

From: Belaval, Marcel <Belaval.Marcel@epa.gov>
Sent on: Tuesday, October 5, 2021 4:33:57 PM
To: Driscoll, Keith J NFG NG MAANG (USA) <keith.j.driscoll.nfg@mail.mil>
CC: Jacobs, Kira <Jacobs.Kira@epa.gov>; Springborg, Denise <Springborg.Denise@epa.gov>; Downing, Jane <Downing.Jane@epa.gov>; leonard.pinaud@mass.gov
Subject: Questions/requests for MPMG Range EPA SSA review
Attachments: Questions for MAARNG MPMG Range SSA Review Oct2021.pdf (129.02 KB)

Hi Keith,

Attached please find a list of questions related to the Phase 1 buildout of the proposed MPMG Range.

I realize that some of these questions/info requests require more time than others. Please feel free to send responses back in stages if that is helpful. As always, please reach out by phone or email if you have questions, need additional information, or would just like to talk through some of these topics to get a better sense for what we're looking for.

Once you have a chance to review the questions/info requests please let me know what timeline you think may be required for responses.

Thanks,

Marcel

Marcel Belaval

Hydrologist, [USEPA New England](#)
617.918.1239

EPA Sole Source Aquifer Review of the Proposed Multi-Purpose Machine Gun Range for Joint Base Cape Cod

Preliminary Questions and Information Requests (Phase I only)

10/5/2021

Category	#	Question/Request	EPA Comment
Design	1	List all weapons and other devices to be used.	
Design	2	What are the projected total number of weapons (for each type) and pyrotechnic devices to be used in an average use day, a maximum use day, and annually?	
Design	3	Describe the components and associated mass for all ammunitions for each weapon type.	The Draft OMMP provides a diagram of one type of ammunition. Please provide similar diagrams for all type of ammunition used.
Design	4	For each type of ammunition, provide the total number of rounds per day expected to be fired for each weapon (in average use and maximum use scenarios)	
Design	5	List the constituents of the propellants, primers, bullets, and cartridge cases for all weapons systems and bullets proposed for use on the range. List the constituents of tracers, flares, and simulators that are proposed for use on the range.	EPA acknowledges MAARNG’s related response to Comment #900 in the document “Environmental Assessment for the Proposed Construction and Operation of a Multi-Purpose Machine Gun (MPMG) Range, Camp Edwards, Joint Base Cape Cod, Massachusetts Public Review Comments 8 August - 7 September 2020.” However, this response did not provide the information requested.
Design	6	How will stormwater be managed to minimize contaminant mobilization and transport during construction and operation (e.g. within bullet collection systems/berms)?	
Design	7	Provide the 90% Design Plan (or most current design plan) for the proposed range, including drawings of bullet capture systems (if any proposed), drawings showing locations and types of berms, descriptions of berm construction, etc.	
Design	8	Provide Appendices to the Notice of Project Change (not provided online).	
Design	9	Describe any threats to soil and groundwater that exist outside the MPMG Range Area but within the Surface Danger Zone	
O&M	1	What recycling plans will be instituted, including products, storage, metal stockpiles, recycling facility, and location and frequency of	EPA acknowledges MAARNG’s related response to Comment #904 in the document “Environmental Assessment for the

