# Science Advisory Council to the

# **Environmental Management Commission**

Via Zoom Webinar June 3, 2021 5:30 p.m.

Meeting Minutes			
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**Environmental Network** 

Mary Waygan Citizen

#### **Handouts Distributed at Meeting:**

- 1. Joint Community Advisory Council and Science Advisory Council Draft Meeting Minutes, July 29, 2020
- 2. Joint Community Advisory Council and Science Advisory Council Draft Meeting Minutes, October 8, 2020
- 3. Multi-Purpose Machine Gun Range Presentation
- 4. Tango Range Redevelopment Presentation
- 5. Environmental Management Commission Read Ahead Spring 2021
- 6. Weapons Qualifications Range Renovation, Multi-Purpose Machine Gun Range Fact Sheet, October 2020

#### Agenda Item #1. Welcome

Science Advisory Council (SAC) Chair Paul Cavanagh welcomed everyone and introduced the council members present at the meeting: Jack Duggan, Phil Gschwend, Tara Nye Lewis, and Denis LeBlanc.

Mr. Cavanagh provided background information about the SAC, which has existed for 18 years and holds meetings between two to four times per year.

- The Environmental Management Commission (EMC) and its advisory councils, the SAC and the Community Advisory Council (CAC), originated in 2001 when a Memorandum of Understanding (MOU) was signed among the Commonwealth of Massachusetts, the United States Army and the National Guard Bureau, which indicated that the Governor shall establish by executive order an independent environmental management commission. The day after the MOU was signed, the Governor signed an executive order establishing that and in 2002, an act of the legislature, Chapter 47 of the Acts of 2002, formalized the EMC, established the CAC and SAC, defined the Upper Cape Water Supply Reserve (the Reserve), and transferred the Reserve to MassWildlife.
- Everything the SAC does as a body comes under the guidance and requirements of Chapter 47 of the Acts of 2002. The SAC uses the Environmental Performance Standards (EPSs) promulgated in Chapter 47 as its metrics to assess things. The SAC compares what is being proposed to those EPSs.
- The SAC does not have decision-making power. Its role is to be presented information, to discuss, inquire and apply their professional experiences and then offer scientific and technical advice to the EMC regarding protection of the drinking water supply and wildlife habitat on the Reserve to ensure that military use and training is compatible with the natural resource purposes of water supply and wildlife habitat protection as defined by the EPSs. The SAC makes considerations as they relate to the Reserve.
- The EPSs have been revised in the past and can be revised in the future, but for the point of discussion tonight, we are dealing with those EPS currently in effect.

#### Agenda Item #2: Review of SAC Minutes and Approval

Minutes of July 20, 2020; Mr. Cavanagh stated that the members who were in attendance at that meeting are eligible to discuss and vote on those minutes. Those members are Mr. Cavanagh, Ms. Lewis, Mr. Duggan and Mr. LeBlanc. Ms. Lewis made a motion to accept the minutes; Mr. LeBlanc seconded the motion. Mr. Cavanagh, Ms. Lewis, Mr. Duggan and Mr. LeBlanc were in favor; Mr. Gschwend abstained. The minutes were approved.

The minutes of October 8, 2020 were carried over for a vote at the next meeting.

Agenda Item #3: Environmental Officer Update – Gary Moran, Acting EMC Environmental Officer

Mr. Moran, Acting Environmental Officer, reported that the Community Advisory Council (CAC) is tentatively scheduled to meet on June 17, 2021, and the Environmental Management Commission (EMC)

is tentatively scheduled to meet on July 12, 2021. Interested parties may submit comments to: env-mgmt@mass.gov.

He discussed the previous process for the Multi-Purpose Machine Gun (MPMG) range, which has been discussed at a number of meetings. Mr. Pinaud, the EMC's Environmental Officer, has provided comment on the range design and during the Massachusetts Environmental Policy Act (MEPA) and National Environmental Policy Act (NEPA) processes. The EMC has not taken a position; its approval is needed to move forward. If the Range is not consistent with the EPSs or is a substantial threat, the EMC will vote against it or will ask for adjustments in the proposal. If the Range is consistent with the EPSs, the EMC will vote to ask the Environmental Officer to approve the range design and Operations, Maintenance, and Monitoring Plan.

**Agenda Item #4: Multi-Purpose Machine Gun Range -** COL Matthew Porter, Camp Edwards Commander, MAARNG; MAJ Alex McDonough, Plans and Training Officer, MAARNG

COL Porter expressed his thanks to the SAC for their many hours and numerous meetings devoted to the MPMG.

MAJ McDonough described the MPMG project:

- The MPMG range is used to meet basic annual qualification requirements for soldiers that are assigned the M249 light machine gun and the M240 Bravo medium machine gun.
- This project is split into two phases. Phase 1 is the project that is currently funded, which is 8 lanes at 800 meters. Phase 2, which is currently unfunded, but which is included in the Environmental Assessment, is to extend two lanes to 1500 meters to support the M2 (.50 caliber machine gun).
- The range is proposed to be located on the Known Distance range, which does not meet current Army qualification requirements.
- The M249 / M240B and its supporting copper ammunition are already approved for use at India range, a 25 Meter zero range. This active range supports larger qualification ranges.
- The MAARNG has completed a number of regulatory milestones including Conservation and Management Permit (Final September 2020), the Massachusetts Environmental Policy Act process (Notice of Project Change sent to 85 stakeholders; Single Environmental Impact Report [SEIR], signed SEIR certificate 17 July 2020), and the National Environmental Policy Act process (Finding of No Significant Impact [FNSI] on the Environmental Assessment signed April 30, 2021). The completion of the FNSI is the culmination of thousands of man hours in analysis of any potential impacts, careful review of and response to public comments, and the ongoing commitment of the MAARNG to ensure any project concerning the Reserve ends in a net benefit to the habitat and water supply.
- The next step is to ask for approval of the range design and Operations, Maintenance and Monitoring Plan (OMMP) through the EMC. The particular EPS that's involved with this range establishes the requirement for the EMC to review the design, and if approved by the EMC, to authorize the EO to approve the design and work in cooperation with Camp Edwards to review and approve and implement an OMMP. The key design component for the MPMG is the installation of capture berms, which are a unique design element; Camp Edwards is the only installation in the Army that incorporates capture berms.
- The EMC's Environmental Officer, in addition to ensuring compliance, is part of the MAARNG's planning processes. Mr. Pinaud was present at all design meetings for the MPMG and provided input which was incorporated into the design. Additionally, he provides oversight by conducting regular onsite inspections during training activities to ensure that the MAARNG is

- complying with the EPSs. EMC involvement does not end once construction operations are over. The EMC has enduring oversight requirements.
- In accordance with Chapter 47, the MAARNG will be submitting the following request to the Commissioners: "The Massachusetts Army National Guard requests that the EMC Authorize its Environmental Officer to approve the design and operations, maintenance, and monitoring plan for the Multipurpose Machine Gun Range at Camp Edwards."

