

U.S. ARMY CORPS OF ENGINEERS REMEDIATION APPROACH TO CLOSEOUT THE REMAINING FUSRAP SITES THROUGH THE CERCLA PROCESS

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ABSTRACT

The Formerly Utilized Sites Remedial Action Program (FUSRAP) began in March of 1974 under the direction of the Atomic Energy Commission (AEC) for the purpose of assessing the radioactive contamination at sites formerly used by the Manhattan Engineers District (MED) and AEC in the development of the atomic bomb. FUSRAP became the responsibility of the newly created Department of Energy (DOE) in 1977 after AEC was abolished in 1975 and the Energy Research & Development Administration duties were assigned to DOE. In 1997, Congress transferred FUSRAP to the U.S. Army Corps of Engineers (USACE) with the Energy & Water Appropriations Act for Fiscal Year 1998 (P. L. 105-62). Congress expects cost and schedule efficiencies to be gained by having USACE execute FUSRAP.

FUSRAP sites were used during the 1940's, 1950's and 1960's for research, development, processing, and production of uranium and thorium and storage of processing residues. DOE recognized a need to assess the former sites to ensure sites that had been previously decontaminated or stabilized under previous criteria or regulations did not present an unacceptable risk to human health and the environment under current regulations. DOE identified 46 sites that warranted further investigation or remediation. As of 1997, remediation and closeout at 24 of the sites was completed. Some of the completed sites have ongoing monitoring, or operations and maintenance activities.

USACE is executing FUSRAP site remediation under the authority granted by Congress (P. L. 105-62 and P. L. 105-245). The restoration process will be in accordance with the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) which provides the implementing regulations for CERCLA. The presence of radiological materials in different forms and stages of equilibrium at the FUSRAP sites presents a challenge in developing the remediation goals and cleanup criteria. Preliminary remediation goals and clean up criteria are developed using Applicable or Relevant and Appropriate Requirements (ARARs), or in their absence, risk-based values that meet the acceptable risk range.

USACE is not self-regulating and will not be able to utilize the additional remediation authority granted to DOE under the Atomic Energy Act of 1954, as amended (AEA). USACE is executing FUSRAP with the understanding that Congress has designated USACE to act as the lead federal agency (P. L. 105-245) for the CERCLA response actions as authorized under CERCLA and delegated to DOD and DOE by Executive Order 12580. USACE will be using their CERCLA authority to remediate and perform interim removal actions at the FUSRAP sites.

INTRODUCTION

The Formerly Utilized Sites Remedial Action Program (FUSRAP) was an environmental program established in March of 1974 by the Atomic Energy Commission (AEC), a predecessor agency to the Department of Energy (DOE), under the provisions of the Atomic Energy Act of 1954, as amended. FUSRAP was created to identify, investigate and take appropriate cleanup action at sites where radioactive contamination from the early atomic weapons program exceeded current environmental guidelines. The sites were predominantly contaminated with low levels of uranium, thorium and radium with their associated decay products. FUSRAP became the responsibility of the Department of Energy (DOE) in 1977 after AEC was abolished (1975) and the successor federal agency (Energy Research & Development Administration) duties were subsequently assigned to DOE under a government reorganization.

In 1997, Congress transferred FUSRAP to the U.S. Army Corps of Engineers (USACE). Initially USACE determined that the response actions necessary for closeout of the remaining 22 FUSRAP sites should be done in accordance with the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended (CERCLA). This decision was based on review of the environmental laws and regulations, DOE's execution of FUSRAP and USACE experience in executing the remediation of Formerly Used Defense Sites (FUDS).

Congress provided USACE with \$140 million for administration and execution of FUSRAP for the first year of administration and execution of FUSRAP (fiscal year 1998). Congress directed USACE to review the baseline cost, scope, schedule and technical assumptions for each cleanup site and determine what actions can be taken to reduce cost and accelerate cleanup activities. USACE provided Congress with a cost to complete estimate and an assessment on the time necessary to complete the close out of the remaining FUSRAP sites. USACE projected the escalated cost to complete the remediation of the remaining FUSRAP sites ranged from \$1.5 billion to \$3.4 billion depending on several factors. USACE identified several sites where it did not appear that the DOE estimate of closeout by the year 2002 could be accomplished even if Congress provided all the necessary annual funds.

