Soldiers fire thousands of rounds at backstops, berms and bullet traps on small arms ranges every day. Impact often shatters or pulverizes these bullets as well as underlying soils, creating potential for erosion.

Use of Best Management Practices on our small arms ranges will help us prevent small arms range metals from migrating to surface water and groundwater, and keep erosion in check on our ranges.

ARMY SMALL ARMS TRAINING RANGE ENVIRONMENTAL BEST MANAGEMENT PRACTICES (BMPs) MANUAL

Environmental Management at Operating Outdoor Small Arms Firing Ranges

RANGE 16

The Right Way!

Best Management Practices... ...for small arms range design

FOLLOW THE PROCESS

PHASE I – Preliminary Site Assessment – A general evaluation that requires no environmental sampling. Focus of evaluation – soil erosion and sediment/storm water runoff and the potential of migration metals.

A.) Visual Inspection of Range
1.) Types, locations and conditions of rounds
2.) Soil Erosion – check storm water flow patterns and land conditions
3.) Delineate Watershed. 4.) Range Checks

B.) Develop Conceptual Site Model of Phase I – summarize and interpret data collected. Describe current condition of range and surrounding area (model is used to determine whether BMPs are necessary).

PHASE II – Perform Limited Sampling to Confirm Phase I

PHASE III – Implement Best Management Practices – Refer to Best Management Practices manual for suggestions.

#1 Area of Concern for Range 16:

Soil Erosion

Our BMPs:

Native Grass – Can't kill the stuff

Vegetation – Promote seeding vegetation by fertilizing and reduce mowing frequency. This is a very cost efficient and effective way to prevent soil transport.

Operation and Management – Monitor Firing Lane Use to ensure range operation covers all firing lanes could help avoid soil erosion in specified lanes.

Stormwater Management –
- Reset the berm to a 1:2 angle (33 degrees, not 45 degrees)
- Grade the range on a monitored schedule–but only to refill bullet holes (reduces erosion and runoff!)

Desired Results (for memo)

By implementing these BMPs on Range 16 we are hoping to improve soil erosion and promote long term sustainability. This will proactively improve both the environmental conditions of a range and the range's mission of troop training and readiness.

Coordinate
BMPs w/ installation Environmental Management Division!!!

BULLET TRAP PERFORMANCE CRITERIA
A decision-making tool for Army range managers

TABLE 3-2. BMP TRAINING AREA SUITABILITY MATRIX

FCC No. Range Type	Operational Changes: Firing Lane Use Management	Minimize/Eliminate Firing into Water Resources	Vegetative Cover Sustainment	Improved Range Maintenance Practices	Existing BMP Inspection and Maintenance	Vegetative Cover Establishment and Sustainment	Aerial Seeding of Inaccessible Areas	Grassed Channels/Swales	Grass Filter Strips	Riparian Buffer Zones	Erosion Control Mats and Mulches	Land Shaping	Diversion Channels and Dikes	Check Dams	Channel Stabilization	Terraces and Aprons	Sediment Barriers	Dry Detention ponds	Sand Filters	Dust Control	Berm Design	Berm Structural Enhancements	Geosynthetic Materials	Soil Amendments: Lime Amendments	Soil Amendments: Phosphate Amendments	Pollution Prevention: Green Ammunition	Pollution Prevention: Bullet Traps	Pollution Prevention: Lead Removal
FCC 17750 Impact Area (Dudded)	-	X	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FCC 17751 Impact Area (Nondudded)	-	X	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FCC 17801 Rifle/Machinegun Range	-	X	X	X	X	X	-	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-
FCC 17803 Automated Field Fire Range	X	X	X	X	X	X	-	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-
FCC 17805 Automated Record Fire Range	-	X	X	X	X	X	-	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-
FCC 17806 Modified Record Fire Range	-	X	X	X	X	X	-	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-
FCC 17809 Qualification Training Range	-	X	X	X	X	X	-	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-
FCC 17812 Automated Sniper Field Fire Range	-	X	X	X	X	X	-	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-
FCC 17823 Automated Combat Pistol/Military Police Firearms Qualification Course	-	X	X	X	X	X	-	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-
FCC 17829 Heavy Sniper Range	-	X	X	X	X	X	-	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-
FCC 17833 Multipurpose Machinegun Range	-	X	X	X	X	X	-	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-
FCC 17858 Scout/Reconnaissance Complex Fire	-	X	X	X	X	X	-	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-


Making a 1:2 Berm at Fort Bragg


Trap Test

http://aec.army.mil/usaec/technology/rangexxi03g.html

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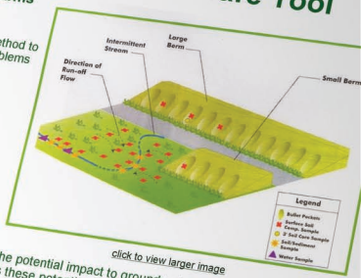
Small Arms Range Technology

Range Evaluation Software Tool

A Valuable Tool for Small Arms Range Managers

Providing a quick, easy, low-cost method to evaluate potential lead migration problems at small arms training ranges.



click to view larger image

Small arms ranges are essential to the readiness of our military forces. Many military training and test facilities exist throughout the United States. The ammunition used on small arms ranges, however, contains metals such as lead, which is a RCRA-listed toxic material. In order to maintain compliance with the law, the Army must proactively manage these ranges. Range managers require a means to determine the potential for lead and other metals to migrate off of the range, determine the potential impact to groundwater, surface water and sediments, and determine how to best address these potential environmental impacts while maintaining training readiness.

Range Evaluation Software Tool (REST) was developed based on site characterization data from 25 It utilizes commonly available information regarding the topography, weather conditions, and range rovide a site evaluation. Installation personnel will be able to input information such as the number soil conditions, and rainfall and REST will provide a qualitative answer as to whether or not T will also provide potential design or technology fixes, according to the particular

Sampling and Analysis Plan (ASAP), are the first in a series of proactive range managers with pollution prevention techniques to mitigate the n small arms firing ranges.

A Windows-based software application, REST works on IBM-compatible personal computers (386 chips or faster) with at least a Windows 3.1 operating system. It estimates the potential for heavy-metals migration for user-defined "areas of concern," based on site characteristics. It displays a series of input screens requesting information related to the range's use, its physical and geological characteristics, its geogra location, and its climate.

For more information:
*Tech Transfer Hotline:
800-USA-3845
*USAEC Technology Branch
http://aec.army.mil/usaec/technology/