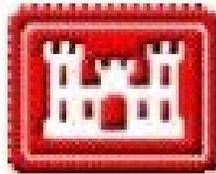


FINAL

WORK PLAN

**HISTORICAL SITE ASSESSMENTS
IN SUPPORT OF THE
ENVIRONMENTAL CONDITION OF PROPERTY PHASE I
FOR SELECTED
BASE REALIGNMENT AND CLOSURE INSTALLATIONS**

Prepared for:



Baltimore District
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Prepared by:



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Contract No. W912-DR-05-D-0024
Delivery Order 0002

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Washington, D.C.

LIST OF ACRONYMS

AEC	Atomic Energy Commission
AMC	Army Materiel Command
ARA	Army Radiation Authorizations
ARL	Army Research Laboratory
BRAC	Base Realignment and Closure
CABRERA	Cabrera Services, Inc.
CD	compact disc
CECOM	U. S. Army Communications-Electronics Command
DORF	Diamond Ordnance Radiation Facility
DQO	Data Quality Objectives
ECP	Environmental Condition of Property
FBI	U. S. Federal Bureau of Investigation
HSA	Historical Site Assessment
MARSSIM	<i>Multi-Agency Radiation Survey and Site Investigation Manual</i>
MFR	Memorandum for the Record
MMRP	Military Munitions Response Program
NRC	U.S. Nuclear Regulatory Commission
PM	Project Manager
USACE	U. S. Army Corps of Engineers
USAEC	U.S. Army Environmental Center
USACHPPM	U. S Army Center for Health Promotion and Preventative Medicine
USAMRIID	U. S. Army Medical Research Institute of Infectious Diseases
WRAMC	Walter Reed Army Medical Center

1.0 INTRODUCTION

Cabrera Services, Inc. (CABRERA) has prepared the following work plan for conducting a Historical Site Assessment (HSA) in support of the Environmental Condition of Property (ECP) Phase I for four selected Base Realignment and Closure (BRAC) Installations. The candidate installations include Forts Gillem and McPherson, GA; Fort Monmouth, NJ; and the main post of the Walter Reed Army Medical Center (WRAMC), Washington, D.C. The HSA is designed for facilities and areas formerly having operations that involved U. S. Nuclear Regulatory Commission (NRC)-licensed radioactive materials or those that fall under Department of the Army Radiation Authorizations (ARA). The work shall be accomplished in accordance with the U. S. Army Corps of Engineers (USACE) Scope of Work entitled, *Historical Site Assessment in Support of the Environmental Condition of Property Phase I for Selected Base Realignment and Closure Installations, March 2006*, under the terms and conditions of Contract No. W912DR-05-D-0024, Delivery Order 0002, dated May 18 2006 between the Baltimore USACE District and CABRERA. The *Multi-Agency Radiation Survey and Site Investigation Manual* (MARSSIM; NUREG-1575 Rev. 1/EPA 402-R-97-016 Rev. 1/DOE/EH-0624, Rev. 1) will be the primary guidance document for conducting this HSA

This work plan provides a general summary of the planned activities for the aforementioned installations, including a short description of the work to be performed, the methodologies to be utilized, and the rationale for performing the proposed activities. The names of the project personnel, including their qualifications, are provided in Section 3.0, and a project schedule is included in Table 4-1. Installation-specific addendums to this work plan provide information specific to the four installations which will be addressed during the project.

1.1 Objectives

These HSAs are being conducted to supplement the ECP Phase I Study being performed by Shaw Environmental for the four installations. The primary objectives of the HSA, as outlined in the Scope of Work, include:

- Identify potential sources of residual radioactivity at each of the four installations;
- Determine whether or not sites pose a threat to human health or the environment;
- Differentiate impacted areas from non-impacted areas;
- Provide input to scoping and characterization survey designs;
- Provide an assessment of the likelihood of residual radioactivity migration; and

- Identify additional potential radiation sites related to the installation being investigated.

The HSA typically consists of three phases: (1) identification of a candidate site, (2) preliminary investigation of the facility or site, and (3) site visits or inspections. These phases are incorporated into the subdivision of the project into four separate tasks, as follows:

Task 1 - Project Management, Work Plan, Meetings, Briefings

Task 1 includes the development of this work plan, as well as the kick-off and progress meetings, conference calls, and progress and financial reporting procedures to be used to communicate and coordinate all project activities with USACE, U.S. Army Environmental Center (USAEC), and Shaw Environmental.

Task 2 - Document/Historical Review

Task 2 will involve the collection, review, and technical data analysis of documents provided by the government, interviews with installation staff, and the conduct of site visits at the installations, Nuclear Regulatory Commission, the Humphrey's Engineering Center at Fort Belvoir, and other document archives to collect historical background information regarding the use of radioactive materials at the subject installations.

Task 3 - Conduct Visual Site Inspection/Site Visits

Following review of technical documents in Task 2, visual site inspections will be conducted at the locations of potentially radiologically impacted areas at each installation. The purpose of these inspections will be to determine the completeness and accuracy of the documentation obtained in Task 2, gather further information through the conduct of interviews with relevant staff, conduct a screening hazards assessment using radiological survey instrumentation, photo document the potentially impacted areas, determine what additional effort (such as dismantling of equipment) may be required for future surveys, and identify other information that will assist in planning future characterization or remediation efforts. A standard questionnaire (Attachment A) will be used to document all personnel interviews.

Task 4 - Document Preparation

Task 4 will include the development of the HSA Report, and providing recommendations for Data Quality Objectives (DQOs) and Data Gap Analysis to support the ECP. A separate report will be developed for each installation and will be a stand alone document.

1.2 Background

Four separate HSAs will be conducted at BRAC installations which have been identified by the Government as having potential for radioactive contamination. Each installation has a unique history and background with respect to its use of radiological materials during their operation. The following subsections provide a general summary of the information sources and investigative procedures and techniques that will be used to perform this project. Installation-specific discussions of the existing and expected data sources are provided in Attachments B, C, D, and E to this work plan.

2.0 INVESTIGATIVE PROCEDURES

The following is a summary of the specific tasks that will be completed as part of the HSA activities, including the specific sources to be used to obtain information, and the proposed methods for accomplishing the tasks. The proposed scope is designed to meet the applicable requirements of the MARSSIM Guidance Manual, and has been revised to incorporate site-specific information with respect to records sources and existing survey data.

2.1 Task 1: Project Management, Work Plan, Meetings, Briefings

CABRERA and USACE have planned the project activities to be consistent with the approach outlined in MARSSIM. When scoping the specific aspects of a project, CABRERA shall meet with USACE to discuss all project planning decisions and special concerns associated with the site.