BACKGROUND

History of FUSRAP

The U.S. Army Corps of Engineers was originally assigned the responsibility for the development of the atomic bomb project during World War II. The Army established the Manhattan Engineer District (MED) in August 1942, commanded by Brigadier General Leslie Groves, to manage the development of the technology and production facilities for the Manhattan Project. MED expended nearly \$2.2 billion by the end of WWII, on weapon production facilities, towns and research laboratories scattered across the Nation. At the end of WWII, Congress decided the responsibility of the atomic weapons program should be transferred from MED (effective January 1, 1947) to the new civilian Atomic Energy Commission (AEC) created under the Atomic Energy Act of 1946.

During the 1940's through the 1960's, MED and AEC had used many sites throughout the United States to process and store uranium and thorium ores for the nuclear weapons program. Most of the sites that became contaminated during the early atomic weapons and energy programs had been cleaned up under the guidelines in effect at the time. Initially AEC, and subsequently DOE, recognized a need to assess the former sites to ensure that sites that had been previously decontaminated or stabilized under previous criteria or regulations did not present an unacceptable risk to human health and the environment under current regulations. FUSRAP provided AEC and DOE with the funding and authorization to revisit the old sites to ensure there was not a remaining unacceptable risk to human health and the environment. AEC and DOE initially examined old records to determine which sites were connected to MED and AEC activities and might be potentially contaminated with radioactive materials. DOE reviewed records and performed site surveys on more than 400 sites to determine if remedial action or removals were warranted. Eventually DOE identified 46 sites that required some type of remedial action because radioactivity exceeded their guidelines. DOE began limited cleanups in 1979 but started the major remedial actions in 1981. From 1981 until FUSRAP was transferred to USACE in 1997, DOE had completed remediation at 24 of the 46 sites and had one site (Ventron, NJ) in the process of closeout.

DOE executed FUSRAP under several statutory authorities that permitted some self-regulating authority through DOE orders/directives. Initially DOE performed cleanup of FUSRAP sites under the health and safety authority of the Atomic Energy Act of 1954. In addition, Congress granted DOE additional authorities under the Energy and Water Development Appropriations Acts (P. L. 98-50 & P. L. 98-360) to conduct a decontamination research and development project at various FUSRAP sites. However, DOE has recently performed most of their response actions under the authority of the CERCLA, as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) regulations.

Congress transferred the administration and execution of FUSRAP from DOE to USACE with the Energy and Water Development Appropriations Act for fiscal year 1998 (P. L. 105-62) on 13 October 1997. The conference report stated that Congress expected a smooth transfer of the program from DOE to USACE. Congress stated that they believed there were cost and schedule efficiencies to be gained by having USACE manage FUSRAP similar to their FUDS program. Congress was aware of concerns of the transition of FUSRAP from one federal agency to another, but their conference report stated that they expected DOE and USACE to make the transition as smooth as possible and maintain current schedules and improve execution performance.

Status of FUSRAP Execution

At the time FUSRAP transferred from DOE to USACE, there were 22 FUSRAP sites comprised of 48 operable units that were scheduled for remediation. However, DOE announced that the remedial action at the Ventron, NJ site was complete and DOE was in the process of site closeout. A memorandum of agreement is currently under

negotiation between DOE and USACE to formalize the responsibility of site close out at this site to DOE. There are currently 21 FUSRAP sites being remediated by USACE.

Table 2.1 presents an overview of the FUSRAP status at the time the program was transferred to USACE and the first year of execution (through December of 1998). The table categorizes the status of the different sites in relation to the seven major phases in a CERCLA remediation process: Preliminary Assessment/Site Inspection (PA/SI); Remedial Investigation/Feasibility Study (RI/FS); Interim Actions (Removals); Record of Decision (ROD), Remedial Design/Remedial Action (RD/RA), Project Closeout and Operation and Maintenance (O&M).