		recycling. What BMPs will be used to minimize releases during recycling and storage procedures?	Proposed Construction and Operation of a Multi-Purpose Machine Gun (MPMG) Range, Camp Edwards, Joint Base Cape Cod, Massachusetts Public Review Comments 8 August - 7 September 2020.” However, specific BMPs were not described in the response or in the referenced Draft OMMP.
O&M	2	What is the projected general efficiency with which the projectile removal process eliminates the source of metals (projectiles) on the ranges, based on the total mass of metals removed from the range compared with the total computed mass of bullets fired on the range? Provide any relevant and and/or scientific studies.	
O&M	3	The Draft OMMP states that projectiles will be removed after 500,000 rounds or every 5 years, whichever is first. Is that amount per lane or range? What is the basis for the 500,000 rounds criterion? Based on projected use, what is projected frequency of projectile removal?	
O&M	4	What procedures and locations will be used to clean weapons, including types of cleaning materials and storage? Describe associated BMPs to minimize contaminant releases.	EPA acknowledges Draft OMMP Section 2.1 includes general procedures related to weapon cleaning. More detail is needed.
O&M	5	Draft OMMP (Section 8.1.3) states that projectile pockets will be checked monthly to see if fragmentation is occurring. The OMMP also states, “... select projectile pockets will be excavated by hand to see if fragmentation is occurring.” Are these the same procedures to be done monthly or different procedures at different schedules?	
O&M	6	Draft OMMP Section 9.6.1. states, “Surface soil action levels for lead, copper, and antimony are set using selected concentrations from the Massachusetts Contingency Plan.” Provide a basis for how concentrations were “selected” for each metal.	
O&M	7	Are there specific SOPs and/or BMPs written to cover range activities? If so, provide a copy of all SOPs and/or BMPs applicable to activities on the MPMG Range.	
O&M	8	Will fire suppressant chemicals be used on the MPMG Range? If so, provide chemical information. If fire suppressant chemicals will not be used, provide an SOP/BMP reference prohibiting their use.	
Monitoring	1	Provide Figure 9.1 for Draft OMMP	
Monitoring	2	Provide construction information for all proposed monitoring wells, including depth of screened intervals.	
Monitoring	3	The Draft OMMP was provided to EPA with a file named “MPMG Well Modeling.jpg”. How were water table contours in this image generated? If modeled, provide model description and QA	

		documentation including process for calibrating and verifying model with field data.	
Monitoring	4	What was the basis used for designing the monitoring well network, including number existing and/or new wells, construction (e.g. screened interval), and locations? Is there a plan for adaptive management of groundwater monitoring in response to evolving site conditions?	
Monitoring	5	Describe why plans for porewater monitoring are deleted in the Draft OMMP	
Monitoring	6	Provide information about baseline conditions (e.g. contaminant concentrations, groundwater levels, etc) for contaminants of concern within the MPMG Range area, including surface soils, subsurface soils, porewater, and groundwater.	
Monitoring	7	Soil resampling in the KD Range was required under the EPA September 2015 Decision Document. Provide results from this sampling.	EPA acknowledges MAARNG's related response to Comment #901 in the document "Environmental Assessment for the Proposed Construction and Operation of a Multi-Purpose Machine Gun (MPMG) Range, Camp Edwards, Joint Base Cape Cod, Massachusetts Public Review Comments 8 August - 7 September 2020." EPA is requesting data and/or reports which informed this comment response.
Monitoring	8	Draft OMMP Section 9.5 states that subsurface soils may be monitored if surface soil results show "increasing" trends or exceedance of OMMP action levels. How will you determine increasing trends? Over what time interval?	
Monitoring	9	If subsurface soils are sampled pursuant to question 8, above, what are the specific plans and time frames?	

Category	#	EPA Question/Request	EPA Additional Comment	MAARNG Response
Design	1	List all weapons and other devices to be used.		The M-249, M240B are the weapons approved for use on the MPMG range and approved for use on other ranges in the Northern Training Area.
Design	2	What are the projected total number of weapons (for each type) and pyrotechnic devices to be used in an average use day, a maximum use day, and annually?		Estimated Average Weapons Use (1 Range day): M240: 10, M249: 10 Estimated Max Weapons Use (1 Range day): M240: 32, M249: 44 Estimated Annual use: M240: 350, M249: 700 No pyro use estimated nor is it part of the request to the EMC. Numbers are based on existing force structure in MA. Annual use factors and estimation of extra weapons from out of state units. All estimations are based on a maximum use case from all units and does not account for Soldiers either not being assigned a weapon or deployed.
Design	3	Describe the components and associated mass for all ammunitions for each weapon type.	The Draft OMMP provides a diagram of one type of ammunition. Please provide similar diagrams for all type of ammunition used	See data sheets for Design #5 for components and associated mass. Only 5.56mm and 7.62 mm Enhanced Performance Round (EPR) (Copper Rounds) will be used on the range. See 7.62 mm Schematic (attached).

