Operational Range Assessment Program (ORAP) Phase II Overview

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# Operational Range Assessment Program (ORAP) Phase II Overview

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Army Environmental
Military Munitions Programs

- ORAP is part of the Sustainable Range Program (SRP), which also includes Operational Range Inventory Sustainment (ORIS)
  - ORAP is a comprehensive effort to identify and evaluate off-range munitions constituents (MC) impacts from operational ranges (as defined in TC 25-8), and to ensure continuity of training missions at these ranges
  - SRP Tenet: Information Excellence – Ensure the Army has the best available data to support operational ranges

- MMRP is a program element of DERP (September 2001)
  - Documents MC impacts from other than operational military ranges and munitions sites
  - MMRP includes FUDS, BRAC, and CTT sites

Coordination efforts are underway between the two programs to reduce burden to installations
ORAP Assessments use a phased approach and are based on Source – Receptor Interactions.
Phase II Assessment Overview

- Phase II Assessments will occur where Phase I Assessments indicate *Inconclusive* categorization.
- Phase II is planned to start in FY10.
- Sample and analyze migration pathway media:
  - Use accepted processes to determine the number and locations of samples.
  - Analyze for MCOC using approved analytical methods.
Phase II Quantitative Assessment – Pilot Studies

- USACHPPM’s Recommended Phase II Approach
  - Develop installation-specific HSPs
  - Develop DQOs using EPA guidance
  - Develop QAPPs using UFP-QAPP
  - Address SW and GW pathways only
  - Develop detailed Viable Pathway CSMs (discussion and illustration)
    - Incorporate non-range influences and degradation
    - Select effective sample locations
  - GW sampling at/near sources (not on Impact Areas) or exposure points
  - SW sampling
    - Account for temporal variability (wet/dry seasons, high/low flow events)
    - Use SW decision flow chart
Phase II Quantitative Assessment – Pilot Studies

- USACHPPM’s Recommended Phase II Approach (continued)
  - Ecological Risk Assessments – aquatic receptors only
    - Background and 95% UCL of mean results vs. screening levels comparison
    - Benthic macroinvertebrate surveys – false Positive / Negative
  - Human Health Risk Evaluations
    - Initial data screening – direct comparison to screening levels
    - Quantitative data screening – determine need for HHRA
  - Installation-specific Phase II reports categorizing each formerly Inconclusive range as either Unlikely or Referred
  - Referred categorization must be based on Risk Assessment results – not just on Phase II data
Phase II ORAP Roles & Responsibilities

- ISE has overall Army responsibility for Range Assessment Program including funding and guidance
- G3 provides HQDA level operator input
- AEC and NGB are the Program Managers for Phase II Assessments with responsibility for:
  - Upward and downward reporting
  - Disburse funding
  - Implement protocol as guidance
  - Data repository
  - Scheduling
- USACHPPM provides technical oversight
- Contract mechanism for Phase II Assessments will consist of AE IDQ and Multiple Award Military Munitions contracts
ORAP Phase II Pilot
USAG Fort Jackson / McCrady Training Center

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Installation Overview / Fast Facts

- **Fort Jackson** -
  - Army owned/operated 36,971 acres (+15,267 acres operated by SCARNG)
  - Used 1917 to present for Basic & Advanced Infantry Training
  - 29,475 operational acres / 16,471 categorized as Inconclusive
  - 104 operational ranges / 51 categorized as Inconclusive

- **McCready Training Center** -
  - Army owned/NGB operated
  - 15,267 acres in total
  - Used by SCARNG since 1943
  - 14,895 operational acres / 12,243 categorized as Inconclusive
  - 62 operational ranges / 48 categorized as Inconclusive
Combined Installation Phase II Pilot Study Advantages

- Able to obtain additional surface water/sediment data for both installations with minimal added effort - better determine if a source area is up-stream within each watershed

- Same up-stream (background) and down-stream surface water/sediment sample locations used for both installations - additional McCrady TC only locations no longer needed