Table 2.1 FUSRAP Status

Phase	Complete		In-Process		Not Started	
	22 Sites	21 Sites	22 Sites	21 Sites	22 Sites	21 Sites
	1997 ¹	1998 ²	1997	1998	1997	1998
PA/SI	96%	95%	4%	5%	N/A	N/A
RI/FS	48%	57%	33%	43%	19%	0%
Removals - (Time Critical & Non-Time Critical)	15%	14%	27%	57%	43%	29%
ROD	0%	19%	0%	43%	100%	38%
RD/RA (Post ROD)	0%	0%	0%	14%	100%	86%
Close Out	0%	0%	0%	14%	100%	86%
O&M	0%	0%	7%	5%	93%	95%

Notes:

1. Status of FUSRAP at time of transfer. Information from USACE "Formerly Utilized Remedial Action Program (FUSRAP) Report to Congress, April 1998.

2. Status of FUSRAP at the end of December 1998. The Ventron, NJ site is excluded because it was complete and in the process of closeout by DOE.

Scope of FUSRAP

In the USACE report to Congress, there were programmatic and site-specific uncertainties identified that make it unlikely that the 21 FUSRAP sites can be completed by the year 2002 as proposed by DOE's draft accelerated cleanup plan. If adequate funding is provided, USACE estimated that 16 of the sites could be completed by the year 2002. However, the remaining sites would require additional time to address site characterization, evaluation of alternatives, public participation and decision documents. USACE's assessment in the report to Congress was that it would take at least until the year 2006 to complete the remediation of all FUSRAP sites as long as the program was not inhibited by funding constraints. Otherwise if the funding is constrained, it could take until year 2018 before the sites would be remediated.

Funding of the total remediation effort was very difficult for USACE to project since there are many dynamic factors that affect the cost to complete estimates. In the USACE report to Congress, the escalated cost to complete FUSRAP ranged from \$1.5 billion to \$3.4 billion depending on the annual funding amount, the period of performance, the cleanup criteria, and the amount of radioactive material that must be remediated. Stakeholder involvement (public, regulators) and the corresponding impacts

on the selected remedies and the final cleanup criteria were very difficult to assess. For example, the determination of future land use can have a significant impact on the final cleanup criteria (unrestricted vs. commercial/industrial) and ultimately the cost to complete the remediation. Likewise, if the remediation waste requires offsite recycling, treatment and/or disposal the cost can be significant depending on where the waste must be sent.

CLEANUP AUTHORITIES

In 1997, when Congress transferred FUSRAP to USACE for execution, the legislation did not specifically identify the cleanup process USACE would be required to follow. After review of the environmental laws and regulations, USACE determined that the response actions at FUSRAP sites should be carried out in accordance with CERCLA. Congress validated this determination by including very specific language within the funding authorization for fiscal year 1999 (P. L. 105-245). The law stated that USACE was subject to the administrative, procedural, and regulatory provisions of CERCLA and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). USACE was authorized to perform “sampling and assessment of contaminated areas, characterization of site conditions, determination of nature and extent of contamination, selection of the necessary and appropriate response actions as the lead Federal agency, preparation of designated reports, cleanup and closeout of sites and any other functions the Chief of Engineers determines necessary for remediation of the [FUSRAP] sites” (P. L. 105-245).

The 1999 fiscal funding authorization for FUSRAP also confirmed that USACE is the lead Federal agency for FUSRAP. This means that for FUSRAP sites on the NPL, USACE must consult with EPA and State authorities on CERCLA activities and enter into an interagency agreement with EPA for the completion of all necessary remedial action. The lead Federal agency (USACE) is authorized to select the remedial action along with input and concurrence from EPA. If USACE and EPA are unable to reach agreement on the selection of the final remedy, CERCLA designates EPA as having the final decision authority in remedy selection at NPL sites.

If the FUSRAP site is not on the NPL, USACE is still required to have the remedial action comply with all state laws and regulations concerning the removal and remediation unless there is a waiver in conformance with CERCLA [Section 120 (a)(4)]. However, the state standards must be consistently applied to all federal and non-federal entities. The state regulators shall be provided a meaningful opportunity for consultation with USACE throughout the response process at the FUSRAP sites.

IMPLEMENTATION OF FUSRAP REMEDIATION PROCESS.

USACE will continue to use the CERCLA authorities that DOE used to conduct environmental responses at many of the FUSRAP sites. However, USACE is not authorized by Congress to share the authorities DOE has under the AEA to establish cleanup standards and requirements for its assigned missions and contractors. For example, USACE is not self-regulating under FUSRAP and will not be able to use DOE orders/directives that weren't established as an applicable or relevant and appropriate

requirements (ARARs) following the CERCLA process. USACE, in view of the Department of Justice opinion, DOD policy, and recent case law, will not utilize the National Environmental Policy Act (NEPA) in evaluating or performing CERCLA response actions.

