Internet research at the Quest Technologies web site indicates that it is not of the proper type under the ANSI code. Rather than the required type under ANSI S1.4, required by law, the meter is of a different type qualified under ANSI S1.25. See, "Product Standards" section of "Noise*Pro*® DL Noise Dosimeter Technical Specifications" at Quest Technologies' company web site at:
http://www.quest-technologies.com/Noise/NoisePro/np_dl.htm.

Again, it is difficult to believe that a self-proclaimed "expert in noise level testing" (See, affidavit of Paul Baer, CSP, item 2) could have "reviewed the law referenced above" (See, affidavit of Paul Baer, CSP, item 3, and the letter referenced therein) and missed this testing requirement. Therefore, it must be concluded that Mr. Baer ignored it, because he didn't address the requirement, after having reviewed the law.

3. Subp. 4. **Measurement procedures.** The following procedures must be used to obtain representative sound level measurements:

A. Measurements must be made at least three feet off the ground or surface and away from natural or artificial structures which would prevent an accurate measurement.

B. Measurements must be made using the A-weighting and fast response characteristics of the sound measuring device as specified in American National Standards Institute S1.4-1983.

C. Measurements must not be made in sustained winds or in precipitation which results in a difference of less than ten decibels between the background noise level and the noise source being measured.

D. Measurements must be made using a microphone which is protected from ambient conditions which would prevent an accurate measurement.

Again, Mr. Baer made no attempt to address the mandatory ("must") requirement in Subp. 4(A), which must be addressed in the positive. Similarly, he did not address the requirement of Subp. 4(C), which, because it is a condition that must be eliminated as a factor, must also be

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[1] Mr. Baer claims that he used a "Quest Acoustic Calibrator (Model Number QC-10/QC-20; Serial Number QIG020080)" in his testing. Yet a visit to the Quest Technologies Web Site at http://www.quest-technologies.com/Calibrators/calibrators.htm reveals no such model number to exist. It is either the QC-10 **OR** the QC/20. They are not the same. **Please notice** that Mr. Baer did NOT give the calibration date of Calibrator, which establishes the baseline sound level used.

addressed, in the negative. Mr. Baer also did not address the microphone protection (from atmospheric disturbances) requirement in Subp. 4(D), which also must be addressed in the positive. These are requirements of law.

Most interesting, however, is the positive evidence that Mr. Baer provided concerning his ignoring the mandatory requirements of Subp. 4(B) concerning the A-weighting and fast response characteristics of the sound measuring device specified and required in the law. A simple review of the Monitoring Reports submitted reveals that he used a **"SLOW" response setting** in every case. The law requires a "fast" setting, and Mr. Baer used a "slow" setting[2]. He had a choice to make that is significant to the applicability of the data he collected; he made the wrong one. He did, however, set his instrument to the A-weighting mode[3], as required.

Mr. Baer also HAD the option of setting the dosimeter to the Leq monitoring setting, if he wanted to. THAT, of course, would have been following the legal requirements of testing as set out in the statute. Leq is the technically, most scientifically accurate way to measure impulsive noise level impacts on a person because of the nature of impulsive noise. The law, the statute, sets out the standards. Mr. Baer COULD HAVE given you relevant information to decide

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[2] From the Frequently Asked Questions at
http://www.quest-technologies.com/FAQS/noise/noise_faq.htm

> **What is RESPONSE (FAST, SLOW)?**
> The response determines how quickly the unit responds to fluctuating noise. Fast is a time constant of 125 milliseconds. Slow is a time constant of 1 second.
>
> Example: Typically, noise is not constant. If you were to try to read the sound level without a response time, the readings would fluctuate so much that determining the actual level would be extremely difficult. Using a response of slow or fast simply smoothes the noise fluctuation and makes the sound level easier to work with. While the terms slow and fast have very specific meanings (time constraints), they work very much as you would expect. The fast response would result in a more fluctuating sound level reading then would the slow response. The OSHA regulations require slow response.

[3] Also from the Quest Technologies FAQS:

> **What is WEIGHTING?**
> Weighting is the filtering of sound before averaging. A, B, C and LINEAR are the standard weighting networks available. These are frequency filters that cover the frequency range of human hearing (20 Hz to 20 KHz).