SAC members asked questions and discussed the information.

Table 2-2 Anticipated Weapons and Ammunition Usage at the MPMG Range included machine gun, shot gun, grenade launcher and pistol. Will someone clarify if all those will be used with copper bullets, including grenade launchers?

• Neither shotgun nor pistols are used on the MPMG range, so those munitions would not be used on that range. The 1,500 meter range on a standard MPMG range utilizes the Mark19 grenade launcher. That round is not approved, and if the MAARNG were to seek approval, it would have to go through the standard review process, looking at the constituents and ensuring it meets compatibility requirements for the Reserve. At this time, the MAARNG is not pursuing those. The EMC EO received documentation that those would not be part of the range plan at this time.

Do we know if there's "other stuff" in the copper, as in zinc or other alloy materials to make it harder?

• The Enhanced Performance Round (EPR) is a solid copper core bullet with a copper jacket with a steel penetrator in its tip. It's a tin/copper alloy slug and the jacket is copper. There is no antimony in the bullet.

Will the copper bullets be removed from the berms?

• The capture berms are designed to do that. Through joint inspection between the MAARNG and the Environmental Officer, those berms are looked at regularly and when it's determined that there's enough round density, the rounds are harvested.

How do we decide what is "significant?" How did we come up with "less than significant" for copper?

- The MAARNG answered "Less than significant" is a NEPA term, which is the conclusion of all the impacts analyzed through the Environmental Assessment. To come to that conclusion, significance is analyzed under two different variables: context and intensity. An example is tree clearing is one of the impacts. The context is Camp Edwards, there are 13,500 acres of habitat on Camp Edwards; the impact of the clearing of the trees is 171 acres, about 1.3 percent of the acreage on Camp Edwards. The intensity is the removal of the dense, low quality habitat. Comparing those two variables, overall, the MAARNG came to the conclusion that it was "less than significant," because it was 1.3 percent of what's existing on Camp Edwards. That was done for all of the impacts, and overall, none of the impacts assessed came close to being called "significance." That was reviewed by National Guard Bureau's legal team with a cursory review from the Army that went through those impacts assessments. Ultimately, National Guard Bureau signed off on the analysis of the entire document.
- The MAARNG has all the data the onset of copper ammunition use at Camp Edwards. The MAARNG has not seen significant copper impacts based on the Operations, Maintenance, and Monitoring Plan with the current action levels set by the regulatory community. The MAARNG is not seeing anything above background levels other than in the bullet pockets and that is in the immediate vicinity and only to a depth of approximately 12 inches due to the buildup of bullets.
- The MAARNG has been actively firing copper for almost nine years; a lot of data has been collected through the annual sampling of Sierra and India ranges, which would have shown some data if copper was a systemic issue. Nine years of use has not demonstrated any significant

impact on Sierra Range and that is how we draw the conclusion on the MPMG range because the same ammunition will be used.

• Copper has been less than significant or non-detect in pore water.

One SAC member stated: It's not just what is in the bullet, but also the residues that are produced at the firing line. There is a lot more in the bullet than just the metal...although there certainly are other chemicals that are released as part of the primer and the quantities are very, very small...perhaps you could talk about the firing line itself?

• Machine gun muzzle blasts at the firing line have been studied for the last 20 years, especially with the EPA orders on the small arms range operable unit on those ranges. The blast puts out lead. There is lead and antimony in the primer and nitroglycerin and nitrocellulose. What was found is that at almost 99 percent of the ranges, lead and antimony do not build up at the firing lines, however, nitroglycerin and nitrocellulose did. Microbes eating the nitroglycerin can get through the nitrocellulose to get to the [inaudible] in short order. Tango Range was a former machine gun range, and historically, there was more active firing on that range than so the muzzle blast would have created a dense cloud that can drop to the ground. There were elevated levels of lead at the firing line on that former machine gun range. In the proposed Operations, Maintenance, and Monitoring Plan, firing line monitoring is required and specified to be done for some time to determine whether there is lead and antimony build up from the primer and the bullets.

Please clarify the final numbers of acreage for habitat restoration and land transfer.

- For the MPMG, there is 310 acres of land protection; 260 acres of that is direct transfer to MassWildlife. Those acres were called Tracts 1-5 of the Special Military Reserve Commission and were owned outright by the Military Division and were transferred to MassWildlife as an expansion of Crane Wildlife Management Area.
- The MAARNG also took on a perpetual habitat restoration and maintenance component, which is 551 acres of pine barrens restoration work that was completed over 850 acres of pine barrens restoration using the mitigation bank established through the Conservation and Management Permit.
- In addition, KD Range area was treated as sandplain grassland habitat by MassWildlife, MAARNG had 36 acres of grassland mitigation and have completed 157 acres of sandplain grassland mitigation work. There are also forest cover protection zones set up with a 1.5 to 1 ratio for box turtles of actual, more mature forest protection (an additional 150 acres of box turtle protection).
- There is also extensive monitoring and reporting requirements under the Conservation and Management Permit.
- Active restoration for every acre disturbed is completed on a 4 to 1 ratio. The land protection for endangered species and land transfers is a 2 to 1 ratio.

How will the MAARNG demonstrate net benefit? What are the triggers to let you know when something needs to be done differently or changed?

 The MAARNG will demonstrate net benefit through its monitoring work such as long-term moth surveys, whip-poor-will and general bird surveys. Long-term monitoring is being implemented on the species that the MAARNG is concerned about impacting. Basically all of which already have long-term or periodic monitoring already in place so the MAARNG knows their status and condition and can evaluate it moving forward. What are the thresholds or triggers that will let the MAARNG know when something needs to be done differently or changed to better demonstrate that net benefit? The concept of "no significant impact," the conclusion that all of the impacts are less than significant, and the mitigation the MAARNG is proposing, is doing and has done, that get taken into the big picture?