Two important questions need to be answered for each FUSRAP site as it relates to determining the appropriate response action that should be taken at each site.

- 1) Are there unacceptable risks to human health or the environment at the FUSRAP site?
- 2) Is the contamination a result of past MED or AEC activities at the FUSRAP site?

DOE has already started the CERCLA process at some of the remaining 21 sites to answer these basic questions. It is now USACE's responsibility to continue the process of site characterization; develop and screen alternatives; formally select a remedy; obtain public and regulator input; complete the remedial action, and closeout the site.

The first question must be answered to determine the appropriate response action to be taken at each FUSRAP site. CERCLA and the NCP have established the procedures that must be followed to answer the first question. DOE has already performed a screening process when they developed a list of 46 sites that warranted further analysis of the human and environmental risks. As previously discussed, DOE had closed out 25 of the FUSRAP sites before Congress tasked USACE to complete the remediation of the remaining 21 sites.

The second question must be answered to determine if the contamination qualifies for remediation under FUSRAP. An important part to this question is to establish if there are any potentially responsible parties (PRPs) that will need to share in the cost of remediating the site. USACE will be seeking contribution or cost recovery from any viable PRPs that may be legally liable. USACE will be working with the Department of Justice to negotiate settlements, or to litigate Federal claims for cost recovery from PRPs. DOE and subsequently USACE FUSRAP authority and funding are limited to addressing only the following:

- 1) radioactive contamination (hazardous substance) from MED/AEC activities, or
- 2) other hazardous substances, pollutants, or contamination that resulted from MED or AEC activities, or
- 3) hazardous substances, pollutants or contamination not related to MED/AEC activities that are commingled with MED or AEC waste.

Section 121(e) of CERCLA exempts any response action conducted entirely on-site from having to obtain a Federal, State or local permit, where the action is carried out in compliance with Section 121. In general, on-site actions at FUSRAP sites (NPL and non-NPL) need comply only with the substantive aspects of ARARs, not the corresponding administrative requirements. Permit applications and other administrative procedures are not considered as ARARs for actions conducted entirely on-site, and USACE would not intend to obtain any permits excluded under CERCLA.

Remediation Objectives

USACE's objective in the execution of FUSRAP is to consistently apply the CERCLA process in evaluating the nine criteria (40 CFR 300.430) to select remedies that are fully protective of human health and the environment and are compliant with ARARs. This objective does not equate to a uniform cleanup standard for all FUSRAP sites but rather a standardization of the process in establishing cleanup standards on a site-by-site basis in accordance with CERCLA. Each FUSRAP site will have unique technical and legal factors that will need to be analyzed before developing cleanup standards for a remedial action. For example, institutional controls of the land may be the appropriate remedy for one site while on another site the evaluation of future land use may require cleanup for unrestricted use. USACE will follow the procedures specified in CERCLA and the NCP when determining the appropriate cleanup level for the individual FUSRAP sites. USACE will be working with the regulators and the public in an effort to ensure that taxpayer dollars are spent judiciously and in a manner that will fully protect human health and the environment.

Development of ARARs for FUSRAP Cleanup Levels

In the development of remedial objects an important question that USACE must answer for every FUSRAP site is; what are the ARARs for this site? A two-tiered test will be applied by USACE to first determine if a requirement is applicable; then if not applicable, to determine whether the requirement is relevant and appropriate. Compliance with ARARs is required at the completion of the remedial action for hazardous substances, pollutants, or contaminants that remain on-site. However, there are under specific conditions, provisions within CERCLA to waive ARARs provided that protection of human health and the environment are still assured. The potential ARARs that USACE will be examining for the radioactive hazardous substances requiring response at the FUSRAP sites include the Nuclear Regulatory Commission Decommissioning Rule (10 CFR 20, Subpart E), the Uranium Mill Tailings Radiation Control Act (UMTRCA) standards (40 CFR 192) and the promulgated state regulations. The above regulations will form the framework of potential radioactive regulations for the FUSRAP sites. There are other potential ARARs that must be considered on a site-by-site basis, due to other hazardous substances or pollutants and contaminants at the FUSRAP sites. USACE must not only consider the ARARs pertaining to radioactive contamination, but Section 121(d)(2)A of CERCLA requires that responses comply with any standard, requirement, criteria, or limitation under any Federal environmental law, including, but not limited to the Toxic Substances Control Act, the Safe Drinking Water Act, the Clean Air Act, the Clean Water Act, the Marine Protection, Research and Sanctuaries Act, or the Solid Waste Disposal Act.