A weighting is the most commonly used filter in both industrial noise applications (OSHA) and community noise regulations. A weighted measurements are often reported as dBA. ***The A weighted filter attempts to make the dosimeter respond the way the human ear hears.*** It attenuates the frequency below several hundred hertz as well as the high frequencies about six thousand hertz. (***Emphasis Supplied***).

whether any further inquiry needed to be made. He did not do so. He had the ability to perform multiple analyses, and he did NONE. One can only speculate as to the reasons and make inferences from the facts: from laziness, to incompetence, to fraud. It is apparent that Mr. Baer studied, analyzed, and followed the manual for his device as well as he studied, analyzed, and followed the law. He either didn't refer to either of them, doing what he did out of arrogance; or he did refer to them and chose to lie to you with irrelevant, misleading information. As the specifications sheet on the NoisePro DL meters, referenced above states:

> **Do you need basic statistical analysis of your personal noise exposure data?**
> Then consider the Noise*Pro*® DL noise dosimeter which is ***far advanced than normal noise exposure meters***. In addition to measuring and reporting basic noise exposure data, this Type 2 noise dosimeter logs Lavg/Leq, FastMax and Slow Max statistics at (1) minute intervals.
>
> ***It includes (2) virtual noise dosimeters to measure (2) separate noise standards.*** An impressive 128 x 64 pixel backlit LCD display and intelligent user interface provide easy access to data and setup information. Options include a vibrating alarm and boom microphone.
>
> All Noise*Pro*® noise dosimeters are compatible with QuestSuite Professional Software for advanced reporting and record keeping, a virtual docking station, calibration management and more.

(***Emphasis Supplied***). The data sheets Mr. Baer submitted show several blanks where, apparently, 4 different functions can be analyzed and logged simultaneously. The doses could have been measured according the criteria specified in the law, but weren't. The self-proclaimed "expert in noise level testing" had the technical capability, but didn't use it. Again, from the Quest Technologies web site:

> **What dose [sic] a noise dosimeter do?**
> The noise dosimeter integrates an employee's exposure to "Sound Over Time" and calculates a number of values including "Noise Dose". The noise dosimeter's dosage value is then used to determine if the employee needs to enroll in a hearing conservation program.

Where the submitted data sheets do indicate that some meters/sensors were apparently turned on to register "dose" of some kind, the registered "doses" are "0%". Where meter/sensor number 1 COULD have measured Leq, Mr. Baer sabotaged that effort by setting the exchange rate at 5dBA, incorrectly to obtain that data. All he had to do was to set the exchange rate to 3 dBA and set up the criteria according to law, and he would have had the required data generated by his equipment. It appears, arguably, that he had to go to some effort to make sure that the relevant data was NOT generated properly. Again, from the Quest Technologies web site concerning the Dosimeters that they make:

What is Dose?
Related to the criterion level, a dose reading of 100% is the maximum allowable exposure to accumulated noise. For OSHA, 100% dose occurs for an average sound level of 90dB over an 8-hour period (or any equivalent exposure). By using a TWA reading rather than the average sound level, the time period is no longer explicitly needed. A TWA of 90dB is the equivalent of 100% dose. The dose will double (halve) every time the TWA increases (decreases) by the exchange rate.

Example: OSHA uses an exchange rate of 5dB. Suppose the TWA is 100dB. The dose would double for each 5dB increase over the criterion level of 90dB. The resulting dose is therefore 400%. If the TWA was instead equal to 80dB then the dose would halve for each 5dB below the criterion level. The resulting does would be 25%.

When Taking noise samples less then the full workday, dose is an easy number to work with because it is linear with respect to time.

Example: If a 0.5 hour sample results in 9% dose and the workday is 7.5 hours long, then the dose for the full workday would be computed as (7.5 hours / 0.5 hours) *9%=135% dose. This is computed making the assumption that the sampled noise will continue at the same levels for the full 7.5 hour workday.

What is LEQ? [bold in original]
The ***true equivalent sound level measured over the run time***. The term LEQ is functionally the same as LAVG except that it is ***only used when the exchange rate is set to 3dB*** and the threshold is set to none.

SO, it is apparent that Mr. Baer made no effort to use his equipment to obtain the data that was 1) required to obtain by law, and 2) perfectly and easily available to him with the equipment he had. His statement that "IEA was not ***able*** to collect data that can be compared to the state noise regulation MN Chapter 87A.05." is, simply put, a lie. (***Emphasis Supplied***). All Mr. Baer did was to use an "advanced" noise exposure meter as a "normal" noise exposure meter. He "dumbed it down." Choosing NOT to do something has nothing to do with the ability to do it. Mr. Baer is not a child making an excuse to a parent about cleaning his room: "But Dad, I couldn't do it!"

4. Subp. 5. **Data documentation.** A summary sheet for all sound level measurements shall be completed and signed by the person making the measurements. At a minimum, the summary sheet shall include:

A. date;
B. time;
C. location;
D. noise source;
E. wind speed and direction;
F. temperature;
G. humidity;

H. make, model, and serial number of measuring equipment;
I. field calibration results;
J. monitored levels; and
K. site sketch indicating noise source, measurement location, directions, distances, and obstructions.

Again, we find that the statute and rules are absolutely clear on the MINIMUM documentation required for a valid, relevant measurements, and that Mr. Baer failed in significant aspects of these MINIMUM requirements.