- The demonstration of net benefit is more of a prerequisite for the plan itself with the long-term monitoring that making sure that does bear out. The plan was built collaboratively with MassWildlife and its specialists and their determination is that it did clearly demonstrate net benefit for the species of concern.
- The project is not happening in isolation; there is an overarching conservation plan for the base that the external agencies have signed onto as both partners and as the regulatory oversight. The entire training site is being managed for net benefit for rare species already and for the overall long-term sustainability of the ecosystem. The data is reported annually and shows that it is working very effectively with the military mission. The MAARNG does monitoring showing rare species thriving even right at the ranges.
- The context is important in weighing the significance of the action and the impacts. The MAARNG's overall program management is to make sure that the military training and potential impacts of range construction can be absorbed without it being significant.

Do legacy pollutants need to be considered moving forward?

• As part of EPA Administrative Order 2, the IAGWSP was required to investigate all the small arms ranges; one of the MAARNG's requirements in coordination with IAGWSP, know that MAARNG wanted to build a range there, was extra investigation and removal actions. Those have been completed.

The Massachusetts Drinking Water Standard for copper is 1.3 milligrams per liter. In porewater or groundwater on any of active ranges where we had copper are we close to 1.3 milligrams per liter? What is the highest level of copper found in soil?

- The maximum found in groundwater was in 2015 is 12.7 parts per billion (ppb). That sample was taken in a drought year where the contractors had to use a grab sample that consists of grabbing muck at the bottom of the well. Upon resampling, it was non-detect.
- An SAC member stated that 12.7 parts per billion is micrograms per liter, so at the source, it would still be 100 times lower that the drinking water standard. MassDEP has reportable concentrations for soil and groundwater and the reportable concentration for copper is 1,000 parts per million.
- 50.6 parts per million (ppm) is the highest level of copper found in soil, about 20 times lower than the reportable concentration.
- An SAC member stated that in terms of copper being a source from a munition, it is orders of magnitude below what would otherwise trigger any concern in any other setting, whether it be an urban setting, or rural setting where there might be private wells, surface water supplies, or groundwater supplies at the drinking water point of consumption as opposed to a potential source area.

Will there be any soil manipulations contemplated during the operation in that firing line or the firing point?

• There will be no significant soil manipulation.

Will the range monitoring be similar to what has been done in the past, where different ranges have lysimeters in place?

- The MAARNG has already worked with the IAGWSP and the Army Corps of Engineers to model wells that could be used for firing line monitoring. For mid-range monitoring another well isn't planned for downrange. There will be intensive soil monitoring at the firing line and then mid-range and at the targetry downrange.
- The range monitoring requirements are a living thing, and the work doesn't stop when the range is built. If something is found that needs to be addressed it will be brought to the attention of the SAC and will be worked to find a solution. Updates on this range will be rolled into the update brief provided at every meeting.

**Agenda Item #6: Tango Range Redevelopment -** COL Matthew Porter, Camp Edwards Commander, MAARNG; MAJ Alex McDonough, Plans and Training Officer, MAARNG

MAJ McDonough discussed the Tango Range Redevelopment project.

• Tango Range is an old STAPP™ supported 25 meter range that has been modernized to support the Enhanced Performance Round (copper round). Range modernization consisted of moving the firing and target lines north by 25 meters and expanding the firing point to 32. Use of this range eliminates the need for soldiers to drive 7 miles between qualification events, increasing throughput efficiencies for rifle qualification activities. The project went through the MEPA process and is included in the Conservation Management Plan and Permit. The Environmental Officer provided input during the design process to ensure compliance with Chapter 47 and the EPSs.

The MAARNG will be submitting the following request to EMC: "The Massachusetts Army National Guard requests that the EMC Authorize its Environmental Officer to approve the redesign and operations, maintenance, and monitoring plan for the Tango Range at Camp Edwards."

SAC members asked questions and discussed the information.

Was the STAPP system removed and a new berm installed?

• The MAARNG replied that the STAPP system was removed because it's incompatible with the EPR round and the MAARNG moved to an earthen berm management process for that round, which is successfully used on India and Sierra Ranges, beginning in 2012. The berm was essentially moved with the target firing line.

Are the groundwater monitoring devices the same or do they need to be replaced? Is there continuity of data to look at before and after the STAPP<sup>TM</sup> system removal?

• The MAARNG replied that since the range is moved 25 meters north, a new baseline sample will be taken; only the current groundwater monitoring well will still work for modeling. After the removal of the STAPP system, the MAARNG continued to sample the range for three years and that data is available. The two lysimeters are still in place behind the current berm, which can be checked if needed. The MAARNG will have the same monitoring in place: soil, groundwater, and pore water, if required.

When the berm was moved, could you see that there were just a few bullets? Was there a way to know that because of the way the berm was moved, you could see bullets left in the material?

• The MAARNG responded that Tango Range was a STAPP range, so it had a containment system. Part of the removal process was emptying and disposing of the STAPP system and the lead rounds it contained. There were no STAPP liner penetrations, so the rounds fired into the STAPP system were all contained.

# Agenda Item #7: Vote: the SAC shall discuss and vote on Tango Range Redevelopment – SAC Members

A vote on Tango Range was determined to not be required by the SAC members.

# Agenda Item #4: Multi-Purpose Machine Gun Range

Mr. Cavanagh asked to return to Agenda Item #4.

Mr. Cavanagh discussed his perspective on the MPMG Range, including

- The proposed MPMG is an increase of 84 percent in cleared range area based on comparison to active ranges and ranges identified as "range reconfiguration;" including Phase 2 with 171 additional acres increases that to 144 percent in cleared range area. He looked at the EPS and found that one of the things he assumed was included was not in the EPS: net loss of acreage. Carbon sequestration, sound as it effects wildlife isn't identified. There are some things that may be affected but there isn't a performance standard to say it does not meet.
- Based on the current EPS, the MPMG seems to meet those. However, concerning the additional 171 acres in the Reserve, was the intent of Chapter 47 to increase cleared ranges by 144 percent. He would like clarification on this. Although there is mitigation, it is outside of the Reserve and there is a net loss of the undeveloped acreage in the Reserve, even if there is an increase outside of it. The mitigation meets the needs of MESA, but there is nothing in Chapter 47 that states this type of mitigation is possible-is it allowed under Chapter 47?
- The MPMG doesn't seem to hang up on any of the EPS, it seems to hang up on the intent of Chapter 47. When Chapter 47 was established, did anyone think that we were going to increase the range areas by 144 percent? If we do it for this project, does it mean that type of alteration can continue as needed by the MAARNG? He would like to the EMC to weigh in on the issue of what the intent was, perhaps with legal discussion. He doesn't think that the people that originally wrote the legislation intended the ability to clear again and again.
- Members stated the MPMG range meets the EPS as currently written.
- The current EPS need to be revisited and possibly updated to address issues that the SAC saw that were not covered by the current EPS.