State standards, requirements, criteria, or limitations that are promulgated and are more stringent than federal requirements may be potential ARARs (40 CFR 300.400) at FUSRAP sites. The State is required by the NCP to identify the potential ARARs to USACE in a timely manner. State substantive standards and requirements must be complied with, but their approval or permits, which might otherwise be required, are not necessary prior to USACE proceeding with necessary response actions.

Risk Information in Developing FUSRAP Cleanup Levels

Risk assessment and risk management are two distinct and separate evaluations that are important in the development of cleanup levels for FUSRAP sites. The two processes together help determine how to most effectively clean up the environmental contamination at a site while reducing overall risk to human health and the environment. USACE will use risk information on FUSRAP sites as a tool to establish cleanup levels when there are no ARARs available or when there are multiple contaminants or multiple pathways that cause the ARARs to be insufficiently protective. A risk assessment is both a qualitative and quantitative process aimed at characterizing the nature and magnitude of potential risks to public health and the environment from exposure to hazardous substances, pollutants or contaminants at a site. The NCP in 40 CFR 300.430(d) requires a risk assessment to be conducted during the Remedial Investigation (RI) to determine whether a site warrants further investigation, whether a removal action is warranted and/or whether the site needs to move into the Feasibility Study (FS) phase to evaluate remedial alternatives. Consequently, for each FUSRAP site that enters into the RI/FS stage, a human health and environmental evaluation will be performed by USACE. The human health evaluation for FUSRAP sites will consist of the baseline risk assessment, the refinement of preliminary remediation goals, and a remedial alternatives risk evaluation.

Refinement of Preliminary Remediation Goals

For sites where an FS is warranted based on the results of the RI, preliminary remediation goals (PRGs) are used to evaluate the remedial alternatives for the FUSRAP site. The first step in the FS process involves developing remedial action objectives for protecting human health and the environment, which should specify contaminants and media of concern, potential exposure pathways, and PRGs. The PRGs assist in setting parameters for evaluating technologies and developing remedial alternatives, by establishing initially acceptable contaminant levels for each exposure route. The PRGs are modified as necessary through the RI/FS process and become the final cleanup levels documented in the Record of Decision. Values required for attainment of ARARs are used as PRGs for the evaluation of the potential remedies as they apply to the media of concern. For contaminants of concern (COCs) that do not have ARARs, risk-based levels are used as PRGs and are developed using the CERCLA “point of departure” value of 10^{-6} excess cancer risk. Risk based PRGs developed at the beginning of the RI are by nature overly conservative and are not appropriate for use in evaluating remedial alternatives.

STAKEHOLDER INVOLVEMENT

USACE intends to promote close coordination between federal, state, local agencies, and the public to achieve participation and community involvement. As the lead Federal agency responsible for the cleanup of FUSRAP sites, USACE will comply with the CERCLA requirements for public participation for the NPL sites, as well as for non-NPL sites that have Federal Facility Agreements (FFA). The other FUSRAP sites

that are non-NPL and not regulated by RCRA or a FFA, will attempt to encourage public participation and community involvement consistent with CERCLA.

Public Involvement

USACE will be actively promoting a broad-based public participation and community involvement process for FUSRAP. The USACE report to Congress identified several items that will be implemented to encourage public participation and community involvement in accordance with requirements of CERCLA. USACE will ensure that the public will be properly notified of public hearings and of documents that are available for their review and comment. USACE will provide sufficient information to the public to provide a reasonable explanation of the proposed plan for each site and the alternatives. USACE intends to initiate community advisory groups where there is sufficient community interest and where these groups would be appropriate in efforts to foster two-way communication.

State Regulators Involvement

State acceptance is one of the nine criteria that USACE must consider in remedy selection for the FUSRAP sites. In Section 121 (f) of CERCLA, a list of CERCLA response phases are identified in which the State is required to be given an opportunity for meaningful involvement. The State will be given an opportunity to review and comment on the RI/FS, the Proposed Plan, the remedial design, and any other technical data or reports relating to implementation of the remedy.