A. The summary sheets appears to contain a date, time, location of measurements, environmental variables such as temperature, humidity, wind direction and speed, and barometric pressure, and measuring equipment make, model, and serial numbers, but claims that the noise sources are the various firearms themselves, listing them. The noise source that they were studying was the "Waseca Shooting **Range**." What is clearly missing from the "noise source" information is the LOCATION of those firearms when the sound pressure of their alleged discharge was measured at the alleged measurement locations. The relevant location of the firearms at the time of the measurement is a KEY element of the validity, or lack thereof, of this report. While it may be technically true that the various firearms listed generated the noises measured, unless their location is explicitly stated at the time of the measurement, the relevant context of such measurement is lacking. Mr. Baer told, at best, a half-truth. A half truth is still a whole lie. The very data reported, as explained above, also raises this question; it's a question that Mr. Baer didn't ask. "Don't ask; don't tell" is unprofessional and ethically/morally bankrupt.

As is clear from the affidavit of Marie Borglum, who was present at her home with her son Tony and her two dogs when the firearms were allegedly discharged on her property, quite literally in her back yard without her, her dogs, or her son hearing them, there is question as to whether that representation concerning location of the discharges was accurate, whether expressly or impliedly made. After she looked for evidence of such activity, and finding none, she called Mr. Baer to determine from him where the firearms were discharged so that she could verify it, satisfying herself that it had, in fact, happened. What she learned from Mr. Baer was that he didn't know, that he didn't set up the firearm discharges as part of the tests, that he was unable to verify the location(s) or the guns, that he didn't professionally establish and professionally monitor a crucial element of a report for which he was taking professional responsibility in terms of ethics as well as in terms of technical accuracy.

B. Even though Mr. Baer disclosed the make, model[5], and serial numbers of the measuring equipment used, including the Quest Acoustic Calibrator, he failed to disclose the required "I. field calibration results." It's one thing to claim, as Mr. Baer did, that one used a calibration unit in the field, as a common sense, professional, normal procedure, "before and after

[5] There is a good question, however, as to the model of the Quest Acoustic Calibrator he used, as the model he claimed to use doesn't seem to exist in the Quest Technologies inventory listed on their web site. The QC-10 is capable of only one output. The QC-20 is capable of four different outputs. Which output on which calibrator did Mr. Baer use, and what were the results? Inquiring minds want/need to know. See, http://www.quest-technologies.com/Calibrators/calibrators.htm

testing was performed." It is another thing to demonstrate that the dosimeter was calibrated and accurate in the field as required; that it "passed" the field calibration requirement and appeared to be accurate both before and after the testing; that the accuracy of the instrument had been verified both before and after the testing. This is a significant omission, not only because the results are not quantified, but also because Mr. Baer failed to state and demonstrate whether the calibration remained constant or stable both before and after testing. Again, we have another half truth that intentionally misleads because of omission of the critical facts; facts, "results," required by law.

C. Finally, we have the site sketch, which is meant to be meaningfully illustrative of the conditions and containing basic, meaningful information and data that aids the analysis: "K. site sketch indicating noise source, measurement location, directions, distances, and obstructions." All that can be said for the site sketch submitted is that it contains the alleged measurement locations and the direction of "north."

1. The Noise Source is NOT indicated. What is required is an "X marks the spot." Nowhere on the sketch does one find the words "noise source." Why not? What are they hiding? It is a critical piece of data required for any meaningful analysis and understanding of the data. It is required by law. This confirms what Mr. Baer told Marie Borglum: he didn't know where the noise source was, even though he stated in his report that he was allegedly within 200 feet of it at one time.

The diagram of the Proposed Shooting Range is not even close to accurate. Please, see the aerial photograph on page six of this document and see for yourselves.

2. There is no information concerning distances from the noise source to the measurement locations. That may be, partially, because there is no noise source to measure from, but also is a glaring omission of meaningful, required data for analysis and interpretation. As Mr. Baer stated in his report: "Meteorological and physical conditions affect the rate of sound attenuation," which is an unremarkable, common sense, common experience proposition. In his chart in part 3.0 of the report, the distance from the noise source is missing. In the absence of the distance from the noise source measurements, one is tempted to overlook the fact that the measurement location significantly closest (by a factor of between 5 - 7 to 15 times closer) to the proposed shooting range received the lowest noise levels. See, Table 2: Peak Noise Levels - Sorted by Noise Level.