Mr. Moran stated that EMC will want to hear any significant issues raised by the SAC and those are: Chapter 47, issues raised around the copper, and perhaps documenting the information that may not have been in the FNSI. Those will be brought up with the EMC when they have to consider this.

### **Agenda Item #5: Vote** – SAC Members

FINAL: It is the opinion of the SAC that the proposed MPMG range meets the current EPS. During the review process, the SAC identified the need for review and potential revision of these standards.

Roll Call Vote:

Mr. Duggan: Yay

Mr. Gschwend: Yay

Mr. LeBlanc: Yay

Ms. Lewis: Yay

Mr. Cavanagh: Yay

# **Agenda Item #7: Vote** – SAC Members

A vote on Tango Range was determined to not be required by the SAC members.

# Agenda Item #8: Public Comment Period – Paul Cavanagh, SAC Chair

Twenty members of the public commented. Three minutes of public comment were allowed per person. The verbatim comments are contained in Appendix A of this document.

## Agenda Item #9. Adjourn

Mr. Cavanagh asked if a member of the SAC would like to make a motion to adjourn.

Mr. Gschwend made a motion to adjourn. Ms. Lewis seconded the motion.

Roll Call Vote:

Mr. Duggan: Yay

Mr. Gschwend: Yay

Mr. LeBlanc: Yay

Ms. Lewis: Yay

Mr. Cavanagh: Yay

The meeting was adjourned at 9:36 p.m.

### **Appendix A: Public Comment, Verbatim Comments**

Mary Waygan: My first recommendation is that we rescind the vote you just took until public comment is over. My name is Mary Waygan, and I live in Mashpee. I have a master's in environmental science and over 10 years of doing environmental reviews under NEPA for (inaudible) projects. I also have years of experience in an environmental testing laboratory and field sampling. So, I did give written comment in that I feel that the FNSI should not have been issued based on the EA. That I urge you to require a full Environmental Impact Statement prior to any recommendation. And, again, my original comment was vote on the data, and I'm very disappointed that you took a vote without hearing from the public first. I think that's completely improper. I do sit on the planning board in my town, and we would have never done that. The reason being, that these points of consideration are extremely subjective, and I heard in the beginning someone say that the most important piece that you looked at was species protection. But, actually, the most important piece you should have looked at was our drinking water quality. The Mashpee water is polluted by PFAS coming off the base. They are emerging (inaudible). We have had a \$.54 million, we have had an allocation that was provided April 27, 2021, to clean up another mess from the base and I don't see any funded plan for cleanup. You might have a funded plan for the gun range, you might have the monitoring, but you have no funded plan for cleanup. Once you see pollutants coming off, it will be years before funding happens. So, I am extremely disappointed; your core purpose here is to protect the community's health. I am really (inaudible) for my comments that you just took a vote without public comment. I also want to push back a little bit on epidemiological statement that it's a huge aquifer and a little bit of pollution is going to get diluted. First of all, that shows a complete ignorance about epidemiological concepts. Just because something goes below a drinking water standard or detection limit doesn't mean it's safe. A carcinogen only needs one molecule to effect one molecule in your body to cause cancer.

Andrew Gottlieb: I am Andrew Gottlieb, I am the Executive Director of the Association to Preserve Cape Cod. I'd like to thank the members of the committee for the seriousness with which you had this discussion. I think that tonight revels a lot about what's really wrong with this proposal. The fact that as a group, felt that the underlying analysis did not support the conclusion that was presented to you. Whether the reality of the situation was sufficient or not, the fatal flaw of this project is this is a large selfcertification exercise with sweeping statements about acceptability without support with parsed words and parsed examples such as when the antimony first came up, the guy representing (inaudible) said it's not in the projectile, later said it is in the primer. You have to scratch below the surface to get the answers to your questions. If you don't know the precise answers, then you don't have the opportunity, which many of us have not in this process had the opportunity to ask the right questions and get straight answers. Information doesn't come to light. This has been like pulling teeth. I'd like to know about the antimony and the groundwater and the pore water around the Sandwich gun range that was detected in Forestdale. I'd like to know why the lysimeters have been removed so we don't know what other antimony is happening in the pore water. There's lots of questions here, and there's a process that has not been enabled this community to delve into a matter of this complexity with the timeframe. This train has left the station, and you can see, frankly, by the reaction, the defensiveness, that the proponents are being pushed on this for the first time, where they felt we were pushing that, they got very defensive and that's a warning signal to the rest of us. This doesn't need to happen now. We don't even know, frankly, what the Range Complex Master Plan envisions. We were told tonight that there's engagement for future ranges; we were also told tonight that this is not an inevitability. How does one reconcile those questions in this kind of forum? This is not a way to handle process; we've talked about it numerous times that that's in fact the case and the fact that none of this seems to matter is extremely distressing. I appreciate the work that you did. I think that your conclusion proves a point; that you can tell, or at least some of you could, that there's problems with the project, the criteria you have to bring to bear to it. It's not allowing you to fully capture those problems. You're stuck with the process you've got and that lead you to a conclusion. But I don't get the feeling that the majority of the committee feels very good about that conclusion. Given

that, I think it's important that it (inaudible) who advise the EMC to take the right step and given the answers and be given the concerns, send this back, just refuse it outright. Thank you for your time.

