
**Science Advisory Council to the Environmental Management Commission Meeting
Building 1805
Camp Edwards, Massachusetts
February 27, 2013
5:30 p.m.**

Meeting Minutes

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Paul Nixon	E&RC/IAGWSP		

Handouts Distributed at Meeting:

1. Draft SAC Meeting Minutes for September 13, 2012
2. Environmental and Readiness Update
3. Request for Joint Review and Approval of the M69 Hand Grenade Simulator For Use on the Reserve/Camp Edwards Training Area
4. Pore Water Sampling on Active Small Arms Ranges

Agenda Item #1. Welcome and Chairperson's Comments – Dr. Paul Cavanagh, SAC Chairperson

Science Advisory Council (SAC) Chair Dr. Cavanagh welcomed everyone and thanked them for coming.

Agenda Item #2: Review of SAC Meeting Minutes

The minutes from the September 13, 2012 SAC meeting were reviewed. Dr. Cavanagh made a motion to approve the minutes, Mr. Schall seconded the motion, and the minutes were approved unanimously.

Agenda Item #3: Massachusetts Army National Guard Updates – Dr. Mike Ciaranca, Deputy Director, E&RC

Dr. Ciaranca, Deputy Director of the Environmental & Readiness Center (E&RC), reported programmatic changes: Jason McCumber is the newly-hired natural resources/ITAM manager. Mr. McCumber was previously with the Texas Army National Guard (ARNG), where he was the Natural Resource Manager; he starts in April 2013. Annie Curtis, Natural Resource Planner, is on maternity leave until May 2013. Stefanie Paventy, Natural Resource Technician, is assisting in the department.

Dr. Ciaranca discussed the Joint Land Use Study; a workshop exploring community-military partnerships was held on February 27. Cape Cod Commission is the primary lead for the Joint Land Use Study. Selectmen's briefings are being scheduled.

Dr. Cavanagh asked when would the field season start. Dr. Ciaranca replied that Ms. Paventy is in the process of hiring summer field workers.

Dr. Ciaranca reported that during the 2012 deer hunt five deer were taken during archery season, 52 were taken during shotgun and three were taken during the primitive fire arms hunt. The 2012 deer hunt also included a paraplegic hunt, during which no deer were taken.

Dr. Ciaranca said that the New England Cottontail study continues and so far for calendar year 2013, seven rabbits have been collared and tracked, although there is no DNA confirmation that the rabbits are New England Cottontails. The rabbits were tracked an average of 0.45 months (0-1.9 months range); their locations were obtained four times a week, both day and night, and 13 plots were searched for rabbit sign. Trapping, collaring and pellet searches will continue through the winter and early spring.

Dr. Ciaranca said that prescribed fires will be conducted as conditions and resource availability allow.

The 102nd Intelligence Wing (IW) would like to build a solar array on the base's capped landfill. It will be put out to bid. Due to rare and endangered grassland bird habitat, there will be prior consultation with the Natural Heritage Endangered Species Program of the Division of Fisheries and Wildlife. Any applicable mitigation resulting from that consultation will be included in the project.

Ms. Nye asked if the landfill that is no longer functioning what is the status of the endangered species survey. Dr. Ciaranca replied that there have been grassland surveys through the last decade.

Dr. Ciaranca reported that the Lt. Governor announced in January during a ceremony at the Coast Guard hanger initiatives for developing alternative energy on the State's military bases. Wind, Solar: off site, on site, mitigation to offset costs. NStar Update: SEMA project, etc. easement work and Southeastern Massachusetts new transmission line across the canal to the substation on base.

Dr. Ciaranca stated that Small Arms Ranges: Juliet, Kilo and India ranges. Annual Sampling: antimony exceedances of established action levels.

Dr. Ciaranca stated that the Supplemental Environmental Project will include the removal of 14 acres of bituminous surface from grasslands area on MMR, reducing the impervious surface, increasing groundwater recharge and will increase contiguous grassland; so far, 1.82 acres have been removed. The project will be completed by August 5, 2013.

Ms. Nye asked about the bituminous surface, and Dr. Ciaranca replied that it's old asphalt pavement and it may be used at UTES and on Army parking areas.