2.1.1 Task 1A: Kick-off and Coordination Meetings

Regular project meetings and briefings are important tools for a successful execution of project objectives. CABRERA shall coordinate with the USACE project team closely throughout the project. A variety of project kick-off meetings have been planned to transfer available information, confirm project objectives, review site investigation strategies, coordinate schedules, and identify specific sources for additional research. CABRERA participated in a conference call on May 17 to discuss project communication issues, and another was held on May 24 to discuss meeting schedules and work plan status. Participants in these calls included staff from CABRERA, Shaw, USACE, and USAEC.

Additional conference calls and face-to-face meetings are planned to facilitate the kick-off process for the project as a whole, as well as for the individual installations. Although not yet scheduled, the group has discussed holding pre-site visit conference calls, and then an on-site kick-off meeting, for each installation. Information gathered at these meetings will be utilized to better scope the activities to be performed at each installation, and determine the extent of additional data necessary to achieve the objectives of the HSA.

2.1.2 Task 1B: Progress and Review Conferences

CABRERA will participate in ongoing Progress Meetings and conference calls throughout the duration of the project. Project coordination and review meetings, meetings to discuss progress, meetings regarding issues related to this project, and conference calls will be planned and

conducted on an as-needed basis, with the subject determined at that time. It is expected that all progress meetings will be conducted with staff from Shaw to ensure that site visit schedules and deliverable schedules are coordinated.

2.1.3 Task 1C: Project Management

Project management requirements for these HSA projects are outlined in the Statement of Work dated March 22, 2006. Specific activities that will be performed include:

- CABRERA shall prepare and maintain a master project schedule (Section 4.0). This schedule has been developed based on the requirements of the scope of work, the technical requirements of the work, and coordination of schedules with USACE, USAEC, the installations, and Shaw Environmental in kick-off conference calls for the project. The schedule will be updated as needed and submitted with the monthly progress report.
- CABRERA shall maintain complete project files, including copies of all documents obtained during site visits and record searches, and all project management-related documents.
- CABRERA will prepare and submit monthly progress reports for each installation by the 10th of the following month for the duration of the project. The progress reports will include a summary of the work performed during the reporting period, an estimate of the percentage of work completed for each installation, a description of project management meetings and conference calls attended, a summary of significant problems and their resolution status, and a projection of upcoming activities.

2.1.4 Task 1D: Prepare Work Plan

This work plan is being developed to document the decisions and evaluations completed during the scoping process and kick-off meetings conducted to date. In addition to a summary of the technical activities to be performed, this plan also presents the project schedule, and a list of key project personnel. The work plan presents a general summary of the technical activities to be performed. Site-specific information sources and activities for each of the four targeted installations are included in attachments to this work plan.

2.2 Task 2: Document/Historical Review

Task 2 will involve the collection, review, and technical data analysis of documents provided by the government, and the conduct of site visits at the installations, Nuclear Regulatory Commission, the Army's Humphreys Engineering Center and other document archives to collect historical background information regarding the use of radioactive materials at the subject installations.

CABRERA shall conduct an initial review of documents provided by the government and conduct site visits to the NRC, each installation, and other document archives to complete the records search and obtain additional information for review. When information relevant to radioactive materials use is referenced in the HSA, copies of those documents shall be obtained and cataloged electronically. USACE and USAEC shall provide CABRERA with pertinent site data and studies in its possession at the beginning of the project. CABRERA shall be responsible for identifying additional record sources and obtaining available relevant records and data.

CABRERA shall review records associated with each installation's operation, radioactive waste streams generated, disposal practices, locations of radioactive material use or storage, and decontamination operations. They may include, but are not limited to, correspondence, radiation safety committee meeting notes, waste manifests, inventories of radioactive materials, routine survey results, technical data and reports, licenses and permits, complaints, records on violations of environmental regulations, and site-specific data developed from other investigations or studies.

CABRERA may request USACE and USAEC assistance for access to records for which a security clearance is necessary; this situation shall be discussed if it arises. If they can be located, CABRERA may contact current and/or former personnel involved in materials or waste handling from the installations. An interview form (Attachment A) shall be used to record oral responses from these individuals. CABRERA shall protect the privileges or confidentiality of all information acquired for this Delivery Order in accordance with the Government's direction. The historical data shall be interpreted to assist USACE in determining the scope and focus for the Task 3 site visits.

CABRERA shall perform a technical data analysis of their sources, and, where appropriate, provide thorough critical evaluation of the existing environmental investigation reports prepared for the site. The technical data analysis from all sources shall be conducted with an emphasis on its use in developing the nature or extent of the radioactive contamination, and to identify requirements for release. CABRERA shall identify potential environmental liabilities related to radioactive materials, as well as any gaps in data required to make such determinations, and shall recommend future survey activities at each site in accordance with MARSSIM guidance.

2.3 Task 3: Conduct Visual Site Inspection/Site Visits

2.3.1 Task 3A: Site Visit to each of the Four Installations

In concert with review of technical documents obtained during Task 2, visual site inspections will be conducted at the locations of potentially radiologically impacted areas at each installation. The purpose of these inspections will be to determine the completeness and accuracy of the documentation obtained in Task 2, gather further information through the conduct of interviews with staff, conduct a screening hazards assessment using radiological survey instrumentation, photograph the impacted areas, determine what additional effort (such as dismantling of equipment) may be required for later surveys, and identify other information that will assist in planning later survey or remediation efforts, if necessary. To the extent practical, visual site inspections shall be coordinated with similar efforts by Shaw personnel.

Specific goals of the visual inspections and physical site tours are to:

- Determine the completeness and accuracy of the information obtained during Task 2 by comparing as-built drawings and materials lists with actual observed conditions;
- Conduct a screening hazards assessment using visual observation and existing data, to the extent possible, to identify the nature of radiological hazards that may impact health and safety or the environment;
- Determine special survey situations that may need to be addressed in future survey phases (e.g. subsurface contamination, sewer systems, ventilation ducts, embedded piping);
- Prepare a digital photographic record of all survey areas;
- Identify data gaps that may assist with the DQO process for later scoping and characterization survey designs;
- Identify potential residual contaminant migration pathways and receptors for radiological contamination;

Visual inspections will be conducted in all rooms, buildings, and open areas identified in records as related to radioactive materials handling, storage, and/or disposal. CABRERA personnel shall inspect all readily accessible areas within potential impacted structures.