Samuel Beschtel: Hi, my name is Samuel Beschtel, I'm here to speak on behalf of the Sierra Club Cape Cod Group's Executive Committee. There are more than 1,900 members in this region and Sierra has almost 4 million members across the United States. Since the 1990s, the Sierra Club has been working with citizens and allies to protect and remediate the Upper Cape drinking water supplies from threats posed by contaminants resulting from previous military activities at Joint Base Cape Cod. Tonight, the EMC's SAC was, you know, voted already on this, so it kind of changes my comment a little bit, but you know, they're supposed to take into account the proposed machine gun range. That's on land that is already specifically set aside for drinking water protection. So, I appreciate the opportunity to speak. Sierra Club is particularly concerned about the proposed machine gun range and the fact that it will threaten the Sagamore Lens of Cape Cod's sole source aquifer. We do not believe that studies to date have adequately considered the potential for bullets and other armaments to disturb previously contaminated soil, re-mobilize toxicants, and introduce them to the groundwater, which came up tonight. Our water supply is precious and limited. It is the life blood of our communities; we cannot risk further contamination. There is no scientific evidence supporting any finding that the project proposes—no potential significant impacts to the health and safety of the water user in Sandwich or Mashpee and Falmouth. That came up in your discussion too, because you guys tore apart the standards that we're talking about, right, you think they need to be revised. On top of risking our water supply, this project will result in the clear cutting of 170 acres of forest, the disturbance of additional protected lands. This will not only hinder attempts at mitigating the effects of climate change, carbon sequestration, but also cause unnecessary mortality of state listed, endangered and threatened species. Due to these and other threats, we feel that the proposed project does not honor previous commitments to prioritize the wellbeing of Upper Cape communities, specifically under Chapter 47 of the Massachusetts Acts of 2002, creating the Upper Cape Water Supply Reserve. We urge you as members of the Science Advisory Council to reject the military's Finding of No Significant Impact, to vote against the development of the proposed Multi-Purpose Machine Gun Range at Joint Base Cape Cod, and to call for a full federal Environmental Impact Statement to be prepared prior to any further consideration of the project, and to advise the state's Environmental Management Commission to do the same. I think anything less would be inappropriate and thank you for your time.

Stephen Buckley: Like the previous speaker, I also am a former federal bureaucrat responsible for reviewing and writing environmental reports, NEPA documents. I'm a NEPA nerd, recovering bureaucrat, I like to tell people. So, first with the knowledge of how NEPA is supposed to work, it's very common all across all agencies to avoid doing an Environmental Impact Statement because, oh my goodness, it's going to take so long, so forth and so on. So, in order to avoid the Environmental Impact Statement, and the "S" word, don't want to say "significant" because, oh my god, now we're in an Environmental Impact Statement and so forth and so on. Anyway, what I'm trying to say is that if your point of view is the condition, the technical accuracy of the document should not be taken as gospel because it should be sent to EPA, which reviews all Environmental Impact Statements for technical adequacy for "oh look, this is an Environmental Assessment" we don't have to do that. The only thing is, federal regulations that (inaudible) federal agencies on NEPA, the NEPA regulations say anything over 300 pages is an absolute (inaudible), that's an Environmental Impact Statement, this is all of the appendices, guess what—496—almost 500 pages and the conclusion of which is there's nothing here to talk about, there's nothing worth considering, oh goodness, we could have spent some actual time on insignificant considerations. So, it's masquerading, it's an Environmental Impact Statement for all intents and purposes, except for the bureaucratic expediency purpose. And so, anyway, I would suggest that the Commission say that we would be comfortable with the EMC asking that there be properly labeled as an impact statement, sent to EPA, put to the technical adequacy and then let the chips fall as they may. But to masquerade this as an EA, that the dilemma you're all dealing with, why is this not significant, if you

spent 500 pages telling, it wasn't. That's my thoughts and don't feel bad, every agency tries to get away with this. Thank you very much.

Jane Leifer: My name is Jane Leifer, I live in the village of Cataumet in Bourne. I do not come with the same science background as the previous speakers, but I come as a lawyer who was involved in monitoring wells and polluted water cleanups in another state. I don't want to repeat what's been said, but I note that this committee itself talked about the inadequacy of the data, vis-a-vis the metals leaching into soil, the particular soil in this environment and the particular vegetation in this environment. There was an oral discussion with numbers thrown out by the Guard and I, perhaps somebody can refresh me as to who on the committee is a chemist who had that discussion.

Mr. Gschwend: It might have been me.

Ms. Leifer: when you were given some verbal numbers, you seemed to be satisfied with what you heard. This to me comes back to the whole idea you are a science advisory committee and if this is one of the key issues that you have looked at, that we are missing the data backing up the science. Those comments were made earlier, I repeat them now and I too am extraordinarily disappointed in the vote that's been taken despite so many of the doubts many of you have voiced during this very long meeting and I thank you very much for your work.

Mr. Gschwend: can I respond? Just a brief point, Jane we need people like you to come to our regular meetings. As we talk about these things every few months and that way we would be doing this in real time, first of all. Second of all, because I've been to those regular meetings, I sort of know those numbers ahead of time, so yes, I might nod my head, just being reminded of what they were saying. But you're right, on the other hand, it would be nice to have a lot more data, so I take your point well, thank you.

Ms. Leifer: If I could just respond briefly, you would like to have a bit more data, I think this data goes to the very core of your review, it isn't just (inaudible) to have a little more data, that core data is missing from the studies, are missing, even though they're monitoring other wells in other parts of the location. I just bring that to your attention because you yourselves have said it, and yet you voted to move this forward, thank you.

Susan Starkey: I am Susan Starkey, and I am the co-chair of a Faith Communities Environmental Network here on Cape Cod that has 35 churches and faith communities, it's a whole of over 65 plus of us who have been very much in (inaudible) since August. I'm sure you're aware we are in an existential crisis with climate change. It is not something that's in the books, the standards you're looking at. Your recommendations, simply the standards that are from 2017 or maybe even from 20 years ago and you've pushed back on that tonight, but yet you haven't followed through on it. I think it would be, sometimes we just reach a point as men and women of our day to do the right thing. And so, even if you're told to not do the right thing because you have to just stick with the current rules, I really implore you to do the right thing and say we cannot in all good conscience, knowing what we know, and you're all scientists, know you can't let it go forward without much more stringent review. And the very good questions need to be answered. It's late at night, I know it's tempting, I've served on town committees myself, it's tempting to approve something after 8:30 at night and I really implore you to reconsider your decision and sleep on it, come back to the talking points that you made and decide that you cannot in all good conscience go forward with these environmental protections standards, you need carbon sequestration included in it, and you need your questions answered. Thank you.