Design	4	For each type of ammunition, provide the total number of rounds per day expected to be fired for each weapon (in average use and maximum use scenarios)		<p>Estimated 5.56 EPR ammunition per range day: 11,100 Estimated 7.62 EPR ammunition per Range day: 8,800 Estimated Max Ammunition Use (1 Range day): 5.56: 48,400, 7.62: 25,600 Estimated Annual use: 5.56: 770,000, 7.62: 280,000</p> <p>Ammunition estimates are based on TC 3-22.240 (7.62) and TC 3-22.9 (5.56) from the number of weapons provided in question Design 2. Please note that this is an estimated maximum use estimation.</p>
Design	5	List the constituents of the propellants, primers, bullets, and cartridge cases for all weapons systems and bullets proposed for use on the range. List the constituents of tracers, flares, and simulators that are proposed for use on the range.	EPA acknowledges MAARNG's related response to Comment #900 in the document "Environmental Assessment for the Proposed Construction and Operation of a Multi-Purpose Machine Gun (MPMG) Range, Camp Edwards, Joint Base Cape Cod, Massachusetts Public Review Comments 8 August - 7 September 2020." However, this response did not provide the information requested.	See attached (Attachment 1) for Ammunition Constituent Data for 5.56mm and 7.62mm ammunition to be used for the MPMG. Tracer rounds included. The tracer composition for the 5.56mm EPR is R-258, the specific constituents are not provided on the attached data sheet. The MAARNG has a request in to the Joint Munitions Command for the formulation to be provided. The tracer composition in the rounds to be used at the MPMG is primarily strontium salts, strontium peroxide, strontium nitrate, and magnesium (Attachment 1). Flares and simulators are not used or required for qualification at an MPMG range.

Design	6	How will stormwater be managed to minimize contaminant mobilization and transport during construction and operation (e.g. within bullet collection systems/berms)?		A construction and operational stormwater management plan has been specifically designed for the MPMG in compliance with Massachusetts Stormwater regulations (previously sent to EPA). The design of the MPMG includes individual backstop capture berms behind every target in an effort to capture and contain to the maximum extent practicable. See General Notes Sheet C-001 of the design drawing and see Section 8.1 and 8.2 of the draft OMMP for berm maintenance and erosion.
Design	7	Provide the 90% Design Plan (or most current design plan) for the proposed range, including drawings of bullet capture systems (if any proposed), drawings showing locations and types of berms, descriptions of berm construction, etc.		Provided
Design	8	Provide Appendices to the Notice of Project Change (not provided online).		Appendices will be forwarded via DoD SAFE

Design	9	Describe any threats to soil and groundwater that exist outside the MPMG Range Area but within the Surface Danger Zone		Within the surface danger zone (SDZ), the potential threats to groundwater are legacy in nature, have been identified, are actively being treated and remediated through the Impact Area Groundwater Study Program (IAGWSP), and are not be from the proposed MPMG (Attachment 2). The threats are an oxidizer (potassium perchlorate) and an explosive (RDX) from past artillery firing. These same constituents are a concern from past contractor ranges and are in close proximity to the SDZ; however, in both these cases, ground water flow is away from the SDZ.
O&M	1	What recycling plans will be instituted, including products, storage, metal stockpiles, recycling facility, and location and frequency of recycling. What BMPs will be used to minimize releases during recycling and storage procedures?	EPA acknowledges MAARNG's related response to Comment #904 in the document "Environmental Assessment for the Proposed Construction and Operation of a Multi-Purpose Machine Gun (MPMG) Range, Camp Edwards, Joint Base Cape Cod, Massachusetts Public Review Comments 8 August - 7 September 2020." However, specific BMPs were not described in the response or in the referenced Draft OMMP.	The recycling and storage process will be conducted outside of the reserve and be part of the QRP program. Once rounds are harvested they will be stored in closed containers for storage in the QRP yard pending disposition.