- Able to add piezometers to better determine groundwater direction, depth, and subsurface geology (= better groundwater sample location siting)

- Additional down-gradient groundwater sample locations can used for both installations

- Provide information on potential impacts migrating off the combined installation boundary rather than just the Fort Jackson or McCrady TC boundary

- Combined sampling effort decreases impacts to training activities
Surface Water Pathway Sampling Locations

**Boat Access. Vertical composite Grab Samples. No Benthic Macroinvertebrates.**
Groundwater Pathway Sampling Locations - Multi-Phase Groundwater Approach
Pilot Technologies

X-50 Mobile XRF

Specifications:
- 50kV, 200mA x-ray tube for up to 25X power over a handheld instrument
- High resolution Si PIN diode detector that delivers < 190 eV resolution (FWHM Mn K-alpha line) in a proven, field-ready package
- Rugged, injection molded, sealed carrying case and sealed test platform
- Powerful Pentium processor, embedded XP and sealed, field-hardened color touchscreen
- Multiple analysis modes including Fundamental Parameters, Compton Normalization, Empirical Calibration models, Spectral Matching
- 6-position primary beam filters for optimal performance across the periodic table
- Sample platform with interlocked testing cover
- AC Power or 3-hour Li-ion battery power with optional battery pack (typical duty cycle)
- Total weight 20 lbs/9 kg
- Dimensions (approx.) 12” x 13” x 8” in / 30 x 33 x 20 cm
- Sample chamber dimensions 12” x 8” x 5” / 30 x 20 x 12.5 cm

Active cooling in a portable sampler!

Iisco’s Glacier® Sampler combines the small size, light weight, and mobility of a portable with an exclusive active temperature control system. Its revolutionary design gives you the best of all worlds: easy transport, quick setup, and accurate sample preservation – without reliance on ice or utility power!

Glacier can be powered by 12V DC or AC line voltage. In the field, Glacier delivers 48 hours or more of refrigeration from a 12 volt deep cycle battery. Its power-saving cooling system stands by until the first sample is drawn. Glacier can wait patiently for days or weeks to collect event-triggered samples, and then preserve them until a convenient pickup time.
# Pilot Schedule

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<td>Field Sampling</td>
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ORAP Phase II Pilot
Fort A.P. Hill

Dave Mercadante
EA Engineering, Science, and Technology
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Installation Overview / Fast Facts

Fort A.P. Hill, Virginia

- U.S. Army owned/operated
- Active since 1941
- 228 operational ranges
- 74,262 acres

Phase I Conclusions

- Unlikely - 128 operational ranges, 47,641 acres
- Inconclusive - 100 operational ranges, 26,621 acres
Piloting the Protocol

- The identified sources, pathways, and receptors at installation allow full testing of Technical Protocol
  - Training history means typical programmatic constituents potentially present on site
  - Main programmatic transport pathways identified from multiple source types
    - Well defined surface water flow and discharge points for multi-seasonal sampling
    - Groundwater sampling at both source discharge and potential exposure points
    - Habitat conditions present for testing application of benthic macroinvertebrate dip net sampling

- Site location allows comparisons of protocol application between Fort A.P. Hill and USACHPPM pilot site in Virginia

- Site is easily accessible for evaluation by USAEC, USACHPPM, and USACE program managers and technical oversight
Proving the Concept

- **Application of Worst Case Scenario application**
  - Similarities in models of source, pathway, and receptor between watersheds allow for a focused approach

- **Establishing a baseline for storm event sampling**
  - Installation of rain gauges, transducers and barometers in multiple watersheds to identify parameters necessary for true storm transport

- **Comparison of multi-seasonal benthic sampling results**
  - Measure application of a single season approach
  - Measure application of using historical benthic data
  - Assess value of AVS-SEM analysis

- **Cost-Benefit analysis of USEPA Method 1638**
## Project Schedule – Fort A.P. Hill

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