Dr. Ciaranca stated that the Guard is working to complete the Best Management Practices and Operations, Maintenance and Monitoring Plan for the M781 40mm (Grenade) Training Round. The range will be prepared starting in March 2013.

Dr. Ciaranca stated that the southern boundary of the Reserve needs to be defined. A new, corrected map will be produced and the transfer agreement will be updated.

Agenda Item 4: Proposed Use of M69 Practice Hand Grenade – MAJ Mike DeSimone, Plans and Training Officer

MAJ DeSimone gave a presentation on the M69 practice hand grenade: The M69 practice hand grenade is used for individual and collective training. The M69 provides realistic training and familiarizes the soldier with the function and characteristics of the M67 fragmentation hand grenade. The components and characteristics were listed.

MAJ DeSimone explained that each soldier is required to throw up to 12 M69 practice hand grenades armed with the M228 detonating fuse. Soldiers will be given instruction on installing and removing the M228 fuse; a company-size element will use several hundred. All dunnage is turned into the ammunition supply point; this includes the pin, spoon, and the fuse body.

Dr. Ciaranca described the M228 fuse primer, explosive and propellant compounds and M69 Practice Hand Grenade M228 fuse constituents.

The hand grenade qualification course layout was displayed and detailed. It consists of seven stations with a minimum of one grader at each station. Each participant is issued ten hand grenades and must successfully engage seven targets, MAJ DeSimone said. The Mass Guard's goal is to achieve joint support and approval to use the new pyrotechnic grenade simulator in time for annual training in June 2013.

The MA ARNG requested the SAC advise the EMC of its support for inclusion on the approved list of munitions allowed for use in areas outside of the small arms ranges under the Camp Edwards Training Area General Performance Standards of July 11, 2007, the following simulated munition: M69 Hand Grenade Simulator with the M228 fuse.

Dr. Cavanagh asked if the constituents were the same in the M69 simulator as in the simulators that have been permitted in the past. Dr. Ciaranca replied that M116A1 Hand Grenade Simulator is different but has similar primer and black powder.

Mr. Begley stated that most of the material is similar to other materials being used out there but not the exact combination of constituents.

Dr. Cavanagh asked how the mass of constituents compare. Mr. Begley replied that the mass of primer is larger; however, the quantity of grenades used is likely smaller. Dr. Cavanagh said that each soldier is required to throw up to 12 M69 hand grenade simulators. MAJ DeSimone stated that is only for qualification. The total allotment will be 4,600 and he estimated that 1,600 will be used. Mr. Begley stated that the total mass of material wouldn't be that much larger than the other estimates in the past. He said that the other simulated grenades were used much less than originally anticipated.

Dr. Cavanagh asked for Mr. Gschwend comments on the M69 Hand Grenade. Mr. Begley said that Mr. Gschwend was at conference and he didn't get a chance to get detailed comments from him.

Dr. Cavanagh stated that in Dr. Ciaranca's prior presentation for the M78140 grenade there was an OMMP being prepared and asked are there any plans to prepare a similar OMMP for the ranges for the use of the M69 hand grenade simulator. Dr. Ciaranca stated that there will be an OMMP with range monitoring. Standard Operating Procedures (SOPs) are being discussed with Mr. Begley.

Mr. Begley stated that the ammunition needs to be turned back into the ammunition supply point as opposed to being disposed. MAJ DeSimone reiterated that the items are recoverable and will be turned into the ammunition supply point.

Mr. Begley said that the goal is to take an existing cleared area and fit the training venue within that footprint without a lot of additional clearing. MAJ DeSimone pointed out an area on the map and said that very little modification is required. Dr. Cavanagh asked if using this ammunition presents a fire hazard. Dr. Ciaranca said that although there is always that potential, it's highly unlikely. Range Control does monitor and these would not be used during a high threat of fire. MAJ DeSimone said that there are observers stationed during the entire training; the training events will be actively monitored and policed.

Mr. LeBlanc asked if the range will be permanent. MAJ DeSimone replied that the range will be permanent and it's unlikely that it will require modification.