2.3.2 Tasks 3B and 3C: Records Reviews at NRC and Other Document Repositories

Based on the results of the document reviews and interviews, CABRERA will visit other document repositories in an attempt to identify additional information on radioactive materials use at the selected BRAC installations. The NRC document repository located at NRC Headquarters will be visited to identify if any tenant activities operated under former Atomic

Energy Commission (AEC) license or NRC licenses. Other agencies or repositories that may be visited include:

- U.S. Army Humphreys Engineering Center at Fort Belvoir, VA maintains archival engineering records for all army installations, including environmental and general engineering information.
- U. S. Army Center for Health Promotion and Preventative Medicine (USACHPPM) radiological surveys/audits.
- U. S. Army Environmental Center Historical Records Review for Military Munitions Response Program (MMRP) may identify specific areas of radioactive materials use or reference other locations where documentation exists that identify radioactive materials use areas, particularly related to munitions.
- U. S. Army Field Support Command, Rock Island, acts as the Executive Agent for the Department of Defense Low Level Radioactive Waste. This department may have records that describe the isotopes and amounts of waste disposed for the specific facility. They also have a database that describes the types of commodities that are stored on specific Army installations. While this list is not all encompassing, it will act as a starting point for reviewing the commodities associated with each installation. Assume the government will provide this information electronically.
- The USACE Savannah District, Baltimore District, or other district offices may have environmental investigation or remediation documents from previous environmental investigations at the subject installations.
- The installation-specific Radiation Protection Office and/or Environmental Office may have records that describe additional tenant activities that used radioactive material.

2.4 Task 4: Document Preparation

Task 4 will include the development of an HSA Report for each installation, and providing recommendations for DQOs and Data Gap Analysis to support the ECP. Following completion of all document review, interview, and site visit activities, CABRERA shall perform a technical data analysis of the sources, transport, and environmental fate of radioactive materials for each installation. CABRERA shall provide a critical evaluation of existing environmental reports related to radioactivity prepared by other investigators, as necessary. The review shall be conducted with an emphasis on the development, nature, and extent of radioactive contamination associated with each installation. CABRERA will identify significant issues in the existing data, missing data and/or recommend future investigations at the site in consultation with and/or by approval of the USACE and USAEC.

2.4.1 Task 4A: HSA Report

Information gathered during Tasks 2 and 3 will be evaluated and summarized in an HSA report, which shall have a format consistent with that of the ECP and MARSSIM, as shown in Table 2-1. The report shall be a separate stand-alone report, but the report title and cover will indicate that it is an Addendum to the ECP Report for each installation. To accomplish this, CABRERA will coordinate with the USACE Project Manager and the Shaw staff that will be developing the main text of the ECP report, and will provide them a short summary of the HSA that can be included within the main text of the ECP report. A draft HSA report will be prepared that presents and assesses the information gathered for the installation. It will contain an executive summary, and address, at a minimum, the following:

- A site description (i.e., physical setting, environmental setting, sensitive receptors);
- A brief history of site use, and radiological materials usage, storage, handling, or disposal at the installation and in the surrounding area;
- Radioactive releases (past and potential) and potential environmental liabilities associated with the installation;
- Potential health and safety concerns relative to current conditions and potential survey or remediation activities;
- A preliminary characterization, based on historical data and records review, of the nature and extent of radioactive contamination at the installation;
- Summary of areas requiring no further action;
- A summary of CABRERA's record research results, review and analysis;
- A discussion of CABRERA's site visit and preliminary hazard assessment;
- Existing data gaps and additional data needs;
- Recommendations regarding investigation and/or cleanup activities for the installation, including sampling, analysis, and data required to release the installation; and
- An overview of governing environmental regulations, with respect to cleanup goals and DQOs.

TABLE 2-1: EXAMPLE OF HISTORICAL SITE ASSESSMENT REPORT FORMAT

1. Glossary of Terms, Acronyms and Abbreviations
2. Executive Summary
3. Purpose of the Historical Site Assessment
4. Property Identification
 - 4.1 Physical Characteristics
 - 4.1.1 Name - CERCLIS ID# (if applicable), owner/operator name, address
 - 4.1.2 Location - street address, city, county, state, geographic coordinates
 - 4.1.3 Topography - USGS 7.5 minute quadrangle or equivalent
 - 4.1.4 Stratigraphy
 - 4.2 Environmental Setting
 - 4.2.1 geology
 - 4.2.2 hydrogeology
 - 4.2.3 hydrology
 - 4.2.4 meteorology
5. Historical Site Assessment Methodology
 - 5.1 Approach and Rationale
 - 5.2 Boundaries of Site
 - 5.3 Documents Reviewed
 - 5.4 Property Inspections
 - 5.5 Personal Interviews
6. History and Current Usage
 - 6.1 History - years of operation, type of facility, description of operations, regulatory involvement; permits & licenses, waste handling procedures
 - 6.2 Current Usage - type of facility, description of operations, probable source types and sizes, description of spills or releases, waste manifests, radionuclide inventories, emergency or removal actions
 - 6.3 Adjacent Land Usage - sensitive areas such as wetlands or preschools
7. Findings
 - 7.1 Potential Contaminants
 - 7.2 Potential Contaminated Areas
 - 7.2.1 Impacted Areas - known and potential
 - 7.2.2 Non-Impacted Areas
 - 7.3 Potential Contaminated Media
 - 7.4 Related Environmental Concerns
8. Conclusions
9. References
10. Appendices
 - A. Conceptual Model and Site Diagram showing Classifications

As part of the final HSA Report, CABRERA shall compile a chronological index of records and documents that contained significant information that was relevant to the use of radioactive materials, or to the existence of potential radiological contamination. It shall include: the title, author, addressee, date, number of pages, subject matter, document type and format, and a synopsis. The index (example provided in Table 2-2) shall be issued as an appendix to the HSA. Each document not in the possession of USACE or the Army shall be electronically reproduced, and provided to USACE.

TABLE 2-2: PROPOSED FORMAT AND SAMPLE CONTEXT - DOCUMENT INDEX

No.	PUBLICATION AUTHOR AND DATE	PUBLICATION TITLE
001	(US Army, 1977b)	Installation Assessment of Frankford Arsenal Report No.115, US Army Toxic and Hazardous Materials Agency, October 1977
002	(JMA, 1979)	Historical and Archeological Survey of Frankford Arsenal, prepared for the Department of the Army, Baltimore District Corps of Engineers, by John Milner Associates, May 1979
003	(Rockwell, 1981a)	Final Report for the Frankford Arsenal Decontamination / Cleanup Program, Describes Phases I, II, & III of cleanup, Rockwell International, January 1981
004	(Unknown, 1996)	Plan View of the Frankford Site, ORNL/NRC Building Lists, Unknown, 1996
005	(US Army, 2000)	Letter from Fatz (Army) to Pangburn (NRC) concerning the transfer of responsibility for Frankford Arsenal review from the AMC to FUDS, US Army, July 2000.
006	(NRC, 2000)	Letter from Pangburn (NRC) to Fatz (Army) concerning schedule for Frankford Arsenal surveys, USNRC, May 2000.