O&M	2	<p>What is the projected general efficiency with which the projectile removal process eliminates the source of metals (projectiles) on the ranges, based on the total mass of metals removed from the range compared with the total computed mass of bullets fired on the range? Provide any relevant and and/or scientific studies.</p>		<p>The projected general efficiency is estimated to be ~90%. This is due to the implementation of capture (auxiliary) berms behind the targets, which is a unique design feature that has received input and comment from the EMC.</p> <p>When added with the information on the number of rounds fired on a particular range based on RFMSS data (found in the State of the Reservation Report) there is good information on how many total rounds are available for harvest. During the harvest, procedures for projectile removal include excavation and sieving to a depth where projectile metals are no longer found. The material is then moved out of the reserve to our Qualified Recycling Program yard for disposition. Due to the corrosion of the steel penetrator, the ability to conduct an exact mass balance is compromised. However, during a harvest a rough estimate can be made by with the known weight of the steel penetrators.</p>
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O&M	3	<p>The Draft OMMP states that projectiles will be removed after 500,000 rounds or every 5 years, whichever is first. Is that amount per lane or range? What is the basis for the 500,000 rounds criterion? Based on projected use, what is projected frequency of projectile removal?</p>		<p>1. Based on joint inspections by the MAARNG and the EMC, projectile removal will be by range. However, if identified during inspections by either the MAARNG, EMC, or both, an individual lane or level of targets, e.g. 50 meter targets all lanes, may be closed for bullet harvest.</p> <p>2. The 500,000 round criteria is a carryover from the STAPP system (a rubber, sandwiched, granulated bullet trap) Operations, Maintenance and Monitoring Plan (OMMP) and is used only as a placeholder for determining the appropriate projectile density for each individual range. The MAARNG has been working with the EMC EO at other ranges to determine the appropriate density for harvest projectiles. As stated above it may be determined that a partial harvest may be necessary at specific target levels, e.g. 50 meter targets all lanes. The MAARNG and the EMC will be performing a range harvest within the next training year to further refine knowledge on projectile density and harvest needs, i.e. expected frequency.</p> <p>3. The expected frequency of projectile removal at the MPMG will be determined with the EMC EO using information gleaned from other ranges and inspection results at the MPMG to</p>
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				<p>assist in determining when the MPMG bullet pockets and individual backstop capture berms will need to be harvested for copper projectiles.</p>
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O&M	4	<p>What procedures and locations will be used to clean weapons, including types of cleaning materials and storage? Describe associated BMPs to minimize contaminant releases.</p>	<p>EPA acknowledges Draft OMMP Section 2.1 includes general procedures related to weapon cleaning. More detail is needed.</p>	<p>Weapons cleaning does not take place on the ranges or in the Upper Cape Water Supply Reserve. Units will typically take their weapons to the Training Support Center and use the weapons cleaning tanks or conduct weapons cleaning activities at their home armories. Units are issued a CLP bucket in order to lubricate weapons on the range before use. The procedure is outlined in Section 2.1 of the draft OMMP. Any trash or residue generated is sent to a satellite collection point out of the Reserve for disposition.</p> <p>Cleaning/lubricating/preservative compound (CLP) and other weapons maintenance, cleaning, and lubricants will be conducted in a manner that minimizes the potential for spills and a release to the environment. Personnel will sparingly use these products when maintaining their weapons. When CLP containers are not in use, dependent upon their size, will be kept on the soldier's person; or, when not in use these containers will have their lids on and should be placed in an appropriate container, like a drip pan or 5 gallon bucket. An appropriate container is one that will contain the product when the original container is compromised and/or if spilled. If cleaning materials are used on the</p>
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				<p>range, such as rags, patches, and other cleaning materials, they will be thrown away into a separate plastic trash bag inside of an issued 5 gallon bucket labeled Waste Weapons cleaning material. The content of the bucket will then be inspected to determine appropriate disposition IAW Massachusetts Solid Waste Regulations (310 CMR 19.00) and/or Massachusetts Hazardous Waste Regulations (310 CMR 30.00.)</p>
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O&M	5	<p>Draft OMMP (Section 8.1.3) states that projectile pockets will be checked monthly to see if fragmentation is occurring. The OMMP also states, "... select projectile pockets will be excavated by hand to see if fragmentation is occurring." Are these the same procedures to be done monthly or different procedures at different schedules?</p>		<p>"...select bullet pockets will be excavated by hand to see if fragmentation is occurring..." This specific action will occur as determined by the EMC EO and in coordination with the MAARNG. The range is inspected before and after each firing event. The range bullet pockets are checked before each firing event. If there is no firing during a particular month, then the range will be checked at least monthly. Bullet pockets are checked to ensure we do not have excessive fragmentation and that the frontal and individual backstop capture berms are in good working condition to capture projectiles as designed. Based on observations from other ranges the copper rounds disfigure but exhibit little to no fragmentation due to the nature of copper. Procedures will be the same for bullet pocket checks: visual, excavation, and sieving to determine a rough density. The MAARNG and the EMC EO will be conducting a copper projectile harvest test this Training Year to determine capture efficiency. This will also aid in determining project removal frequency as discussed in O&M #3</p>
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O&M	6	Draft OMMP Section 9.6.1. states, "Surface soil action levels for lead, copper, and antimony are set using selected concentrations from the Massachusetts Contingency Plan." Provide a basis for how concentrations were "selected" for each metal.		The surface soil action level numbers are based on the modeled potential for leaching to groundwater calculated using proposed sampling areas and a sample depth of 3". Surface soil action levels initially had two action levels, 1 and 2. Currently, we default to the Level 1 action level, and if there is an exceedence management actions may be taken. The surface soil action Level 2 numbers are based on modeled potential for leaching to groundwater calculated using proposed sample areas of approximately 35m x 5m and a sample depth of 3 inches. Level 1 numbers are derived by taking 50% of the Level 2 numbers and are established to ensure close monitoring of elevated analyte concentrations in surface soils. Based on the results of soil, lysimeter, and groundwater sampling Camp Edwards initiates range maintenance actions to prevent pollution of the environment, in coordination with the EMC. The need for maintenance actions will be indicated by comparing monitoring results to the action level. The action levels are subject to change as more information is developed on the leaching potential of metals and the effectiveness of the pollution prevention plan. These action levels
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				will be periodically reviewed in coordination with the EMC.
O&M	7	Are there specific SOPs and/or BMPs written to cover range activities? If so, provide a copy of all SOPs and/or BMPs applicable to activities on the MPMG Range.		TC 3-20.40, CE Reg 350-1, TC 3-22.240, TC 3-22.9, and applicable OMMPs.