Dr. Duggan asked if the SOP would include soil sampling. Mr. Begley replied that the study conclusions for nitroglycerin associated nitrocellulose really aren't an issue. With some of the metal compounds, such as antimony, it may make sense to use the XRF to look for lead and antimony buildup in the soil. Dr. Duggan said that debate over the sampling method would be frequency and number of samples. He said that the concern is what would be the environmental impact, could the metals build up over time and there may be a health impact to the soldiers and sampling should be considered for that reason. MAJ DeSimone said that soldiers would only be exposed once per year. Dr. Duggan said that it's worth knowing the exposure pathways. Mr. Begley said that the metals most researched are not mobile but some are, a military CDC equivalent, CHPPM, looks at soldier health and well being.

Mr. Miles asked if these could be used anywhere on Camp Edwards. Dr. Ciaranca replied they could be used anywhere on Camp Edwards. Mr. Begley stated that there are restrictions within the Environmental Performance Standards where training is allowed, and the M69 would not be used within the water supply Zone 1 areas for example

Dr. Duggan would recommend whatever sampling program is developed that it is comprehensive. He suggested the Guard consider looking at high use areas first and then evolve the sampling program.

Mr. Begley said he sees no issue with the grenade based on the chemistry; EPA is comfortable with it and they'll also have a comment period on the item's use in the near future.

Dr. Cavanagh requested that Mr. Begley convey Mr. Duggan's suggestions on the sampling to the EMC.

Motion

Dr. Cavanagh moved to recommend that the EMC include the M69 hand grenade simulator with the M228 fuse in the approved list of munitions allowed for use in areas outside of the small arms ranges under the Camp Edwards Training Area General Performance Standards of July 11, 2007. Mr. Schall seconded the motion and it was approved unanimously by the SAC members.

Agenda Item 5: Pore Water Sampling on Active Small Arms Ranges – Paul Nixon, E&RC/IAGWSP

Mr. Nixon gave an update on the environmental monitoring program for the actively used ranges. Mr. Nixon stated that the monitoring plans spell out the environmental monitoring program for the I, J, K, S and T Ranges. The documents include soil, groundwater, and pore water sampling/analysis to assess the impacts of range use and make sure that there is no impact to the environment. Detected concentrations are compared to action levels in the documents to determine if there is a potential issue. If there is an issue, the documents prescribe a process for response. Results of the fall 2012 sampling indicate no issues with soil or groundwater, but antimony was detected above the action level (6ppb) in several pore water sampling locations.

Mr. Nixon stated the definition of pore water is recently fallen precipitation that is percolating through the pore spaces of the soil toward the groundwater. Pore water sampling provides an early indication of what contaminants might be migrating toward the groundwater. Pore water is sampled using lysimeters which are essentially 5-gallon plastic pails with screens on top to keep the soil out. Standard depth for the program is 2 feet below grade. There are 14 lysimeters on the operational ranges, installed between 2010 and 2012. Sampling is conducted annually as per range-specific monitoring plans. Analytes sample for are antimony, copper, lead, and pH (field measurement). Background lysimeters were installed near K, S, and T ranges in 2012 to determine what the natural concentrations of these metals are without the influence of range operations.

Mr. Nixon stated the pore water sampling metals results were as follows: in fall 2010 low levels of lead and copper were detected; in spring 2011 low levels of lead, copper and zinc were detected; in fall 2011 low levels of lead, copper and zinc were detected; in September 2012 antimony was detected in several lysimeters for the first time, several of them above the action level (6ppb). Antimony concentrations were about the same in filtered and unfiltered samples. In November 2012, selected lysimeters were resampled to check for antimony – it was detected again. In February 2013, all lysimeters were resampled for antimony (unfiltered samples only). Four surface water locations on the ranges were sampled for antimony and the samples were split and sent to two labs for analysis. Only one lab has sent results so far. Antimony was detected again in the same lysimeters. Antimony was detected in one of four surface water locations. The background lysimeter were sampled in September 2012, October 2012, and January 2013. The lysimeter near T Range is the only one to produce water; the others have been dry so no samples were taken. Low levels of antimony (max 1.5 ppb), copper and lead have been detected consistently.

Mr. Nixon displayed an antimony results summary table.