I suggest that the reason the required distances were omitted was in the hope of not calling attention to the patent anomalies thereby exposed in combination with the lack of identification of the location of a noise source. Those reported results are simply not realistic on this planet as we know and understand it, in this universe, absent some other explanation: the "smell test" of common sense, consistency with experience, and reason to believe it to be true. Doesn't it strike you as "odd" that the people who hired Mr. Baer 1) to conduct the noise testing of the proposed shooting range some 1,400 feet away, 2) from an unknown noise source that he apparently wasn't interested in, 3) had the highest noise level, 4) with the lowest-powered firearm? Common sense tells you that they could have almost stuck the 9mm handgun in Mr. Baer's ear from where it was actually being

fired. Mr. Baer's alleged data would have you infer, and believe, that the noise at the Davisons from a 9mm pistol some 1400 feet away at the range was more than 128 times as energetic[6] as the noise from a 300 Winchester Magnum, high power rifle, at the range was some 200 feet away at the Steinhart's. There's a 22 dB difference between the Steinhart noise level for the magnum rifle (100.0) and the Davison noise level for the 9mm pistol (122.6). Using the information from the Quest Technologies web site at http://www.quest-technologies.com/FAQS/noise/noise_faq.htm, "most of the world" (but not Mr. Baer at IEA in Mankato) uses a 3 dB "doubling rate," which means that every 3 dB increment means a sound energy increase of 100%, or doubling of energy. Quest Technologies requires the use of the 3 dB doubling rate in the measurement of Leq, the standard of the law, on their dosimeters. See, page 10, above. The next 3 dB increment has four times the energy; and the next 3 dB increment has 8 times the sound energy, all as compared to the starting point. It is an exponential function. So, the 22 db increase divided by 3 equals 7.33. 2 (double) to the seventh power is 2, 4, 8. 16, 32, 64, 128 times, AT LEAST, in sound energy.

Even if you want to use the IEA-Mankato-OSHA 5 dB doubling rate, the result is: 22 divided by 5 equals 4.4. 2 (double) to the fourth power is 2, 4, 8, 16 times, AT LEAST, in sound energy. That change represents a move from a sublime proposition that was ignored by Mr. Baer, to his ignoring one that is merely ridiculously absurd, by changing the base of computation. One would think that Mr. Baer would have noticed the difference without a meter, if only because his ears were "ringing" from the pistol at the Davisons, 1400 feet from the range location, and were not "ringing" from the Magnum rifle at the Steinhart location, 200 feet from the range location. "It doesn't take a rocket scientist . . .."

In fact, using the algorithm from the PCA's "A Guide to Noise Control in Minnesota" referenced earlier, which uses a 3dB doubling rate, like the rest of the world, one can estimate the amount of the disparity even more accurately, based on the assumption (and it's a big assumption[7] both in terms of noise source location and methodology) that his measurement of the peak level of noise at the Stinehart property was accurate, one would have expected, in a "clear, unobstructed view" situation, that the 100 dBA level (rifle discharges) would have been 84.1 dBA[8] at the Davison residence, instead 100 dBA, also. In fact, the similarity of the peak levels clearly indicates that the

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[6] **What is Exchange Rate or (Doubling Rate)?**
Exchange rate refers to how the sound energy is averaged over time. Using the decibel scales, every time the sound energy doubles, the measured level increases by 3dB. ***This is the 3dB exchange rate that most of the world uses.*** For every increase of 3dB in the time-weighted average the measured DOSE would double. (***Emphasis Supplied***).

[7] See, page 11 of the PCA's A Guide to Noise Control in Minnesota concerning sound reflective objects and surfaces. Surely, the metal sides of the of the storage shed turned residence reflects sound would be responsible for a 3 dBA error in any measurements taken close to them compared with the distance from the noise source, such as the "septic tank mound" and the "driveway in front of the porch."

[8] 1400/200 = 7; square root of 7 = 2.646; 2.646 X 6 dBA = 15.876; 100 - 15.9 = 84.1.

discharges were made from the same distance, instead of 200 feet and 1,400 feet respectively. In fact, the increase of approximately 12 dBA concerning the 9 mm pistol discharges between the Stinehart measurements (110 dBA) and the Davison measurement (122 dBA) indicates that the Davison residence was 4 times closer to the noise source than was the Stinehart property, absent some other explanation which it was Mr. Baer's obligation to explain under the law. With approximately 1,600 feet between the two properties, mathematically that would yield 320 feet and 1280 feet, IF you trust the peak level readings, to begin with. That is exactly the opposite of what science says should be. The amazing thing is that it is the Stinehart property that is closer to the range, but had the lower peak level reading. From his reported results, he should have known that the firearms were not being discharged at the range location. It's obvious. It is even more obvious when one doubles the distance from the range to the Cain property. One would expect ANOTHER 6 dBA noise level drop compared to the Davison results, if the firearms were discharged at the proposed range location, which they clearly were not. Mr. Baer's results are, in a word, impossible to generate honestly.

Did you just watch Mr. Baer's "reality check" "bounce" at the credibility bank? Shhh. Don't ask; don't tell. He didn't. The fact is that he failed to subject the results he obtained to a simple reality check, or "smell test," especially when he gave up control of a critical factor in the veracity of the results, the location of the noise source. Why? Clearly, the location of the noise source was not either static or at the location of the proposed range. "Garbage in; garbage out:" GIGO.