O&M	8	Will fire suppressant chemicals be used on the MPMG Range? If so, provide chemical information. If fire suppressant chemicals will not be used, provide an SOP/BMP reference prohibiting their use.		It is unlikely that fire suppressant chemicals would be used within the range footprint due to the vegetation conditions of a maintained range. However, maintaining the potential for use at the discretion of incident commanders is essential to safe and effective wildland fire management and the protection of life and property. The MAARNG and JBCC Fire Department maintain lists and files of safety data sheets and are developing a suppressant chemical SOP in coordination with the E&RC and EMC EO. This draft SOP addresses outlines appropriate use standards, reporting, and record keeping. • Attached, Novacool SDS used by JBCC FD. • The USFS Wildland Fire Chemical Systems office https://www.fs.fed.us/rm/fire/wfcs/index.php .
Monitoring	1	Provide Figure 9.1 for Draft OMMP		This information is yet to be determined and coordinated with the EMC EO who has final approval authority of the OMMP before the range can be operational. The figure will be included in the final OMMP.
Monitoring	2	Provide construction information for all proposed monitoring wells, including depth of screened intervals.		This information is yet to be determined and coordinated with the EMC EO who has final approval authority of the OMMP before the range can be operational. Well location determination is being

				conducted in cooperation with the Impact Area Groundwater Study Program via the Army Corps of Engineers, Camp Edwards, and the EMC EO.
Monitoring	3	The Draft OMMP was provided to EPA with a file named "MPMG Well Modeling.jpg". How were water table contours in this image generated? If modeled, provide model description and QA documentation including process for calibrating and verifying model with field data		Water table contours in the image were developed by the Army Corps of Engineers (ACOE) coordination with and approval of the USEPA and MassDEP. This was an initial draft from the modelers at the ACOE through the IAGWSP. Well locations are determined in cooperation and with the approval of the EMC EO. All modeling information can be provided as the final process and decisions take place with the EMC EO.
Monitoring	4	What was the basis used for designing the monitoring well network, including number existing and/or new wells, construction (e.g. screened interval), and locations? Is there a plan for adaptive management of groundwater monitoring in response to evolving site conditions?		The determination for well placement will be determined by past data, on analogous ranges, past machine gun range use, bullet and primer constituents, anticipated lane use (e.g. middle lanes generally get higher use based on past range data) and with the knowledge from the IAGWSP for monitoring small arms ranges under USEPA AO2. Well placement at the firing line, mid, and down range will be decided in cooperation with and approved by the EMC EO. The OMMPs are living documents that will be updated as needed, necessary, and as information is identified that