Mr. Nixon explained the other findings: antimony is present naturally in the soils at about 1 ppm; it has not been detected in groundwater at the ranges, and antimony was detected periodically in suction lysimeters from 2007 to 2009. Those lysimeters were removed in favor of the current bucket lysimeters.

Mr. Nixon said that all of these ranges were used with lead ammunition up to 1997, but they have been reconstructed with mostly new surface soils, so there isn't a lot of free lead/antimony present. The soil analysis and field screening have not detected elevated levels of antimony or lead in soils above the lysimeters; however, the minimum limits of detection in soil are significantly higher than in water (ppm vs. ppb). The field screening of the STAPP cover material, tarp, toe boxes, and lime did not detect elevated antimony. Antimony has been detected in the water within all three STAPP systems, but water level readings show there are no leaks.

Mr. Nixon said that antimony is generally more soluble/mobile than lead, however, the behavior of metals in the environment is very complex and difficult to predict. Soil and pore water pH affects the solubility/mobility of antimony. Lime has been applied on the ranges to raise the pH, including directly over the lysimeters, to reduce lead solubility. pH levels in pore water have typically been near neutral during sampling. Phosphate can prevent antimony from binding to soil therefore increase its mobility. Phosphate was applied to the range berms in 1998 to immobilize lead. Analysis for phosphorous on select samples is pending.

Mr. Nixon said that lysimeters on the range floors consistently indicate that antimony in propellant/primer is not an issue. One surface water location had detectable antimony so surface water may be a migration pathway. The IAGWSP program has also detected antimony in a lysimeter beneath the berm on B Range at similar concentrations. The background pore water has low levels of antimony, lead, and copper.

Mr. Nixon said there are some questions worth asking: what changed in 2012 when antimony was first detected? Lime was applied on the ranges more frequently in 2012, including at the foot of the berms where most of the elevated antimony detections have occurred. Rubber tarps were placed over the STAPP systems in 2012 to prevent rain water infiltration. Antimony is used in fire retardants in rubber, but there is no tarp (or STAPP) on I Range. For every theory we have come up with, he said, there seems

to be a point of evidence that contradicts the theory. Does antimony in pore water pose a risk? The OMMP action level is 6 ppb based on the drinking water standard, but no one drinks pore water. The groundwater is almost 100 feet below and the nearest drinking water wells are miles away. Therefore, there is no immediate risk, but we do want to prevent the migration to the aquifer. What is the appropriate response? The OMMP specifies that a confirmed detection exceeding the pore water action level should result in soil removal in the area above the lysimeters. However, he said they haven't seen an elevated level of antimony in these soils, so that may not be a productive response.

Mr. Nixon said that the Guard is considering temporarily stopping applications of lime on the ranges to see if the antimony concentrations decrease or go away. They're consulting with subject matter experts and existing literature about metals behavior especially on small arms ranges, and will continue monitoring and coordinating with the Small Arms Ranges Working Group.

The next sampling round is due in July/August.

Dr. Duggan said that there was mention using an XRF and the detection levels are low. He asked if there is soil data for those sites. Mr. Nixon replied that he has been collecting soil data since 2010 and antimony is typically less than 1-2 ppm. Dr. Duggan replied that you would expect to have much higher levels with lysimeters. Mr. Nixon noted that the soil has been removed. Dr. Duggan said if the antimony is 1.5 ppb in the pore water and the background level in the soil is about 1 ppm and if there's higher levels in pore water then go back and sample the soil, at 5 or 6 ppm that would be the source and would give you the answer if the ratios carry through. The background levels are a wide range.

Mr. LeBlanc stated lead is so immobile and to try to further immobilize lead may create a problem. Therefore, he asked why continue to treat the soil for lead mobility--lime could be the issue. He suggested putting lime over one of the lysimeters and seeing if antimony shows up and have lab take soil samples under a different geochemical condition. He commented that the longer the pore water stays in contact the more build up.

Mr. Nixon stated the high flow lysimeter seems to have the most antimony.

Agenda Item #6. Public Comment

There was no public comment.

Agenda Item #7. Adjourn

The meeting was adjourned at 7:00 p.m.