EMSRI UPDATE

December 9, 2012

I sent a notice of the startup of the ElectroMagnetic Sensitivity Research Institute (EMSRI), (www.emsri.org) to a number of people in early October, 2012. There are three focus areas: safe housing, engineering research, and medical research. I asked for expressions of interest in these areas. As of early December, 2012, I have received over 40 replies, including 9 from outside the USA. There were a number of words of encouragement. About 15 of the 40 were specifically interested in safe housing, even willing to move to Rockvale, Colorado if conditions were just right. Two people commented that they had extra money which could be invested in housing. Two engineers who have been disabled by EM fields (Bruce McCreary and Steen Hviid) have offered substantial advice on pitfalls to avoid and good research areas to pursue. Several other engineers and technicians have also asked to be kept informed. One medical doctor in London has a major EM Sensitivity research project in progress, but would like to chat about possible areas of collaboration.

Much good engineering research can be done by widely scattered individuals. Engineers would not need to relocate to Colorado unless they specifically needed safer housing than what is available at their present location. I am hopeful of putting together a research group of good people with good ideas, who can write good proposals. Once we have a plan of important research to be done, and the people to do the research, we can seriously start seeking funds from funding institutions to execute the research. As some have already discovered, I need all the help I can get. EMSRI is *not* going to happen as a one man show. I encourage those reading this to think about projects within their area of interest, and how much time and materials they would need to carry out the project, so we can start showing funding agencies what they could be supporting. I am confident that this will happen in due time.

But from the responses to my announcement, it is apparent that work toward safe housing needs to be a top priority. Like the engineering research, there needs to be an understandable and believable plan before any funding source will invest, before any individual will commit to buying (or renting) a housing unit, and before the local planning and zoning office will grant permits. Some of the things that need to happen are the following:

- Do a proper 24/7 evaluation of the site for electromagnetic fields.
- Do a detailed site layout including cabin location, roads, water lines, garden and orchard areas, etc. This might even be a three dimensional layout that could be carried to public meetings.
- Investigate low-cost building materials that will absorb a large fraction of incident high frequency electromagnetic fields.
- Investigate whether the recent push toward using 380 and 24 VDC in commercial buildings could be extended to be used in the cabins.

- Develop one or more floor plans for cabins, with construction details at the level required by the permitting agency.

SITE EVALUATION This should be done for the entire frequency range, from say 1 Hz to microwave frequencies. Several different sensors and recorders would be needed, for different frequency ranges. The low end, say 1–100 Hz, has a world-wide community dedicated to monitoring these frequencies, such that measuring equipment and protocols may be more readily available than at higher frequencies. This range of 1–100 Hz includes the power frequency of 60 Hz, and also the Schumann frequencies starting at 7.83 Hz. The 60 Hz magnetic field is known to be bad for at least some of us, while there is speculation that the Schumann frequencies are helpful. At least the Schumann signals have been with us throughout human history. (Note: Arsenic, lead, and mercury have also been with us through human history. The fact that something is old does not *prove* that it is good.)

Measurement of 1–100 Hz requires a large coil, a low-noise preamplifier, an Analog to Digital Converter (ADC), computer hardware and software to perform a Fast Fourier Transform (FFT), and a dedicated computer to store the data files. This looks like it should be within my skill set, so I am working toward this task. Total cost of equipment should be on the order of three thousand dollars, plus about two months of my time to get things set up.

SITE LAYOUT I have asked an architect friend from Lawrence, Kansas, to do a layout. He visited the gulch in November and took a good many pictures. He is an alternative energy enthusiast, with long term involvement in wind farm development. I do not have the cash to pay him his standard hourly rate for the several months that would be required to do the task, so he is thinking about the project at odd times between paying jobs and sending me relevant information. At some point in the next few months he and I will make a decision, whether to continue the low-level pro bono work based on friendship, or to figure out how he can be appropriately paid so he can be *the* architect of the project. A factor is that he is not licensed in Colorado. As I read the Colorado State website, it would not be too difficult for him to be licensed here ($100 per year and initial submission of a lengthy application), so that should not be a big issue.

EM FIELD ABSORBENT BUILDING MATERIALS Safe housing must be built to prevent the electromagnetic smog existing outdoors from entering the dwelling. This can be done in two ways: metal reflecting layers (Faraday cage) or absorbent material (think stealth bomber). The metal layer technology is fairly well established. Bruce McCreary, for example, built his safe house with an outer metal layer of conventional metal roofing and siding (with special attention to joints, corners, and seams). Windows have low-E glass and two layers of metal screens, one aluminum and the other stainless steel. The inner metal layer is aluminum foil glued to drywall, and the joints covered with aluminum tape. With careful attention to detail, he was able to get very impressive reductions of the EM fields.