3. The requirement of listing the obstructions on the sketch is designed to illuminate the reasons for apparently anomalous results and to provide at least a partial explanation for them. Again, it is obvious that any "obstructions" would be those **between** the noise source location and any receptor locations and requires that a noise source be identified and located on the sketch. And again, there are no indications on the sketch of any obstructions between the proposed range and any of the receptors, which pretty conclusively tells you that the proposed range was not the noise source, even though the report asserts that the reason for its commission was to give the impression of the measurement of sound levels from that location. Apparently there were no significant obstructions between the unlocated noise source(s) and the receptors, which would also be suggestive as to the reasons for the (absurdly?) high results reported.

Misdirection of the attention of the "mark" is a common, if not essential, element of any fraud. The hope is that you won't see the forest for the trees, because of implicit trust. That's the reason that the law requires that there be no possible misdirection, requiring complete and honest disclosure, in these important matters where persons are interacting with government. This is not the game that Ms. Overland's conduct shows that she thinks it is; it's not entertainment, even if one enjoys wrestling or boxing; because real peoples' real rights and real livelihoods are on the line. The applicants and the County are not mushrooms to be kept in the dark and fed a diet of manure.

D. The total irrelevance of the "discussion" in the report; and it still doesn't "hurt"

Mr. Baer's discussion of the OSHA standards was enlightening, but misleading, for several reasons. First, he measured ONLY peak noise levels. The Quest Technologies web site had this explanation for peak noise levels on its meters:

> **What is PEAK LEVEL?**
> PEAK LEVEL is the absolute highest pressure wave that is detected by the microphone. Unlike the MAX LEVEL, PEAK is detected independent of dosimeter settings for RESPONSE or WEIGHTING. The PEAK circuitry responds in 50 micro seconds usually with Linear Weighting (depends on dosimeter model). Test this by simply blowing across the microphone. You will notice that the peak reading may be 120 dB or greater. When taking a long term noise sample (such as a typical 8 hour workday sample for OSHA compliance), the peak level is often very high. Because brushing the microphone over a shirt collar or accidentally bumping it can cause such a high reading, ***the user must be careful of placing too much emphasis on the reading***.

(***Emphasis Supplied***). That means that Mr. Baer reported 1) only the single, loudest impulse and 2) that some, if not all, of the other shots were less noisy. Mr. Baer ignored this basic scientific advice from the designer and manufacturer of his dosimeter. Certainly his EXCLUSIVE emphasis on the peak readings is "too much emphasis."

But, Mr. Baer also mentioned the 8-hour time weighted average (TWA) and the permissible exposure limit PEL. Quest Technologies has this to say about the TWA:

> **What is TWA?**
> The time-weighted average always averages the sampled sound over an 8-hour period. TWA starts at zero and grows. The TWA is less than the LAVG if the run time is less than eight hours, and grows higher than LAVG after eight hours. ***TWA represents a constant sound level lasting eight hours*** that would result in the equivalent sound energy as the noise that was sampled.
>
> Example: Think of TWA as having a large 8-hour container that stores sound energy. If you run a dosimeter for 2-hours, your LAVG is the average level for those 2-hours, consider this a smaller 2 hour container filled with sound energy. For TWA, take the smaller 2-hour container and pour that energy into a larger 8-hour TWA container. The TWA level will be lower. Again, TWA is ALWAYS based on the 8-hour container. When measuring using OSHA's guidelines, TWA is the proper number to report provided that the full work shift was measured.
>
> Example: If the work shift is 6.5 hours long, then measure for the entire 6.5 hours. TWA is the correct level to report to OSHA. It does not have to be modified.

(***Emphasis Supplied***). See how TWA and Lavg (average level) are equal at the 8-hour mark? This is where the **8 hour run time** and the **8-hour storage container** are the same. In this sense,

the TWA, and Lavg, which include the run time and the relative silence involved are similar to Leq, which was discussed earlier, in that they average the total sound pressure TO A CONSTANT SOUND LEVEL of EQUAL ENERGY over the **run time used** in the sampling. The standard run time for the Leq is specified to be one hour. This allows the extrapolation to the hourly requirement of the statute. For impulsive noise, and as specified in the statute, the Leq noise level takes account of the level of the impulsive noise AND the silence between the impulses, averaging them together into a CONSTANT sound level.

> **What is LEQ?** [bold in original]
> The ***true equivalent sound level*** measured ***over the run time***. The term LEQ is ***functionally the same as LAVG*** except that it is only used when the exchange rate is set to 3dB and the threshold is set to none.