				may help with monitoring, i.e. changing site conditions.
Monitoring	5	Describe why plans for porewater monitoring are deleted in the Draft OMMP		The porewater section of the OMMP needs revision and discussion with the EMC EO. Lysimeters will be used for range monitoring.
Monitoring	6	Provide information about baseline conditions (e.g. contaminant concentrations, groundwater levels, etc) for contaminants of concern within the MPMG Range area, including surface soils, subsurface soils, porewater, and groundwater		Prior to the range being used, an initial baseline sampling will take place for soil, porewater, and groundwater. This will take place in coordination with the EMC EO. Details on previous investigations and soil removal actions conducted by the Impact Area Groundwater Study Program (IAGWSP) at the KD Range can be found in the Small Arms Ranges Investigation Report (January 2014), the Final JBCC Training Areas Investigation Report (November 2017) and associated documents.

Monitoring	7	Soil resampling in the KD Range was required under the EPA September 2015 Decision Document. Provide results from this sampling.	EPA acknowledges MAARNG's related response to Comment #901 in the document "Environmental Assessment for the Proposed Construction and Operation of a Multi-Purpose Machine Gun (MPMG) Range, Camp Edwards, Joint Base Cape Cod, Massachusetts Public Review Comments 8 August - 7 September 2020." EPA is requesting data and/or reports which informed this comment response	The Impact Area Groundwater Study Program's (IAGWSP) Small Arms Ranges (SAR) Investigation Report (January 2014) and the SAR Decision Document (September 2015) recommended resampling at one location at KD Range near the parking area at the front of the range to determine if the range met the standards for no further action under the Massachusetts Contingency Plan Regulations. An Incremental Sampling Method (ISM) sample was collected from a newly established 20' x 20' grid (KDR44) where chromium was observed at elevated concentrations in a discrete sample collected in 1999. Chromium concentrations in the three replicate ISM samples collected from the grid were 52.2 mg/Kg, 54.0 mg/Kg and 53.4 mg/Kg, which is below the MCP S-1/GW-1 standard for total Chromium (100 mg/KG) and no further action was required. A description of the sampling at the KD Range is included in a IAGWSP Project Note - Sampling, Soil Removal and Monitoring at Small Arms Ranges (May 2014). The results of soil sampling at KD East are presented in Table 1 of the December 2014 Second Addendum to the May 2014 Project Note. The associated sampling grid and ISM sampling results are also shown on
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				Figure 9 of the draft Small Arms Ranges Completion of Work Report (April 2021). Note that this sampling location is outside of the layout of the proposed MPMG, approximately 1,500 feet south of the firing line.
Monitoring	8	Draft OMMP Section 9.5 states that subsurface soils may be monitored if surface soil results show “increasing” trends or exceedance of OMMP action levels. How will you determine increasing trends? Over what time interval?		After two annual samplings if there is an increasing trend of a constituent of concern then it is discussed with the EMC EO and a determination for actions to be taken will be made. In general if there is an increase, but not an exceedance of an action level, we will wait until the following sampling period to determine if an increase is occurring. If at that point there is a continued increase from the previous

				<p>sampling cycle the information will be discussed with the EMC EO and a determination will be made whether or not to sub surface sample.</p>
Monitoring	9	<p>If subsurface soils are sampled pursuant to question 8, above, what are the specific plans and time frames?</p>		<p>If it were determined that subsurface sampling was needed, then sampling would take place as soon as administrative processing can be completed. Technically no longer than a month for sampling unless identified by the EMC EO that sampling could take place at another point in time. For specific plans or methods see Section 9.5 of the draft OMMP.</p>