2.4.2 Task 4B: Recommendations for Phase II ECP (Data Quality Objectives and Data Gap Analysis Related to Radiological Issues)

Based on the findings of the HSA, CABRERA shall prepare recommendations for Phase II ECP activities relative to radiological contamination at each installation. These documents (one for each installation) shall also include a data gap analysis and DQOs specifically related to radiological issues. These recommendations shall be provided as stand alone documents for each installation, but will also be incorporated into the Phase II Recommendations to be developed by Shaw Environmental. The recommendations will include:

- A site-specific listing of buildings, rooms, or areas at each installation that require additional scoping or characterization surveys activities to support release.

- A summary of data gaps identified during the document reviews, interviews, and site visits that may need to be filled during a Phase II ECP. This may include information on facilities for which CABRERA did not have access during the site visits, lists of documents which were not obtainable by CABRERA, names of persons who were not available for interview during the CABRERA site visits, or other limitations that may be addressed during later surveys.
- A list of DQOs related to radiological issues for the future Phase II study. This may include recommendations for the types of instrumentation or analyses to be used, a description of relevant guidance or regulation that may apply to the future studies, or a summary of relevant clean-up standards that may need to be attained for future release of radiologically-contaminated facilities. DQOs shall be prepared in accordance with USEPA and USACE guidance.

3.0 PROJECT PERSONNEL

3.1 CABRERA Management Personnel

The personnel listed in the following subsections will be involved in accomplishing the tasks outlined in Section 2.0. In addition to the individuals listed in this section and Section 3.2, various CABRERA support personnel will be utilized to complete administrative, word processing, production, and graphics tasks. Contact information for key CABRERA personnel are included in Table 3-1.

3.1.1 David Watters, CHP, Principal Health Physicist - Reviewing Principal

Mr. David Watters will participate in technical data evaluations with respect to radiological issues, as needed, and will provide quality assurance and technical review of all project deliverables. He will also participate in meetings and calls, as necessary.

3.1.2 Kim A. Nelson, PG - Program Manager

Ms. Kim A. Nelson will provide program level review and support for this project. She will ensure that USACE procedures are followed and that adequate corporate resources are made available to the Project Manager. Ms. Nelson will also provide Senior Technical Review and Project Support for all project deliverables. She will communicate directly with USACE management personnel, as necessary, and will be the backup primary point of contact.

3.1.3 Robert Dover, PG, PMP - Project Manager

Mr. Robert Dover will provide day-to-day management and supervision of CABRERA project staff and communications with other members of the Project Team. He will attend the site visit and all project meetings, coordinate record collection and data evaluation, and have primary responsibility for all deliverables. Mr. Dover is responsible for overall project objectives, scope, budget, and quality of submittals. Mr. Dover will be the primary CABRERA contact for USACE project personnel.

TABLE 3-1: KEY CABRERA PERSONNEL

NAME	PROJECT ROLE	ADDRESS/PHONE	EMAIL
Dave Watters	Principal Health Physicist	473 Silver Ln. East Hartford, CT 06118 Phone: 860-569-0095 Cell: 860-306-0606	dwatters@cabreraservices.com
Kim Nelson	Program Manager	103 E. Mt Royal Ave Suite 2B Baltimore, MD 21202 Phone: 410-332-8177 Cell: 301-467-3777	knelson@cabreraservices.com
Robert Dover	Project Manager	103 E. Mt Royal Ave Suite 2B Baltimore, MD 21202 Phone: 410-332-8177 Cell: 410-733-9338	rdover@cabreraservices.com

3.2 CABRERA Technical Personnel

The technical personnel listed in the following subsections will gather, organize, and evaluate records relative to the installations.

3.2.1 Hank Siegrist, PE, CHP - Technical Lead (Fts. Gillem, McPherson, and Monmouth)

Mr. Hank Siegrist will serve as the Technical Lead for the data reviews and site visits at Forts Gillem, McPherson, and Monmouth for this project. Mr. Siegrist will direct staff in the acquisition and review of available records, as well as preparation of the HSA report for these installations. He will be responsible for the interpretation and evaluation of all radiological data inputs to the HSAs for all four installations, and have overall responsibility for HSA report development.

3.2.2 Joe Weissman, CHP - Technical Lead (Walter Reed Army Medical Center)

Mr. Joe Weissman will serve as the Technical Lead for the data reviews and site visits at Walter Reed Army Medical Center. Mr. Weissman will direct staff in the acquisition and review of available records, as well as preparation of the HSA report for this installation.

3.2.3 Mike Barsa, Project Scientist - Research Lead

Mr. Mike Barsa will serve as lead researcher for the HSAs. He will compile documents and document indices, take the lead on data review and evaluation, and take the lead in as the preparation of the HSA reports.

3.3 Key Project Team Personnel

USACE Personnel

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Installation Personnel

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Wanda Green
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Shaw Personnel

Doug Schicho
Project Manager
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4.0 PROJECT SCHEDULE

CABRERA shall take no longer than 9 months to accomplish the tasks outlined in this work plan, and shall strictly adhere to the schedule in Table 4-1. As this schedule is updated, the alterations shall be included in the monthly progress report. The overall project schedule is linked to the completion schedule for the Phase I ECPs for each installation. All modifications to schedule shall be discussed and approved by USACE, USAEC, and project management personnel from Shaw.

TABLE 4-1: PROJECT SCHEDULE

Project Milestone	Required Date of Completion
Attend Kick-off Meeting	10 days from Notice to Proceed (NTP)
Complete Draft Work Plan	10 days following completion of data review
Site Visits	Coordinated with Shaw schedule
Completion of Draft HSA	90 days from NTP
Response to Army Comments on Draft HSA and sections of the ECP	118 days from NTP
Completion of Draft Final HSA and Sections	132 days from NTP
Conclusion of Regulatory Review of Draft Final HSA and ECP	162 days from NTP
Response to Regulator Comments on Draft Final HSA and ECP	176 days from NTP
Completion of Final HSA and ECP	190 days from NTP
Completion of Draft ECP Phase II Recommendations	104 days from NTP
Conclusion of Army Review of Draft ECP Phase II Recommendations	118 days from NTP
Response to Army Comments on Draft ECP Phase II Recommendations	125 days from NTP
Completion of Draft Final ECP Phase II Recommendations	132 days from NTP
Conclusion of Regulatory Review of Draft Final ECP Phase II Recommendations	162 days from NTP
Response to Regulator Comments on Draft Final ECP	176 days from NTP

Phase II Recommendations	
Completion of Final ECP Phase II Recommendations	190 days from NTP
* All intervals are provided in calendar days after CABRERA's receipt of notice to proceed (NTP)	

5.0 PROJECT DELIVERABLES

5.1 Meeting Memoranda

CABRERA shall prepare a Memorandum for the Record (MFR) of each meeting attended and they shall be submitted within 10 calendar days following each conference. Applicable verbal conversations shall also be documented.