(***Emphasis Supplied***). Again, if Mr. Baer had set his dosimeter to measure Lavg (even at the 5 dB exchange rate) or Leq (at the 3 dB exchange rate, which is what "most of the world," including the Minnesota Pollution Control Agency, uses), he could have generated some data that might have been somewhat probative on the issues specified in the law concerning shooting ranges, assuming the integrity of his methodology concerning the noise source location (discussed above). But he didn't, for reasons known only to himself and about which we can only make inferences in somewhat unflattering terms involving arrogance (concerning his cleverness and intelligence vis-a-vis the applicant and the County), incompetence (despite his claims to the contrary, failure to read and follow both the law and rules for carrying out the law and/or the manual for his meter), and fraud (intentional disregard of the law and rules for carrying out the law, intentional disregard of the manual for his meter, and/or intentional sabotage of the law, rules, meter capabilities, and science in an effort to present misleading and irrelevant "data" and "science.").

E. Let's take him at his questionable word, just for fun.

But, as an intellectual exercise, let's take him at his word and grant him the two hours per day limit on the exposure to a constant level of sound at 100.0 dBA. According to the definition of impulsive noise contained in the Rules and incorporated into the statute by explicit reference:

> **7030.0020 DEFINITIONS.**
> Subp. 6. **Impulsive noise.** "Impulsive noise" means either a single sound pressure peak (with either a rise time less than 200 milliseconds or total duration less than 200 milliseconds) or multiple sound pressure peaks (with either rise times less than 200 milliseconds or total duration less than 200 milliseconds) spaced at least by 200 millisecond pauses.

What this means, as a practical matter, is that 5 (or more) impulses a second at a level of 100.0 dBA would equate to a CONSTANT level of sound at 100.0 dBA. And Mr. Baer said that such a level would be acceptable under OSHA for a two-hour time period and contain a full dose of sound pressure for the day.

That means, ladies and gentlemen, that according to Mr. Baer's calculations, a **minimum** of (using the scientific "principle of conservatism") 5 such impulses a second equals 300 gunshots per minute (60 seconds), for 120 minutes (2 hours), or 36,000 (thirty-six THOUSAND) gunshots over that two-hour period of time. Spreading these over his OSHA-mandatory 8-hour time period, that's 4,500 gunshots per hour, or 1.**25 gunshots per second, each and every second of an eight-hour day**, without stopping to reload, or for dinner, or for any break.

Assuming, only for the sake of argument, that the outside ranges are full to capacity and that there are six shooters present with an unlimited supply of ammunition, then each of the six shooters would be required to discharge 750 rounds per hour for 8 solid hours, or 12.5 rounds per minute each, roughly one round every five seconds each. Still no break for meals or the bathroom.

Another, additional, perspective is provided by the material submitted in the 3-ring binder by the Davisons for the EAW hearing at tab 13. There, they tested an indoor police shooting range and applied a standard used by the American Conference of Governmental Industrial Hygienists (ACGIH), "based on both the peak sound level and the number of impulses in a day." That would be consistent with the data and approach taken by Mr. Baer, who claimed to have measured ONLY the peak noise levels generated by individual firearm discharges. "The TLV doesn't allow unprotected employee peak sound levels above 140 dB, and permits 100 impulses per day at 140 dB, 1000 impulses at 130 dB, and 10,000 impulses at 120 dB." If we were to take it further in the "noise dose" analysis (10 times the impulses for every 10 dB lower level of peak noise), that would allow 100,000 impulses at 110 dB, and 1,000,000 impulses at 100 dB. The reason that the article stopped at the 120 dB noise level and 10,000 impulses was, probably, that it is hard to generate more than 10,000 impulses, even at a police training and qualification center where shooting goes on all day, in one day. It's just a thought, a different perspective to put the situation into a context, especially when Mr. Baer's own analysis would easily allow for a minimum of 36,000 impulses in a two-hour period as "constant noise", or spread out over the course of a day at 100 dB, as shown above.

Because Mr. Baer used peak sound levels in his analysis, more impulses per second at the same level would not change the result; so doubling the number of rounds fired would only "smooth out" the constant level of sound such that the individual pulses would not be discernible to the human ear. If any of the discharges occurred within 200 milliseconds of each other, they would count as a single discharge, by statutory definition. It is the same phenomenon as listening to a busy highway filled with moving vehicles. One cannot discern the sound of any single vehicle and the highway sounds like a single "hum" or "roar" depending on your proximity and upon your descriptive persuasion in the use of adjectives and similes. Another example would be television commercials. They aren't any louder than the programs; they simply have fewer periods, a smaller fraction, of relative silence.