REMEDY SELECTION AT FUSRAP SITES

The Record of Decision (ROD), which documents the decision-making process, will comply with the CERCLA and NCP requirements. Section 121(b) of CERCLA establishes general rules regarding the selection of the appropriate remedy. USACE will be following these rules by considering, when appropriate, remedial actions that permanently and significantly reduce the volume, toxicity or mobility of the hazardous substances, pollutants, and contaminants.

USACE will be making risk management decisions by considering the “trade-offs” of different remedial alternatives and their ability to accomplish the overall project objectives. Many competing factors will be considered such as site remediation priorities, availability of funds, preference, policies, written agreements, technological considerations, and social/political considerations. Competition for limited funding among programs, projects or even within a project, is a factor that may need to be considered in site management and decision making. USACE realizes that stakeholder and regulatory agency site prioritization may not be the same as their funding prioritization. USACE will consider such non-scientific factors along with scientific factors to make site decisions. Scientific factors include realistic performances of the remedial technology, protectiveness of the remedy, and uncertainty associated with site conditions, fate and transport properties of contaminants of concern and risk estimates.

If the FUSRAP site is on the NPL, USACE will submit a report to EPA when the remedial action is complete. Upon EPA concurrence that the remedy is fully implemented, EPA will certify completion and move forward to delete the site from the NPL. For FUSRAP sites not on the NPL, USACE will issue a ROD selecting the final remedial action after all necessary CERCLA processes including public comment on the proposed plan are complete. USACE will then conduct all components of the final remedy as the lead federal agency. If any hazardous substances remain at the site, USACE will conduct the first required five-year review to ensure the remedy remains protective of human health and the environment.

USACE has committed to Congress a rapid restoration of the FUSRAP sites in concert with the regulators and the local citizens. Methods to expedite the remediation process will be considered (e.g. Engineering Evaluations/Cost Analysis (EE/CA) and Interim Removal Actions) when appropriate. The conventional CERCLA response process, which includes a RI/FS, Proposed Plan and ROD, will be utilized to determine the appropriate remedial action for the large, complex or inadequately characterized FUSRAP sites.

USACE REMEDIATION APPROACH FOR THE LUCKEY, OH FUSRAP SITE

Introduction

An actual FUSRAP site remediation being executed by USACE (Buffalo District) will be presented to illustrate the remediation process being implemented in accordance with the information presented in this paper. The Luckey site is in the process of completing the remedial investigation as defined under CERCLA. The next phase will be to proceed with preparation of the RI/FS report. Information collected during the site characterization provided the decision-makers sufficient justification to warrant further investigation and analyses of the site to determine if an unacceptable risk exists for human health or the environment.

History of the Site

In 1942, the Luckey site was purchased for construction of a World War II magnesium processing facility. In 1949, the Atomic Energy Commission built a beryllium processing facility at the site that was operated by a private company. Beryl ore was processed to produce beryllium oxide, beryllium hydroxide, and beryllium metal and then sent to other facilities for further processing. In 1951 and 1952, approximately 1,000 tons of radioactive-contaminated scrap metal was reported to have been sent to the site from the Lake Ontario Storage Area. The scrap metal was intended for use in a chlorine emissions control process in anticipation of resuming magnesium processing. However, magnesium production operations never resumed, so the scrap metal was never used for its intended purpose.

In 1958, beryllium production ceased and in the following year the buildings were reportedly decontaminated. In 1961, the General Services Administration sold the property to a private company. Since that time, several private sector companies have owned the property.

The Luckey site was included in the FUSRAP program by DOE in 1991 for evaluation of radionuclides, beryllium, and chemicals associated with beryllium processing. The evaluation would be accomplished with a site characterization which DOE organized into the following four phases:

- Phase I Collection/review of historical records and interviews
- Phase II cursory site characterization
- Phase III Data validation and data compilation of Phase II test results
- Phase IV Detailed site characterization

Status of Project at Time of Transfer to USACE

When the FUSRAP program was transferred to USACE in October 1997, the Phase II site characterization was in progress. Phase II fieldwork ended in November 1997 at which time Phase III began. Two contractors had been contracted by DOE to assist with the site characterization and both contractors remained involved in the project through Phase III.