Minutes shall be prepared and submitted for review conferences, conference calls, and meetings conducted during the project to USACE. USACE Baltimore District shall initially receive a draft for review and comment; it shall be finalized based on the review comments received.

Following receipt of the review comments, CABRERA shall prepare draft responses and distribute them at the subsequent meeting. The final minutes shall be prepared as an enclosure to the transmittal letter and submitted to each meeting attendee.

5.2 Progress Reports

CABRERA shall prepare and submit monthly progress reports by the 10th of the following month for the duration of the project. Progress reports shall include, as a minimum, a brief statement of the following:

- Work accomplished during the reporting period;
- Percentage of work completed by task;
- Meetings attended with objectives and outcome;
- Significant problems encountered and status of problem resolution;
- Task accomplishment goals for the next two-month period;
- An updated project schedule; and
- Updated financial progress reports.

5.3 Project Reports

CABRERA shall submit 8½ by 11-inch bound copies of the reports listed below. Documents shall be delivered to all reviewers by overnight delivery or e-mail in accordance with the project deliverables distribution list in Table 5-1. Hardcopies, when required, will be delivered as defined by the USACE Project Manager. All “Draft” deliverables will be provided and distributed via electronic format, unless otherwise requested by USACE Project Manager (PM).

The Draft HSA Work Plan will be issued as an electronic copy within ten (10) working days after review completion, and shall have an electronic comment and revision process.

The Final HSA Work Plan shall be provided in both hard copy (10 copies for distribution) and electronic (CD) formats within ten (10) working days after receiving the Draft HSA Work Plan comments. Government comments will be incorporated into the final reports. All “Draft Final” and “Final” deliverables shall be presented via hard copy and electronic format. All electronic versions will be in portable document file (.pdf) and as an electronic working version using the appropriate Microsoft Office software (e.g., Excel for spreadsheets, Word for text, etc). A summary of deliverables for each installation is as follows:

- Draft HSA (As an Addendum to the ECP)
- Draft sections for the body of the ECP
- Copies of Electronic Records identified within the HSA
- Response to Army comments on Draft documents
- Draft Final HSA
- Draft Final sections for the body of the ECP
- Response to Regulator comments on Draft documents
- Final HSA
- Final sections for the body of the ECP
- Draft recommendations for the ECP
- Final Recommendations

All deliverables will be copied to Mr. Peck, the appropriate USAEC RM, and the Installation POC. The Draft HSA Reports will be provided with 5 hard copies in addition to the electronic copy, and the Draft Final and Final Reports will be provided as 10 hard copies. A CD with all files in Adobe (.pdf) format will be provided in addition to the hard copies of all final deliverables to CENAB.

TABLE 5-1: PROJECT DELIVERABLES DISTRIBUTION LIST AND ADDRESSES

DELIVERABLE	DRAFT	FINAL
Work Plan	Electronic (e-mail)	10 hard copies with CD
HSA Report	Electronic (e-mail)	10 hard copies with CD
Meeting Minutes	Electronic (e-mail)	hard copy to Mr. Peck
Monthly Progress Reports	N/A	2 hard copies to Mr. Peck
ADDRESSES FOR DELIVERABLES DISTRIBUTION LIST		
Tim Peck – Mailing Address	Overnight Address	Email Address
USACE-CENAB-EN-HN P. O. Box 1715 Baltimore, MD 21203-1715 ATTN: Mr. Tim Peck	10 South Howard Street Baltimore, MD 21201	timothy.j.peck @nab02.usace.army.mil
Joan Jackson – Mailing Address	Overnight Address	Email Address
US Army Environmental Center ATTN: SFIM-AEC-BRC 5179 Hoadley Rd. Bldg. E4480 Aberdeen Proving Ground, MD 21010-5401	Same	joan.jackson@us.army.mil
Mark Krivansky – Mailing Address	Overnight Address	Email Address
US Army Environmental Center ATTN: SFIM-AEC-BRC 5179 Hoadley Rd. Bldg. E4480 Aberdeen Proving Ground, MD 21010-5401	Same	mark.krivansky@us.army.mil
Todd Beckwith – Mailing Address	Overnight Address	Email Address
US Army Environmental Center ATTN: SFIM-AEC-BRC 5179 Hoadley Rd. Bldg. E4480 Aberdeen Proving Ground, MD 21010-5401	Same	todd.beckwith@us.army.mil

**ATTACHMENT A: QUESTIONNAIRE FOR PERSONNEL INVOLVED WITH
RADIOACTIVE MATERIALS**

The purpose of this questionnaire is to assist CABRERA Services, Inc. in collecting information for a Historical Site Assessment (HSA) in support of the Environmental Condition of Property (ECP) Phase I for selected Base Realignment and Closure (BRAC) installations. The HSA findings will be used to design and perform radiological surveys, as necessary to support release of the selected installation. Please complete this questionnaire to the best of your recollection, and include any additional explanations in the Additional Notes/Comments section on the last page of this questionnaire or on an attached sheet of paper.

Date of Interview: _____

Name of Interviewer: _____

Selected BRAC Installation: _____

Mode of Communication(s): _____

Contact Information: _____

1. What is your name and what is/was your job title/position?

2. During what span of years have you worked, or did you work, at this installation?

3. How many years have you worked with radioactive materials?

4. Can you name or identify the radioactive commodities or devices that you or anyone else might have worked on within the selected installation? What isotopes did they contain?

5. Can you identify any locations/areas/buildings of known use or storage of radioactive material used at the selected installation, including fuel, raw materials, experiments, products, and liquid and solid effluents and wastes? (Be specific; Bldg/room numbers, outdoor areas, etc.)

6. Where and how was the shipping and receiving of radioactive material handled?

7. Did any of the radioactive commodities or devices contain radium-226, cesium-137, hydrogen-3 (tritium) or cobalt-60? How did you handle these items (e.g., standard procedures, contamination controls, personal protective equipment, etc.)?

8. Did your standard operating procedures address disposal of radioactive materials or contaminated material/waste? Are you aware of any disposal, or incineration, of radioactive material onsite or if rad material was transferred to an industrial landfill as non-rad trash?

9. Was animal research, with radioactive material, ever performed at the site? Describe.

10. Are you aware of the presence of any radionuclide-containing exit signs or smoke alarms?

11. Were electronic maintenance activities performed on equipment with electron tubes? Where?

12. Describe what would happen if a radioactive commodity or device was damaged or broken. Whom would you tell? What special procedures would have been implemented?

13. Do you recall any instance of broken or leaking sources or any other contamination incidents or accidents? Describe as accurately as can be recalled, including dates, specific rad materials and forms, contamination levels, areal extent of contamination, and disposition.