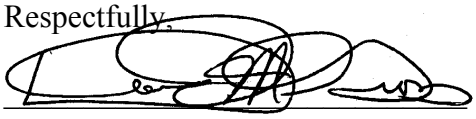
If what Mr. Baer came up with is the worst case that he can come up with using fraudulent and irrelevant data; obviously generated outside of the range location, its topography, hills, and the natural sound attenuation characteristics, and which will be more than adequately supplemented by its very construction as well as additions; misrepresentation of the distances and

natural attenuation involved; and using the wrong, irrelevant standards and methodology; failing to confirm and to disclose the calibration of the meter as required; and measuring, preserving, and presenting ONLY peak sound levels under these less-than-law-abiding/law following circumstances; then the applicant has nothing to worry about under OSHA. It is only fitting (for a more classical reference) that a scoundrel be hoisted on his own petard[9], or if you prefer, that he be cut by his own double-edged sword. But, of course, OSHA standards don't apply, because of the Range Protection Act and the fact that an Leq standard applies, which Mr. Baer COULD have obtained, but refused to obtain. From any sample that he obtained, an extrapolation could have been made, just as I did above, with his "discussion." Perhaps that is the reason he didn't do it.

2. Anonymous trajectory information

It would appear to be irrelevant to the discussion, as the County requires an impact berm that is shot into by the shooter. The purpose of the impact berm is to interrupt and to terminate the "flight" of whatever trajectory the bullet is on. Use of the impact berm makes this information irrelevant. All the trajectories end at the impact berm and go no further.

Respectfully,



[9] The French used *pétard,* "a loud discharge of intestinal gas," for a kind of infernal engine for blasting through the gates of a city. "To be hoist by one's own petard," a now proverbial phrase apparently originating with Shakespeare's Hamlet (around 1604) not long after the word entered English (around 1598), means "to blow oneself up with one's own bomb, be undone by one's own devices." The French noun *pet,* "fart," developed regularly from the Latin noun *pditum,* from the Indo-European root **pezd–,* "fart."

BORGLUM APPLICATION FOR CONDITIONAL USE PERMIT

AFFIDAVIT OF MARIE J. BORGLUM
CONCERNING ALLEGED FIREARMS NOISE TESTING
ALLEGEDLY CONDUCTED ON MAY 9, 2007

STATE OF MINNESOTA)
) ss.
COUNTY OF WASECA)

Marie J. Borglum, after being duly sworn on oath, states and deposes as follows upon her personal knowledge, information, and belief:

1. I am the applicant for the CUP in this matter.

2. The proposed firing range is located in the back yard and side yard of my residence. I work out of my house. I am aware of and monitor the goings on with the help of my two dogs, Max and Boo, who alert me to the presence of any people on the property at any time. They are, and perform as, "yard dogs." The front door is usually open, except when the presence of bugs is too great, so that the dogs are able to come and go as they please. Max's response to gunfire is to get very excited and to go to where the firearm is being discharged to see what is going on and to participate in the fun. Boo's response, however, is to seek refuge from the noise and to lie down under a piece of furniture. My response to any gunfire is to check out who is doing it and to make sure that it is being done safely concerning the persons and property on my property. Since my businesses are located on my property, I could be described as a "yard dog," too.

3. On May 17, 2007, I received a copy of a transmission to Angie Knish, Director of Waseca County Zoning and Planning, which was, apparently sent also to Commissioners and members of the Zoning and Planning Commission. That transmission, entitled Waseca Shooting Range Packet 8..., a PDF file contained an affidavit of Paul M. Baer, CSP; a letter regarding Minn. Stat. Ch. 87A; his report entitled "Waseca Shooting Range Noise Level Testing;" and a copy of his CV.

4. In his affidavit, Mr. Baer states, "On May 9, 2007, I performed extensive testing at and near the subject property." He also indicates that he prepared the attached report for consideration by the Waseca Planning and Zoning Staff, the Planning and Zoning Commission, and the County Board of Commissioners.

5. In his letter, Mr. Baer states, "The purpose of the testing was to measure peak noise levels at nearby residences near the proposed site while firearms were being discharged at the proposed site." In his report, Mr. Baer states, "The purpose of the project was to determine possible peak noise levels at various residences during discharge of firearms at the proposed site."

6. During the relevant period of time discussed in the report, midmorning May 9, 2007, I was working at home. Present also was my son Tony, and the two dogs, Max and Boo. As an early riser, I saw the morning dawn clear, dry, and pleasant. I opened up the windows to enjoy the beautiful Spring day and to get fresh air into the house. I was working in my office near the front of the house. The front door of the house was open for the dogs, as usual. In fact, we

were present all day, gathering information and preparing drafts of submissions on this application for the next afternoon, May 10, 2007.

7. At no time during the morning did I hear or observe any gunfire on or near my property. Neither of the dogs reacted to any gunfire. Neither of the dogs alerted me to the presence of any persons at or near the proposed shooting ranges. I did not see any persons at or near any of the proposed firing ranges. Tony did not inform me of any persons at or near any of the proposed shooting ranges, nor did he tell me that he heard any gunfire on or near our property. There were no unusual visitors or occurrences. Nobody approached me or the members of my family seeking permission to enter upon the property and to discharge firearms on it.