During the fall and winter of 1997, USACE developed a contracting strategy for upcoming work. Throughout this period, it became apparent that the involvement of two separate contractors resulted in coordination problems and duplication of effort. Contractor Y completed Phase III and prepared a Technical Memorandum containing Phase II validated data as originally intended by DOE. Under DOE management, Contractor Y was then to provide the Technical Memorandum to Contractor X after which Contractor X would prepare a Phase II Characterization Report. However, since Contractor Y had already reviewed the data in preparation of the Technical Memorandum and to avoid duplication of effort, USACE instructed Contractor Y to prepare the Phase II Characterization Report. At the same time, Contractor X was instructed to prepare the RI/FS Work Plan. Contractor X was the sole contractor during the RI and will be retained for preparation of the RI Report.

Drinking Water Quality

An initial concern of USACE in the fall of 1997 was whether drinking water had been impacted by MED/AEC contamination at the site. Employee's drinking water (manufacturing facility) is supplied by two on-site production wells, only one of which is currently active. Nearby residents also obtain water from their own private wells. A review of historical records revealed that the current tenant periodically collects water samples from the two production wells and from a tap within the facility. Three tap water tests conducted in 1985 and 1986 showed beryllium was present at levels ranging from 5.8 µg/L to 8.8 µg/L, all of which exceed the current drinking water standard for beryllium of 4 µg/L. USACE contacted the Ohio EPA Site Coordinator to determine if any action had been taken in response to those test results. Ohio EPA researched the matter and determined no action was taken because a drinking water standard for beryllium did not exist until after 1990. The manufacturer is now required to test the drinking water for beryllium once every three years. Tap water samples collected since

1986, show beryllium is not present at concentrations exceeding the maximum contaminant level (MCL) for beryllium in drinking water.

A similar concern for drinking water quality developed during the USACE Phase IV Remedial Investigation (summer of 1998). A water sample collected from an outside faucet at a residence located approximately 600 feet north of the FUSRAP site contained beryllium at a concentration of 7.7 µg/L. USACE immediately notified Ohio EPA, Ohio DOH, and Wood County Health Department of the test result. Wood County Health Department was included in the notification since it has regulatory oversight of residential drinking water wells.

USACE risk assessors provided technical expertise in the evaluation of the test result. Risk-based calculations based on USEPA guidance were conducted to determine an action level, above which water treatment or an alternate water supply would be warranted. A risk-based calculation was conducted accounting for both ingestion and dermal contact, resulting in an action level of 22 µg/L. *Note: The risk-based level is higher than the MCL due in part to recently revised EPA approved toxicity values for ingestion of beryllium. Reference: Integrated Risk Information System (IRIS).* The calculations were provided to all three regulatory agencies for review. USACE and the other agencies agreed that immediate action was not warranted but further monitoring would be prudent. USACE requested Wood County Health Department inform the owner of the property of the test result and the evaluation of the result. USACE has since collected two additional rounds of water samples from the same residence and from the second residence north of the FUSRAP site, none of which contained detectable beryllium. All stakeholders have been provided the test results.

Future Milestones

Additional investigations and a RI report will be completed in 1999. The RI Report will include a ground water model and a Baseline Human and Ecological Risk Assessment. The risk assessment will be used to refine existing Preliminary Remediation Goals for sediment, soil, ground water, and surface water. Following the RI Report, a FS will be completed, leading to a Proposed Plan, Record of Decision, Remedial Design, and Remedial Action. If an immediate health risk is discovered at any time during the process, a time critical or non-time critical removal action will be conducted as appropriate. A contracting strategy will soon be developed for the FS and subsequent steps in the CERCLA process. USACE held information sessions for both the public and manufacturer employees before and after the Phase IV RI and will continue to keep all interested parties informed throughout the CERCLA process.

SUMMARY

USACE will be following the CERCLA process and the NCP regulations to remediate the remaining 21 FUSRAP sites. USACE will be the lead Federal agency for the execution of FUSRAP remediations in accordance with Executive Order 12580 and will be making the remedy selection for all FUSRAP sites. EPA retains the right to overrule USACE on the remedy selections for FUSRAP sites that are on the NPL.