14. Are you aware of any studies/reports that may have identified contaminated areas and the isotopes activated? Describe.

15. Are you aware of any chemical use/storage/spills/releases involving any type of solvents or fuels?

16. Are there any other individuals you feel should be interviewed regarding the above items?

17. What areas would you concentrate on if you were conducting a radiological close out survey of the selected installation?

18. Additional Notes / Comments:

ATTACHMENT B: SITE-SPECIFIC WORK PLAN FOR FORT GILLEM, ATLANTA, GEORGIA

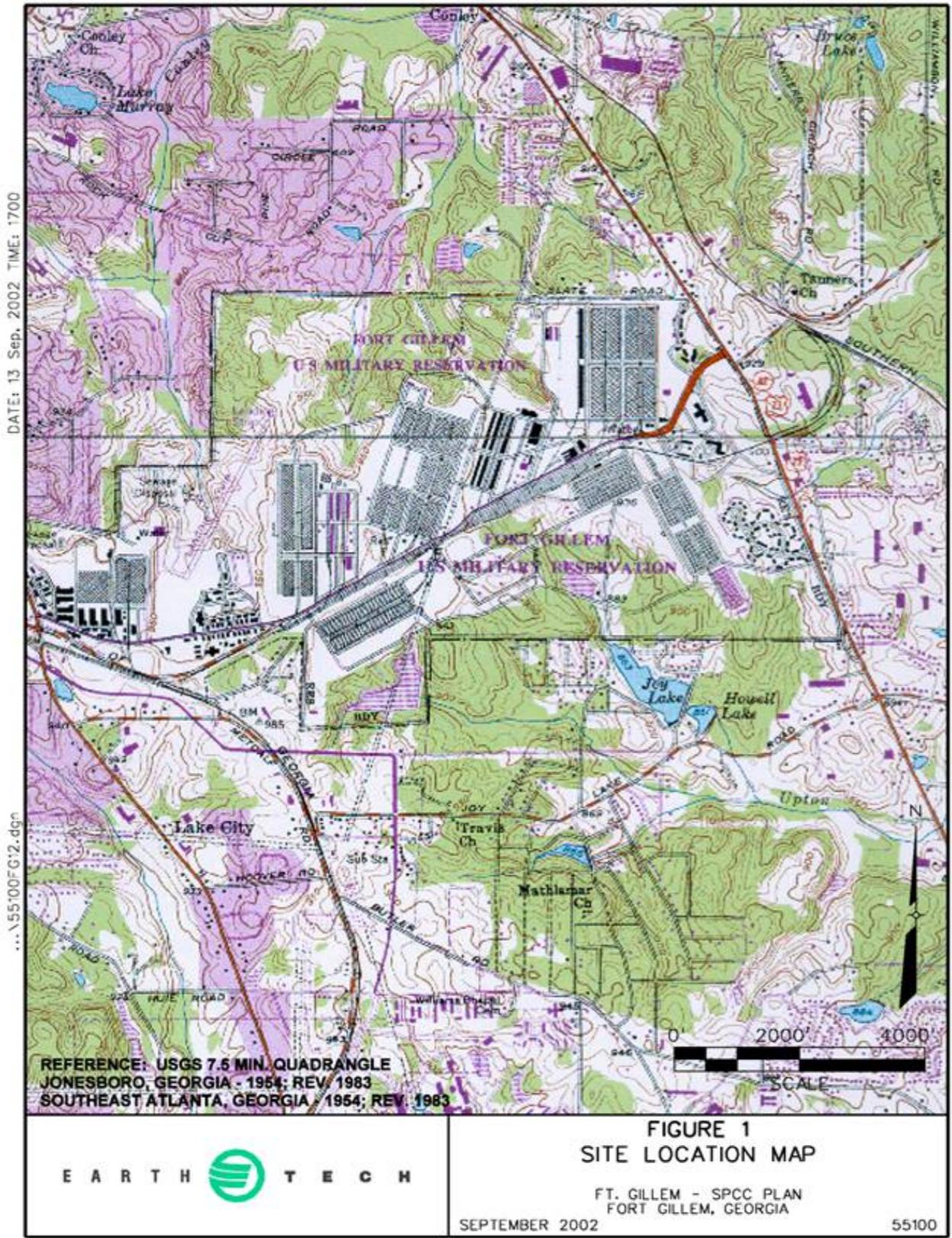
B.1 Summary of Existing Radiological Information

Representatives of the Installation Management have indicated that certain radioactive commodities have been stored or used at Fort Gillem. The Army Reserve Command (USARC), Army Forces Command (FORSCOM), and 3rd Army Headquarters units have all stored and used, or are currently storing and using RADIAC survey meters, and chemical agent monitors and detectors with sealed radioactive sources at this installation. Depot operations, which involved large quantities of radioactive commodities, were maintained until 1974 by the U. S. Army Materiel Command (AMC). AMC reportedly stored the commodities prior to 1974 in the 500 area of the fort. Archival and records search will be combined with the findings summarized in the ECP to complete the HSA for Fort Gillem. The radioactive commodities are all generally NRC-licensed under the AMC subordinate commands.

B.2 Data Sources, Interviewees, and Site Investigations Specific to Ft. Gillem

The following areas will be considered when searching for additional information on radioactive materials use at Fort Gillem:

- U.S. Army Center for Health Promotion and Preventative Medicine (USACHPPM) radiological surveys/audits. This information has been provided by the Government.
- U.S. Army Environmental Center Historical Records Review for Military Munitions Response Program (MMRP) may identify specific areas of radioactive materials use or reference other locations where documentation exists that identify radioactive materials use areas.
- U.S. Army Field Support Command, Rock Island, acts as the Executive Agent for the Department of Defense Low Level Radioactive Waste. This department may have records that describe the isotopes and amounts of waste disposed for the specific facility. They also have a database that describes the types of commodities that are stored on specific Army installations. While this list is not all encompassing, it will act as a starting point for reviewing the commodities associated with each installation.
- NRC document repository located at NRC Headquarters to identify if any tenant activities operated under former Atomic Energy Commission (AEC) license or NRC Licenses.
- Fort Gillem Radiation Safety Office (Note: the Radiation Safety Office for Ft Gillem, also has responsibility for Ft McPherson) and/or the Environmental Office may have records that describe additional tenant activities that used radioactive material.