8. When I became aware of the assertions in the letter and in the report that there had been persons on my property discharging firearms, I didn't believe it, because I would have seen, heard, or been alerted to anything of the sort. I checked my property on and near the proposed shooting ranges, with the dogs, looking for any sign of soil or vegetative disturbance from the presence of people, or soil disturbance from impact of bullets and/or expended cartridge casings, to include 9 millimeter handgun cartridges and 30-06 Springfield or 300 Winchester Magnum high power rifle cartridges. I found none. Neither of the dogs alerted me to anything unusual in their "stomping grounds."

9. I am informed by my neighbor, Roger Cole, that neither he, nor his renter, Dean Pertle, had been approached with a request for permission to enter onto the Cole property to take sound level measurements. Further, Roger Cole informs me that he was present at his sales location on the property, arranging and stocking, both inside and outdoors during the entire morning of May 9, 2007. He states that he observed no person to arrive in any manner and to conduct any activity of any kind either in the driveway in front of the porch or in the front yard of the residence, which is approximately 150 feet away and visible from where he was.

10. On Monday, May 21, 2007, I contacted Mr. Baer by phone shortly after 7 a.m. and expressed my concern that he reported people on my property discharging firearms repeatedly, well in excess of 50 times, over a 45-minute time period 1) without my permission, 2) under his supervision and direction, 3) without my knowledge or awareness of it, and 4) that I could find no evidence of such activity. I asked him to tell me exactly where the shooting occurred so that I could verify it. His response surprised me.

11. Mr. Baer told me that he did not know where the shooting took place: "I'm not sure that it was on your property;" "I wasn't there where the guns were fired." He said that he wasn't "involved" in the shooting, that he didn't know whether an impact berm was used or in what direction the guns were discharged; but also that "I'm sure that the shooting was done safely." Mr. Baer said that he "was told that it [the shooting] was near the proposed gun range;" and "I wasn't there where the guns were fired."

12. Mr. Baer claimed that there were 8 other people who handled the discharge of the firearms and that he never saw the guns. He claimed that "I was hired to record the noise outside of the residences; other people handled the shooting." He stated, "All I did was drive from place to place and record the noise."

13. If Mr. Baer was on top of the septic mound at the Steinhart property as he claims in the report, he could see my house at a distance of some 300 feet. He claims in his report to have been within 200 feet of the place where the firearms were discharged at that point, but now, he

claims that he wasn't there where the firearms were discharged and that he doesn't know where they were discharged. He also claims to have been on the Steinhart driveway in front of the porch. There is no porch at the Steinhart building, not even a loading dock.

14. I asked him for the names of the people involved in the shooting of the guns so that I could verify the location of the shooting, if any, on my property. Mr. Baer refused to identify any of people supposedly involved so I could contact any of them to verify the assertion that firearms were discharged on my property, "at the subject property," or "at the proposed firing range site."

15. There's an adage that goes: "Fool me once; shame on you. Fool me twice; shame on me." I'm informed that is a statement of the law of credibility relating to lying witnesses; that once a witness is determined by the fact finder to have lied, the fact finder is not required to give any presumptive credibility to the witness. Rather, the fact finder is required to disbelieve anything and everything that they say, unless and until the fact finder is given independent and convincing corroboration by another that what the witness said is true.

16. In this matter, Ms. Carol Overland, attorney at law, representing the Davisons, has submitted a petition to the EQB, causing delay and great waste of resources in this matter for both me, as the applicant, and the Waseca County Zoning and Planning Staff, only to be withdrawn at the beginning of the hearing. It was obviously submitted for the purposes of delay, confusion of the issues, and infliction of unnecessary costs. Now, here, Ms. Overland, representing the Davisons, submits another obviously bogus, inept, misdirected report that is based on a lie, exposed above. In that report, Mr. Baer has apparently fabricated a study of the wrong issues, contrary to law, using procedures, settings, and instruments designed to generate invalid and irrelevant data, according to law, for the purpose of confusion, intimidation, delay, and the infliction of expense, again, upon the County and me, the applicant.

17. I as a citizen of the United States, State of Minnesota, and a taxpaying resident of Waseca County, and the County, its staff, and Commissions, deserve better treatment than to be served up lies, falsehoods, misrepresentations, fabrications, and fraud such as this. In my day, a person who gave up their integrity, honor, and virtue for money was called a prostitute. We should openly declare our refusal to deal with prostitutes. It is time for the County to reject these destructive and demeaning submissions firmly and finally and move on to the constructive business at hand without unnecessary distraction.

Further your affiant sayeth not.

Marie J. Borglum

Marie J. Borglum

Subscribed and sworn to before me this
22nd day of May, 2007

Beatrice O'Brien

Notary Public

BEATRICE OBRIEN
NOTARY PUBLIC - MINNESOTA
My Commission Expires Jan. 31, 2010