Rosemary Carey: Hi, thank you for hearing my comments. I live in North Falmouth and I am a leader in the grassroots group 350 Cape Cod. Two weeks ago we initiated a Change.org petition opposing this project and have already received more than 1,000 signatures. I second Mary Waygan's point that by taking your vote before hearing from the public is just another signal that the concerns of the community are not significant. I'm not also swayed by the assurances made tonight that there will be no significant impacts to the environment on this project. The impacts of copper bullets have not been studied sufficiently in the EA. Past experience with the Sierra Range is not the same as a study. Moreover, when

170 acres of trees are cleared, massive amounts of carbon is released into the atmosphere and we lose the carbon sequestration value (inaudible) in future. The performance standards review as we discussed tonight does not even address that kind of impact. Also, with the loss of trees, the water filtration services of those trees vanishes. Contaminants like copper would likely leach into the aquifer even faster, more directly. Just today I submitted a comment along with a report by Dr. Lee Seaman of Falmouth that elucidates my concern about the water contamination. That report is on the record. Dr. Seaman's focuses on aquatic invertebrates and (inaudible) fish. As a person living in this area, who is dependent on clean, safe water from this aquifer, I'm deeply concerned about this (inaudible). The bottom line, my comment I'd sum up is please respect the community and reconsider the decision you made tonight. Like Susan Starkey said, sleep on it and urge the EMC not to approve this plan. Thank you.

Sandra Faiman-Silva: Good evening, my name is Sandra Faiman-Silva. I live in Falmouth; I've lived in Falmouth since 1984 and I want to remind you that scientists are servants of civil society. You are losing the forest for the trees. Science must be in the interest of the public good, and I am troubled that it isn't. I too support Mary Waygan's statements about public input, and I ask you listen and hear us. I have lived in Falmouth since 1984, and my well in West Falmouth had to be capped because of plumes of contamination moving towards West Falmouth Harbor. I was active in giving rise to Chapter 47 of the Massachusetts Acts of 2002 as a citizen member of a citizen's committee. I want to remind you of some of the Guiding Principles of 1988 said and I quote, "Cumulative environmental impacts will be considered when making decisions about future uses. Economic impacts will be considered in evaluating proposed uses. The plan will protect existing and future drinking water supply areas by protecting their zones of contribution. The plan will protect surface water resources by providing buffers around these areas by protecting them from adverse hydrologic impacts. The plan will take into account what has been learned about contamination of the MMR through the Installation Restoration Program. The plan will propose use that minimizes adverse impacts on rare species habitat and enhanced management of these." This does not mean moving them or moving their habitats and destroying other parts of their habitat. "The plan will minimize fragmentation of forest habitat and other natural areas. The impacts on residential areas of proposed use will be minimized. Proposed uses will respect and/or reflect the history and traditions of Cape Cod, but those uses will minimize impacts to areas of archeological significance." Of which I believe there are many this (inaudible) Wampanoag (inaudible). I want to remind you of the General Performance Standards, "none of the following banned military training activities shall be allowed in the Camp Edwards training areas: artillery, live fire, mortar live fire, demolition live fire training, artillery bag burning, non-approved digging, deforestation or vegetation clearing." I quote from the groundwater performance standards, "All actions at any location within the Camp Edwards training areas must preserve and maintain groundwater quality and quantity and protect the recharge areas consisting of potential water supply wells." I believe the machine gun range proposal cannot meet these considerations. Thank you.

Rheanna Hastings: Hi, thank you to everyone working on this and all the time and energy; there's been a lot of talk about the environment, which is very important, but we also need to talk about the soldiers and our country, and our citizens. My brother did three tours overseas and was injured and I have two sons that are currently in the Navy, cadets at Camp Edwards. We find that this training is very important for their safety and our safety and we need to very strongly take that into consideration and (inaudible) members on this committee spoke about that and collaboration. I'm very much for that and compromise, so speaking about that, you know that the military has been working on this project. The committee members said they've been very proactive, very collaborative doing lots that they can to ensure that the standards are being met, that the environmental processes are being met, going over, showing that there isn't significant, that the environmental impact isn't significant and it's the exact wording I cannot quite recall. I heard everything you guys said, it was long meeting. I do think it's a good decision, what the committee came to, I think it's fair and I think we should move forward with it. I think to continue to support our troops and also make sure we're following the guidelines that we have a healthy environment. I think that's what this project is doing and I fully support it. Thank you for your time.

Betsy Smith: Hi, I am not a scientist. I would like to thank all the scientists on the committee and all of the scientists in the public who weighed in and all the members of the public who weighed in. I am a retired professor and hearing people say tonight "but we spent so many hours, thousands of hours on this project" reminded me of my students who would come to me and say, "Dr. Smith, I spent so much time writing this paper" and I wouldn't say back, "it's a piece of garbage," but, um, but the amount of time spent on it did not make it a quality project. And so, I would like, with all due respect, to suggest, as others have tonight, that you spend a little bit more time on this. I see Phil writing things as we, the public, talk, this is the only indication that I have seen in all the meetings I've been to that somebody has been listening and paying attention to us. I think that what we have to say is important and that asking you to spend a little bit more time on it and coming out with a quality statement about a really important project that many of us think is misplaced. It's worth your extra time. So, I thank you.

Adam Lange: I'm pleased to hear that you found the gun range meets all standards. This gun range, when operational, will save American lives by training our troops. I'm a Republican leader in the community. We have over 28,000 members in Barnstable County alone; our party is pro-military. Many of our family members are military; both my sons served. It's important stuff. This project has been approved by both EPA and state officials. The environmentalists that are hammering away; when you're a hammer, everything looks like a nail. You will never satisfy them, never. These are the same people that have no problem trucking all their garbage over the bridge every day and bury them off Cape and claim an environmental success. But then, they go after this project, they're going to continue to go after it, okay. The notion that the planned gun range will cause global warming is ludicrous, absolutely ludicrous, okay. So, please continue to support this project, our service member lives and many of our families depend on it. Thank you.