ATTACHMENT C: SITE-SPECIFIC WORK PLAN FOR FORT MCPHERSON, ATLANTA, GEORGIA

C.1 Summary of Existing Radiological Information

Representatives of the Installation Management have indicated that certain radioactive commodities have been stored or used at Fort McPherson. USARC, FORSCOM, and 3rd Army Headquarters units have all stored and used, or are currently storing and using RADIAC survey meters, and chemical agent monitors and detectors with sealed radioactive sources at this installation. The former U. S. Army Medical Laboratory at Fort McPherson (currently USACHPPM-South) used radionuclides in medical research (both *in vitro* and *in vivo* [animal] procedures) during the 1960s and 1970s. The Army Health Clinic, Dental Clinic, and Veterinary Clinic also have used radioactive materials or machine-produced radiation (i.e., diagnostic x-ray machines) at some time in the past.

Fort McPherson operations involving radioactive materials or machine-produced radiation were or are performed under the following licenses and authorizations:

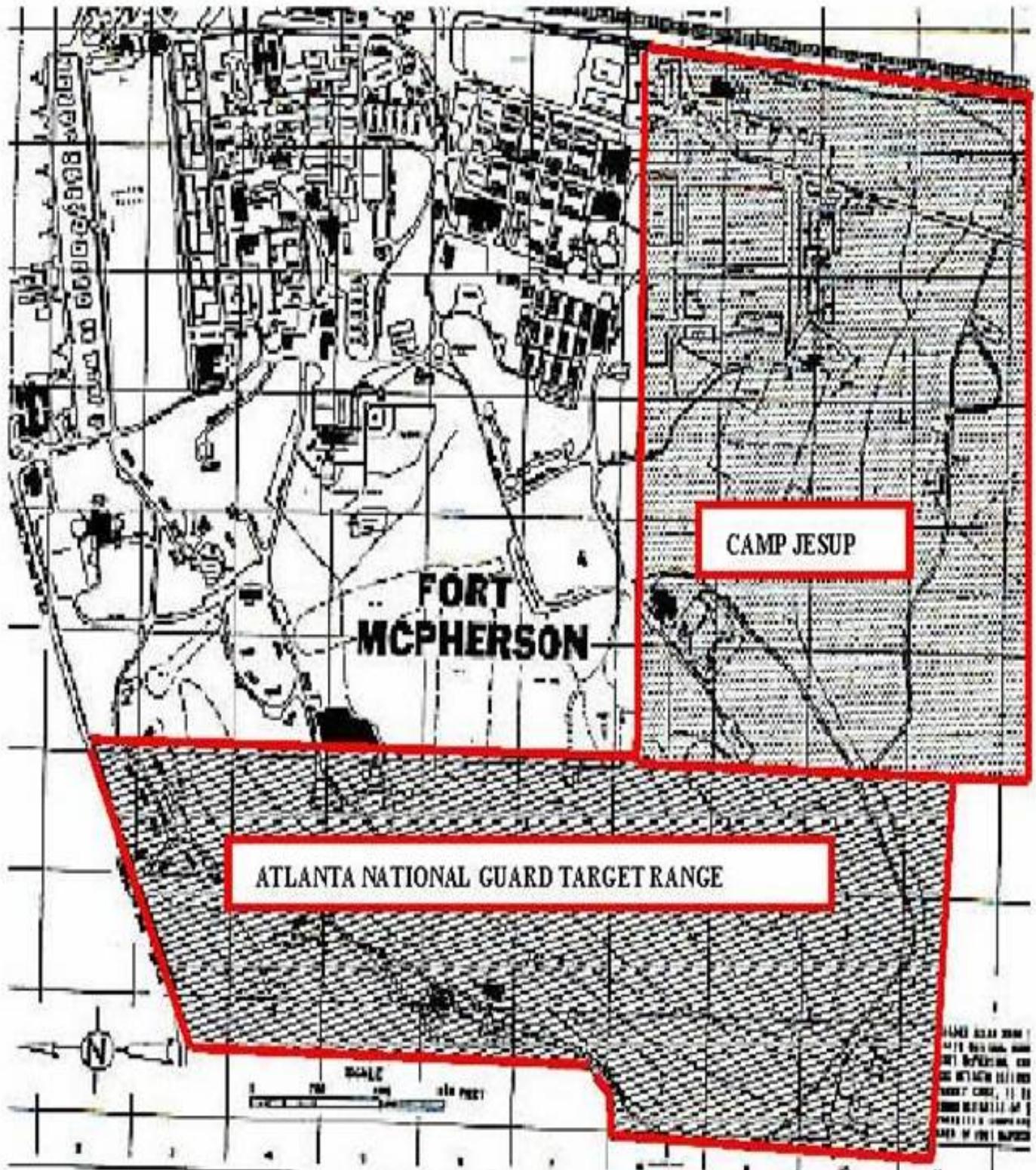
- Former U. S. Army Medical Laboratory, Fort McPherson (formerly USAEHA-South, and now USACHPPM-South) had an Atomic Energy Commission (AEC) License No. 10-03997-05, Expiration Date 30 June 1975 [historical document]. USACHPPM records indicate USAEHA-South may have applied for Army Radiation Authorization in 1975 [possible historical document for Ra-226 sources].
- The USARC, FORSCOM, and 3rd Army Headquarters units at Fort McPherson have stored and used or are currently storing and using RADIAC survey meters, chemical agent monitors, and chemical agent detectors, all with sealed radioactive sources, at Fort McPherson. These radioactive commodities are all generally licensed by the NRC under AMC subordinate commands.

C.2 Data Sources, Interviewees, and Site Investigations Specific to Ft. McPherson

The following areas will be considered when searching for additional information on radioactive materials use at Fort McPherson:

- U.S. Army Center for Health Promotion and Preventative Medicine (USACHPPM) radiological surveys/audits.
- U.S. Army Environmental Center Historical Records Review for Military Munitions Response Program (MMRP) may identify specific areas of radioactive materials use or reference other locations where documentation exists that identify radioactive materials use areas.

- U.S. Army Field Support Command, Rock Island, acts as the Executive Agent for the Department of Defense Low Level Radioactive Waste. This department may have records that describe the isotopes and amounts of waste disposed for the specific facility. They also have a database that describes the types of commodities that are stored on specific Army installations.
- NRC document repository located at NRC Headquarters to identify if any tenant activities operated under former Atomic Energy Commission (AEC) license or NRC Licenses.
- Fort McPherson Radiation Safety Office and/or the Environmental Office may have records that describe additional tenant activities that used radioactive material.



ATTACHMENT D: SITE-SPECIFIC WORK PLAN FOR FORT MONMOUTH, NEW JERSEY

D.1 Summary of Existing Radiological Information

Data collected during the ECP team visit to Fort Monmouth is insufficient to determine all historic locations where radiological materials were handled or used, to identify all radiological materials handled, and determine the status of the installation with regard to radiological decommissioning and closeout. Representatives of the Installation Management, DPW Environmental Office, and U. S. Army Communications-Electronics Command (CECOM) have indicated that certain radioactive commodities have been stored or used at Fort Monmouth. CECOM is a major tenant and the main user of radioactive materials at this installation. Other tenants who used radioactive materials at Fort Monmouth include the U. S. Military Academy Preparatory School (USMAPS) and the U. S. Federal Bureau of Investigation (FBI). An archival and records search will be used to identify the radioactive commodities that were present, and complete the HSA for Fort Monmouth.