But one curse of being an engineer is that we are continually asking if there is an even better, easier, or cheaper method to accomplish a task. We know, for example, that concrete is absorbent to EM fields. Could we add some material to concrete that would make it even more absorbent? We could then consider ICF (Insulated Concrete Form) construction. This

involves buying blocks of insulating foam with a cavity between two layers of foam. The blocks are stacked like Legos, rebar is installed in the cavity, then the cavity is filled with concrete. The foam on the inside and on the outside provides ample insulation while the concrete provides structural strength. The major problem in using this for safe housing is the outgassing of the inside layer of foam into the living space.

My architect friend was architect for a house in eastern Kansas that was basically the inverse of ICF. A foam layer was placed in what would be the interior of the wall, and then concrete was poured against the layer on both sides. The concrete could be the final surface, perhaps with a coat of paint, both inside and outside. Outgassing of concrete is relatively low. One would hope that after a month or two, this type of construction would be acceptable to most people with MCS. Thermally and structurally, this is as good or better than ICF. The biggest problem seems to be in pouring the concrete such that the resulting wall surface is acceptably smooth and straight. (There tends to be voids and seams which require patching.)

The rocks in the gulch are a form of sandstone. Sun, wind, and the freeze-thaw cycle causes sand to flake off the rocks, such that the bottom of the gulch is mostly sand. We can easily get enough sand to make concrete for 25 to 50 dwelling units. It may need to go through a 1/8 inch screen to get out larger rocks, with perhaps a fan blowing on the screened material to remove some of the fines. I will be buying some Portland cement and mixing some concrete samples using various ratios of cement to sand. The samples will be tested to see if they have adequate strength, and if the electromagnetic absorbtion is any different from that of standard concrete from the local supplier.

380 AND 24 VDC A recent push in commercial buildings is to bring AC power to the service entrance and convert it to 380 VDC for distribution within the building. This is converted again to 24 VDC every 50 to 100 feet within the building to use for lighting and circuits used mostly for computers and the like. This improves the efficiency of electricity usage, improves power quality, and reduces some building operational costs. Benefits are sufficient to very likely push this to be standard practice. This reduces the 60 Hz magnetic field in the building and has the potential of reducing the amount of 'dirty electricity', hence could help Sensitives to be able to work in the building, or at least to visit it.

Knowing about this push could save EMSRI from unnecessary work. That is, if the standard voltage level is to be 24 VDC, there is no point in designing circuits or components for 12, 36, or 48 VDC. Likewise, issues about plugs, receptacles, and switches being rated for 24 VDC will eventually get sorted out by the big manufacturers involved. (We will probably use English plugs and receptacles in the near term, to ensure that 120 VAC devices do not get plugged into our 24 VDC system, or that our 24 VDC devices do not get connected to 120 VAC).

The LED lighting, the computer receptacle, and the evaporative cooler in the old camper at the bottom of the gulch all use 24 VDC. Everything works, but some experience over a period of time is helpful to determine if adjustments need to be made.

FLOOR PLANS There is a draftsman in Cañon City who is quite good at producing detailed construction drawings (required by the permitting people). He works closely with a

registered civil engineer, specializing in foundations and footings. At least in the past, the draftsman's plans and a signature by the engineer have been adequate to get a construction permit. We would have to convince the engineer that our absorbent block has adequate structural strength. This is a good thing, because the last thing any of us need is to build something that melts in the first heavy rain, or flakes off in large pieces when it freezes and thaws.

My present thinking is that the cabins will be relatively simple one bedroom units, with maybe a few two bedroom units, such that a review of plans by an architect might be adequate (as opposed to the architect personally preparing the plans). The arrangement of building sites needs the touch of someone with aesthetic abilities, however, so each cabin has the best possible view.

TIMETABLES Those who want a safe place ready to move into right now will probably find my schedule frustrating. But the old saying "Time spent sharpening the ax is never wasted" seems to apply here. We need to drill a well, characterize the electromagnetic features of the site, look at absorbent building materials, and do a site layout before we can finalize a development plan. There is city water available at the property boundary, so a functional well is not absolutely essential. However, a well would allow us to have a larger garden and orchard area. Once the plan makes sense to we Sensitives, then we can start talking with the city and county planning and zoning people. Hopefully they will endorse the plan (with appropriate changes) because of the potential economic development benefits (additional property tax income, etc.). At that point, hopefully no more than a year from now, we can do some serious fund raising and start building cabins. Of course, once built, the cabins still need to outgas for at least a month or two before they can be occupied.

One interesting issue is that of determining whether this site is the *right* site for a given MCS and/or EHS person. It seems very unwise for anyone to make decisions on housing sight unseen. A person needs to spend several days in the gulch to see if they actually feel better here, if they enjoy the climate and view, and if the local pollens are acceptable. Until the first cabin is built, the only option is the old camper. Think primitive, as with hauling water. It has electric lights, a propane stove, a computer, an evaporative cooler, but no furnace. Those who think they might want to try staying in the camper can email me, and we will discuss details.