Currently 3 FUSRAP sites are on the NPL excluding the Ventron, NJ site (DOE responsibility) and the proposed Maywood, NY site.

USACE's objective in execution of FUSRAP is to consistently apply the CERCLA process in evaluating the nine criteria in selecting the remedy that is protective of human health and the environment. Cleanup standards will be established by a standardized process and will be site specific. Unique characteristics of each FUSRAP site clearly demonstrate that a uniform cleanup standard can not be applied to all 21 FUSRAP sites. USACE will first attempt to determine if there are ARARs that are applicable or relevant and appropriate for each FUSRAP site. In the absence of ARARs, or when they are not appropriate for the site due to multiple contaminants or pathways of exposure, cleanup levels will be developed using a risk-based approach. The Luckey, OH site provided an actual illustration on how USACE is implementing the CERCLA process in determining the nature and extent of contamination at a FUSRAP site.

Risk assessment and risk management will be essential elements of the FUSRAP decision process in remedy selection. The risk assessment will be used to evaluate the alternatives and the protectiveness of the different remedies. For sites where an FS is warranted, the preliminary remediation goals are used to evaluate the remedial alternatives for the FUSRAP site. Results from the baseline risk assessment, using current and likely future land use, will be used with technical factors to establish the cleanup levels for the FUSRAP sites. It is important to note from the Luckey, OH site, that USACE is evaluating all media including groundwater as potential risks to human health and the environment.

USACE is committed to obtaining stakeholder involvement in the remediation of the FUSRAP sites. As the Luckey, OH site example demonstrates, USACE is committed to communication with the regulators as well as keeping the public informed of any technical information as it is discovered during the remediation process. CERCLA requires the opportunity for the regulators and the public to have sufficient time to review and comment on proposed remedies. USACE will attempt to encourage this communication process among the different stakeholders. USACE intends to initiate community advisory groups where there is sufficient interest and it would be appropriate to foster improved communication among the stakeholders.

Remedy selection must be in accordance with the CERCLA process. USACE does not have any of the self-regulating authorities that DOE had under the Atomic Energy Act. Section 121(b) of CERCLA establishes the general rules that USACE will be following in the selection of the appropriate remedy for each FUSRAP site. USACE will attempt to expedite restoration of the sites with interim actions or EE/CAs when appropriate. However, complex sites, insufficient characterized sites and large site remediation will follow the CERCLA process with a RI/FS, proposed plan and ROD.

USACE will continue to examine methods to expedite or improve the execution of FUSRAP. The Luckey, OH site provided one example of how USACE (Buffalo District) eliminated duplication of effort and coordination problems by reviewing the contracting strategy of work assignments between two different contractors.

REFERENCES

1. “Linking Legacies-Connecting the Cold War Nuclear Weapons Production Processes to Their Environmental Consequences” DOE/EM-0319, dated January 1997.
2. U.S. Army Corps of Engineers “Formerly Utilized Sites Remedial Action Program (FUSRAP) Report to Congress, April 1998.
3. Department of Energy Internet Site, “The History of the Department of Energy”, <http://www.doe.gov/html/doe/about/aboutdoe.html>.

ACRONYMS

AEA	Atomic Energy Act
AEC	Atomic Energy Commission
ARARs	Applicable or relevant and appropriate requirements
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	Contaminants of Concern
DERP	Defense Environmental Restoration Program
DOD	Department of Defense
DOE	Department of Energy
EE/CA	Engineering Evaluation/Cost Analysis
EPA	Environmental Protection Agency
FFA	Federal Facility Agreement
FS	Feasibility Study
FUDS	Formerly Used Defense Sites
FUSRAP	Formerly Utilized Sites Remedial Action Program
FY	Fiscal Year
HTRW	Hazardous, Toxic and Radioactive Waste
MCL	Maximum Contaminant Level
MED	Manhattan Engineer District
MOU	Memorandum of Understanding
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEPA	National Environmental Policy Act
NPL	National Priorities List
NRC	Nuclear Regulatory Commission
PA/SI	Preliminary Assessment/Site Inspection
PRG	Preliminary Remedial Goal
PRP	Potentially Responsible Party
RAB	Restoration Advisory Board
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act of 1986
UMTRCA	Uranium Mill Tailings Radiation Control Act
USACE	U.S. Army Corps of Engineers