Fran Schofield: My name is Fran Schofield and I am a resident of Brewster on the lower Cape. I am on the executive committee of the Cape Cod Climate Change Collaborative, we have over 2,000 members. Our organization has taken a stand in opposition to this project. I speak as not a scientist, I appreciate the work you have all put into this, I speak rather as a lay person. I look at a simple mandate for your committee, the Science Advisory Council, which is to ensure the protection of the drinking water supply and natural habitat. To decimate 170 acres of forest land is antithetical to both of those goals and both of those mandates. I suggest that this project is misguided, it's ill-founded, it's misplaced and I, the only thing that really resonated with me of all of the speaking that had gone on in the two hours previously, I believe the fellow's name is Paul, who is your chair. He looked closely at your mandate, you have a mandate, you have a charge, you have to protect two issues. He said it just doesn't seem right. To a lay person, this just doesn't seem right. I would echo what others have said, that to take a vote prior to, half of the meeting was interrupted by technical difficulties, and so I'm sure many people have had to turn in. To take a vote without hearing from the public, who you are responsible for protecting, that's your charge, our environment, Cape Codders. This is not an NIMBY issue, it's not an Upper Cape issue, our members come from all over Cape Cod, in fact, other parts of Massachusetts. I hope you are paying attention to those who are speaking and ask you to pay attention to your charge. It's very simple. So, thank you very

Michael Heras: Hi, I want to thank my fellow citizens for attending this very important meeting. There's an old saying, first there's tragedy, then there's farce. I was at the Weymouth gas transfer station and I was in a group of fellow citizens as they brought scientific evidence of the toxic dump that the site was built on and how the construction could negatively impact the environment and the health of the people around there and of potential dangers of the station itself, which history has borne out. Of course, the state environmental agency approved that. It is what it is. This is more of a formality than anything else and I hope you'll understand that. I think it's and I'm talking to my fellow citizens, I'm sorry panelists, right now, you're doing your job, but sometimes we have to (inaudible) it's our job to organize and to put pressure on the government to make sure this doesn't happen because of (inaudible) my fellow citizens. Soldiers live on Cape Cod too, and if our drinking water is bad, the soldiers' drinking water is bad. They drink that, they put their health in danger, and I think anyone that knows military history knows that the

health of soldiers tends to come second, third, fourth, fifth, sixth in the priority. Disappointing, but it's just the facts. So, I hope that we can come together as a community, put pressure outside these meetings as we have and do it stronger. Otherwise, this will just happen. We have to recognize that, again, this is a formality and I wish the vote didn't happen the way it did, but it's not the first time this has happened and it won't be the last. If we want our government to represent us, then we have to press the issue. So, I hope we can all organize and do such after. Thank you.

Kathleen Schafer: My name is Kathleen Schafer and I live in the village of Teaticket in Falmouth. I've heard a couple of comments in the chat, I've asked a couple of things. One is, it sounds to me when the National Guard talks to that, the rationale for this machine gun range, is that it's for, it's to reduce the amount of travel time for the Guard for their training. Many, many of us have had to travel thousands of miles in our work, in our jobs. I know I certainly did and so did my husband, and I know you all do as well. To say that it's an inconvenience to travel from one New England state to another, which is a very small area, does not seem onerous to me at all. I would also ask the members of this scientific community, how many of you actually live on the Upper Cape? Okay, that was useful. Thank you. I do not want to have to explain to my grandchildren, who are very young, but very keen on the environment, animals and trees, why they cannot drink my water, tap water, that they have to drink bottled water or that we import from Maine or some place. This whole thing is ludicrous, it's making me extremely angry and I think that it was irresponsible of the National Guard to let us know about this, the first public notice I believe was in August of last year, when many people were struggling with the pandemic. That was irresponsible and unconscionable. To ignore the impact on our water and the impact of noise on wildlife and the children who go to school at the elementary school nearby and to ignore carbon sequestration of all those beautiful trees is folly. I refuse to sit still and take it quietly. Thank you very much for your work and for letting me speak.

Grove Harris: I'm Grove Harris, I am a home owner in West Hyannisport. Been coming to the Cape since I was 6 years old and it's certainly a beloved landscape, and I just want to reiterate, I want to agree with so many things my fellow citizens have said and I want to thank everybody who spent all the time working through all the documentation on this and it's just unbelievably sad to me that we couldn't have a more clear, creative process with better problem solving early on. It's just fraudulent that there's so many National Guardsmen across the state that are going to have to drive a long way to get to the Cape and they will be inconvenienced rather than driving to Vermont. The fact that the trees are irreplaceable at this point, the risk analysis is not done for the potential damage, so I just wanted to weigh in and say I would love us not to have stay up this late all the time, but what we're dealing with here is just so precious and important and I just, this project needs to be simplified, changed, adjusted, solved in another way. It just can't go forwards as is. Just offering you a heart-felt plea for reconsideration. Thank you.

Sharon Mitchell: Hi, I just want to say, I'm 100 percent for the range. I used to live at the base in the '60s, my father was with the (inaudible), the Conneys were out there, my husband was a crew chief on the (inaudible), my son was at the base in the (inaudible), I've lived there. I'll tell you, that base is necessary. It's something that we need to have. Not every training can be done at every base. When these guys did sorties or they played games, they had to fly someplace else. The same thing with every other solider that comes in, they have to go to another base because it doesn't accommodate what they're doing. Every training is different and every landscape is different; everything is different. So these men's do have to, it's necessary. Their proficiency, it counts on their training. That can save their lives. These people put themselves in danger for us. They're like anybody else. They do have to travel, sometimes they do. As a military wife, my husband was in for 38 years and I'm going to tell you, there are times when they go out that door, just like a police officer's wife, you don't know if they're going to come back, where they're going to get deployed someplace. You have no idea. That unit launched 9/11 and I'm very proud of it. That base has accomplished a lot. Those men need to train. That base, that range, they talk about taking down all the trees? They have no problem taking out any tree when it comes to a small strip mall, they don't have any problems to put up these wind farms and taking downs ton of greenery, just like they're going to put up at a golfing range. Where's the concern about trees? Go out there and plant a tree. But, no. put it out in the ocean, they don't care if it kills the birds or kills the fish. That's not a problem. We need that range, there's (inaudible) the training. You guys are doing an exceptional job, I know you're doing your job, just like anybody else. I know the EPA, this is their standard of cleanup a mess, and they did. When you go to a garage, bring your car in, you look and see where those guys put their rags, when somebody cleans at those hotels and motels, where do they throw all of their cleaning liquids? That goes down the drain. Not everything is just exclusively Otis. In the '60s they did what they had to do. But I know for a fact, when they were working on those airplanes out there and they got rid of a rag, one rag, they have to account for and it goes into a container and that container is in their hazmat area, it just is for that. They account for every single thing they have, every rag, every solvent, everything they use is accounted for. Any rag, anything they cleaned, there (inaudible) was accounted for. You can't find that in a hotel, motel or garage. Where's all their stuff go? Just poke your head in and see. That affects the environment, but you don't see anybody doing anything about that. I just think this range is essential. The military men are essential to our safety and our free government. We need them and the EPA cleared this and now everybody wants someone to backtrack and move the goal post? Right when everything is Okayed, they're going to move the goal post? Nah, you know what? They need this and the Colonel's right and the Major's right, this has been Okayed and really should go forth. So, that's all I have to say.