Fort Monmouth operations involving radioactive materials or machine-produced radiation were or are performed under the following licenses and authorizations (current documents and expiration dates need to be obtained during the HSA):

- NRC Byproduct Material License No. 29-01022-06, Expiration Date _____, Research and development broad scope, issued to CECOM.
- NRC Byproduct Material License No. 29-01022-07, Expiration Date _____, Irradiator sources.
- NRC Byproduct Material License No. 29-01022-14, Expiration Date _____, Items of supply (radioactive commodities).
- DARA No. 29-10-01, Expiration Date _____, Various small sources.
- DARA No. 29-10-06, Expiration Date _____, Radium-226 items of supply.
- DARA No. 29-10-10, Expiration Date _____, Electron tubes in supply.
- DARA No. 29-10-12, Expiration Date _____, Thorium-232 in Night Vision Systems.
- NRC License No. _____ (?), issued to Fort Monmouth MEDDAC (U. S. Patterson Army Hospital) [possible historical document].
- NRC Registration Certificate - *In Vitro* Testing with Byproduct Material under General License, 21 June 1975, Fort Monmouth MEDDAC (U. S. Patterson Army Hospital) [historical document].

The Fort Monmouth Garrison, USMAPS, and USARC units may have stored and used or are currently storing and using RADIAC survey meters, chemical agent monitors, and chemical agent detectors, all with sealed radioactive sources, at Fort Monmouth. These radioactive commodities are all generally licensed by the NRC under AMC subordinate commands.

D.2 Data Sources, Interviewees, and Site Investigations Specific to Ft. Monmouth

The following areas will be considered when searching for additional information on radioactive materials use at Fort Monmouth:

- U.S. Army Center for Health Promotion and Preventative Medicine (USACHPPM) radiological surveys/audits.
- U.S. Army Environmental Center Historical Records Review for Military Munitions Response Program (MMRP) may identify specific areas of radioactive materials use or reference other locations where documentation exists that identify radioactive materials use areas.
- U.S. Army Field Support Command, Rock Island, acts as the Executive Agent for the Department of Defense Low Level Radioactive Waste. This department may have records that describe the isotopes and amounts of waste disposed for the specific facility. They also have a database that describes the types of commodities that are stored on specific Army installations.
- NRC document repository located at NRC Headquarters to identify if any tenant activities operated under former Atomic Energy Commission (AEC) license or NRC Licenses.
- Fort Monmouth Radiation Safety Office and/or the Environmental Office may have records that describe additional tenant activities that used radioactive material.

ATTACHMENT E: SITE-SPECIFIC WORK PLAN FOR WALTER REED ARMY MEDICAL CENTER, WASHINGTON, D.C.

E.1 Summary of Existing Radiological Information

WRAMC has an NRC License and a DARA that encompass WRAMC, the Forest Glen Annex, and two leased buildings in Rockville, the Gillette Building, and the Rickman Building. Building 516 in the Forest Glen Annex is utilized as a radioactive waste storage, processing, and packaging facility under the WRAMC NRC License and DARA. This building formerly housed a research nuclear reactor and was called the Diamond Ordnance Radiation Facility (DORF). The U. S. Army Reactor Office has issued an Army Reactor Permit to the director of the Army Research Laboratory (ARL) to ensure that the building's residual radioactivity remains fixed and does not become loose or airborne. The radiological HSA for WRAMC will be used to begin the formal NRC decommissioning process, and assess the level of sampling and other activities that will be necessary to achieve closeout.

WRAMC operations involving radioactive materials or machine-produced radiation are performed under the following licenses and authorizations:

- NRC License No. 08-01738-02, Expiration Date 30 April 2015 (original Atomic Energy Commission License dates to 1957). Operations are conducted at the Main Post in the District of Columbia, the Forest Glen Annex in Maryland, and at leased facilities (laboratories) in Rockville, Maryland.
- Terminated NRC License No. 08-01738-03, terminated on 17 August 2004 (possession and use of gamma cell irradiators transferred to NRC License No. 08-01738-02).
- DARA No. 08-01-97, Expiration Date 30 June 2004 (under timely renewal dated 1 June 2004). Use of radium in medical treatment and research predates the 1957 AEC License and multiple DARAs through the years.
- U. S. Army Reactor Office Reactor Permit No. DORF-1-97, issued to Director, ARL, for DORF, Building 516, Forest Glen Annex, WRAMC. The permit retains control of the building to ensure that the building's residual radioactivity remains fixed and does not become loose or airborne. The reactor facility was never fully decommissioned in 1978, when WRAMC continued to use this building under its NRC License No. 08-01738-02 for its radioactive waste operations from medical procedures and research. There are unknown materials under the 20 feet of concrete in the reactor pool area, as well as neutron activation of the concrete walls of the exposure cells and other areas in the former reactor building.

Correspondence from the NRC was provided to document that certain buildings formerly used for radioactive materials use under NRC License No. 08-01738-02, are now “released for unrestricted use.” These include:

- Decommissioned Building 40, Main Post (NRC Letter dated 26 May 2004)
- Decommissioned Building T-2, Main Post (NRC Letter dated 10 March 2005)
- Decommissioned U. S. Army Medical Laboratory Building, Fort Meade, MD (NRC Letter dated 24 April 2005)

Prior to obtaining its own NRC License during the 1990s, the U. S. Army Medical Research Institute of Infectious Diseases (USAMRIID), Fort Detrick, Maryland, was also listed as a facility user on the WRAMC NRC License.

E.2 Data Sources, Interviewees, and Site Investigations Specific to Walter Reed Army Medical Center

The following areas will be considered when searching for additional information on radioactive materials use at WRAMC:

- U.S. Army Center for Health Promotion and Preventative Medicine (USACHPPM) radiological surveys/audits.
- U.S. Army Field Support Command, Rock Island, acts as the Executive Agent for the Department of Defense Low Level Radioactive Waste. This department may have records that describe the isotopes and amounts of waste disposed for the specific facility. They also have a database that describes the types of commodities that are stored on specific Army installations.
- U.S. Nuclear Regulatory Commission (NRC) document repository located at NRC Headquarters to identify if any tenant activities operated under former U.S. Atomic Energy Commission (AEC) license or NRC Licenses.
- WRAMC Health Physics Office and/or the Environmental Office may have records that describe additional tenant activities that used radioactive material.