Kathleen Schafer: Why is the SAC just now noting that the EPSs are too lenient?

Mr. Cavanagh: Let me take the first... I will say that most of the other projects we've dealt with over the years have been kind of fine tuning and minor adjustments. This is the first project brought before us, from my perspective that has dealt with a large land clearing. Much of it was just working within existing footprints and what we're seeing is different kind of project. We're looking at performance standards that hadn't really been applied in previous years.

Linda Gillooly: Thanks for taking my call. I am totally opposed to this gun range. I've been reading on the EMC and if their mission is to ensure the permanent protection of drinking water supply and wildlife habitat on the Upper Cape, I can't see anything more contrary in terms of rolling out this machine gun range to that mission. If you look at it from a public health perspective, no one's talking about the toxic effects of copper and how numerous studies have been conducted linking copper to central nervous system damage and dementia. The noise pollution will cause anxiety and depression in many people. Just hearing a shotgun in the distance when the hunting season is in process is unnerving, never mind the constant noise of a machine gun and the destruction of the wildlife habitat and the degradation of wildlife species. Since the 1970s, 50 percent of the bird population has diminished. The list goes on and on. You talk about contaminating microorganisms in the soil, well it's all connected to that chain. Animals will be dying, it's like putting mice bait out, when the mice die and then the owls eat the mice and die of the toxic chemical—the same thing. I can't oppose this more. I am (inaudible) military, but let the military continue to go to Vermont where the damage has already been done and they have a gun range there. Let them travel to another state in New England. I just think this is being forced down our throats. I think the (inaudible) is not enough information that was given to the public and we have not had a chance to comment until now. The fact that you scientists have taken a vote when I listened to the meeting all night long and your scientists say they assume on certain aspects of data or there might be (inaudible). Monitoring a gun range is frightening. Let them stay in Vermont. Let them go to Vermont and get training on their machine guns. There's too much at stake. Cape Cod is a small place, we can't afford to contaminate our water. I live in Mashpee. We're already dealing with the gasoline plumes that they can't totally resolve. So now we're going to contaminate our water supply even more? Thank you and again, I totally oppose this.

Cherrill Lewis: Thank you. (Inaudible).

Raymond Jack: Hi there. My name is Raymond Jack and I am a resident of Falmouth. By way of background, I'm the former director of public works for the town. I'm also on the Upper Cape Water Supply Cooperative, which is the regional water system that is sitting on top of that 15,000 acres. I've been involved in that ever since its inception back in 2001. I am also familiar with the designation of the

15,000 acres for water supply and habitat since 2002 as well. This precipitated that move and that legislation. We created the water supply Reserve before that legislation actually hit the table. I wanted to say that I entirely respect the individuals on this committee. I think you do a tremendous job. I know a couple of you personally like Gary Moran and Denis LeBlanc, so I want to say "hi". My issue is this: I was recently appointed to the CAC by the town of Falmouth as well as the MCCC (Military Civilian Community Council) by the town of Falmouth, but I'm not a member of this committee. I did have a couple of concerns. I come at this with an open mind. I do believe in military training, because I am a veteran, and I think that there are a number of things that still need to be addressed, namely about the potential for simulators, all the documents that I have read, I have read the FEIR and the Environmental Assessments and the FNSI. We haven't seen any discussion about the use of simulators in advance of active duty training or active training on a live fire range. My point being that the use of simulators has a valuable benefit. They could reduce the amount of hours and amount of rounds that are expended on an active range. I would like to see issues pertaining to that at least responded to. The colonel indicated earlier in the discussion that the viewers and the general public should keep a broader mind, look at the bigger perspective, and then he mentioned that the base plans for additional ranges for the future or redoing the gym, whatever the case may be, true. I'll go bigger than that, I'm looking at regional. Why? Because a lot of the commenters have expressed concerns about other bases in the area, whether it be Ft. Drum or Vermont. The question here is, it's not so much that JBCC should be operating in a vacuum. They are not a stand-alone facility. In a bigger context, military facilities (inaudible) as they relate to the New England area. So, the question is, what is the military's plan, overall, but in the region? What training is going to be accomplished where and why? Every base cannot facilitate all of their training needs independently of all the others. So, I've yet to see that being addressed. I think probably the last thing is the sole source aguifer concept. The SEIR mentions in there that they feel they're going to be excepted from any review requirement by the EPA out of respect to the sole source aquifer designation that was given Cape Cod in 1982. The reason it was given was that exemption or that categorization was primarily because of military activities and the corresponding activities associated with that and contamination. My point is, even that base be exempt from any EPA review with a sole source aquifer determination and designation. I would like to see that happen. It's not to say that they're going to come up with anything that hasn't already been identified or addressed. But yet, it is an action that the military is looking to get out from under, when you shouldn't be trying to get from under, they should be going over and above on just about everything. I want to thank you all and hope to see this again soon.

Fran Scholfield: I just had a process question. A number of us placed comments and questions in the chat. We did not see answers to the questions, nor did we see all of the questions that people had been asking. So question number one, is how will we know what our fellow citizens have been saying during the meeting and the second is, how will we obtain a copy of the recording of tonight's meeting? Where and when and how will that be made available to the public?

Mr. Moran: It's a great question, I can't answer it right at the moment. I will check it out and get back to you on any information made available when they get widely available. As far as all the comments/questions will be captured as I mentioned earlier, they will be sent to the EMC as well. Again, the posting of the record of the meeting.

Mr. Cavanagh: as I understand, this information/comments are going to be provided to the EMC. Is that correct?

Mr. Moran: Yes. The comments (inaudible)

Mr. Cavanagh: So the comments made over the last hour or so, those comments go directly to the decision makers.