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FINDING OF NO SIGNIFICANT IMPACT PROPOSED INTERIM REMEDIAL ACTION FOR OPERABLE UNIT 3 AT THE FERNALD ENVIRONMENTAL MANAGEMENT PROJECT FERNALD, OHIO

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PROPOSED INTERIM REMEDIAL ACTION FOR OPERABLE UNIT 3 AT THE FERNALD ENVIRONMENTAL MANAGEMENT PROJECT FERNALD, OHIO

AGENCY: U.S. Department of Energy

ACTION: Finding of No Significant Impact

SUMMARY: The U.S. Department of Energy (DOE) proposes an interim remedial action under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended, for the decontamination and dismantlement of structures and other improvements in Operable Unit 3 at the Fernald Environmental Management Project (FEMP). A Proposed Plan/Environmental Assessment for Interim Remedial Action has been prepared for this remedial action. DOE has developed this document as an integrated CERCLA Proposed Plan and Environmental Assessment (EA) (DOE/EA-0877) as the means to incorporate National Environmental Policy Act of 1969 (NEPA) values into the CERCLA process.

The action proposed in the EA is to (1) decontaminate some 200 structures and other improvements in Operable Unit 3 by removing loose radiological contamination, (2) remove equipment and stored material from the structures, (3) dismantle the structures and other improvements, including underground utilities, (4) construct and operate interim storage facilities adjacent to the former Production Area, (5) ship a limited quantity of the waste and debris generated by dismantlement to licensed, off-site disposal sites, and (6) transport the balance of the waste and debris to the interim storage facilities, until a final decision is reached concerning treatment and disposal of the material. Based on the analyses in the EA, DOE has determined that the proposed action is not a major Federal action significantly affecting the quality of the human environment, within the meaning of NEPA. Therefore, the preparation of an Environmental Impact Statement is not required, and DOE is issuing this Finding of No Significant Impact (FONSI). Nothing herein is intended to represent a determination on the legal applicability of NEPA to remedial actions under CERCLA.

E-603-4

COPIES OF THE EA ARE AVAILABLE FROM:

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BACKGROUND: The Fernald Environmental Management Project (FEMP) is a government-owned, contractor-operated Federal facility that produced high-purity uranium metal products for DOE and its predecessor agencies during the period 1952-1989. Thorium also was processed, but on a smaller scale, and still is stored on the site. Production activities were stopped in 1989, and the production mission of the facility was formally ended in 1991. The FEMP, which was formerly known as the Feed Materials Production Center, was included on the National Priorities List in 1989. The current mission of the facility is environmental restoration of the site. Response actions at the FEMP are being conducted in accordance with the requirements of CERCLA, as amended. The facility is located on a 1,050-acre site in a rural agricultural area about 17 miles northwest of downtown Cincinnati, Ohio.

The FEMP is divided into five separate operable units. Operable Unit 3 (OU3) consists of the former Production Area and production-associated facilities and equipment, and incorporates all above- and below-grade improvements at the site, not specified in the definitions of the other operable units. The former Production Area occupies an area of about 136 acres near the center of the FEMP site.

No future use has been identified for the site's former Production Area and its associated improvements other than for activities related to the site's mission of environmental restoration. Consistent with that remaining mission, it is anticipated that all buildings and other components will be dismantled using CERCLA remedial or removal actions. Most

structures date from the early 1950s and have already exceeded their intended design life; others are approaching their design life, which will be exceeded by the time remedial actions for the FEMP are completed.

PROPOSED ACTION: DOE proposes to decontaminate, remove equipment and stored materials from, and dismantle over 200 contaminated structures and other improvements in Operable Unit 3 at the Fernald Environmental Management Project. The major contaminants are uranium and, in some areas, thorium, and associated decay products. Until a final CERCLA Record of Decision (ROD) is issued on how the resulting waste and debris will be managed, most of the resultant material would be placed in interim storage facilities that would be located adjacent to and northeast of the former Production Area. The construction and management of these interim storage facilities as a central storage facility (CSF) is also included in the scope of the proposed action.

DOE is currently preparing a Remedial Investigation/Feasibility Study (RI/FS) (modified to incorporate NEPA values) for remediation of OU3 and treatment and disposal of wastes, which DOE plans to issue in draft in 1996. The proposed action to accelerate decontamination and dismantlement of contaminated structures and other improvements is being treated as an interim action in accordance with 40 CFR 1506.1. The proposed action will not limit the choice of reasonable alternatives or prejudice the ultimate decision for which the RI/FS-EA document is being prepared and, on the basis of the determination presented in this FONSI, will have no adverse environmental impact.

Structures and other improvements associated with the proposed action range from support facilities with low levels of contamination (such as small buildings, roads, and concrete pads) to large process buildings that are heavily contaminated and large administrative buildings that are relatively non-contaminated or clean.

The methods to be used for decontaminating and dismantling structures and other improvements would depend on the contamination expected and the type of construction (e.g., concrete block, transite, steel, etc.). The order in which a component would be decontaminated and dismantled would be based on the need for the component to support remediation activities.

Surface decontamination measures would be used to remove contamination from floors, walls, ceilings, structural members, and various equipment and materials. Decontamination technologies would be selected during remedial design. Potential decontamination technologies include wiping, vacuuming, manual or mechanical scrubbing, low or high pressure washing, grit-blasting or pelletized CO_2 blasting. New or innovative technologies might be incorporated, as appropriate. Structures would be exhausted through High Efficiency Particulate Air (HEPA) filters in order to minimize the airborne releases of contaminants during dust-generating activities.

After removing equipment and stored materials from the structures and decontaminating the various surfaces, the structures would be dismantled using standard engineering procedures and equipment. Maximum use would be made of heavy equipment to minimize the likelihood of occupational injuries during dismantlement activities. The buildings would be brought to the ground as expeditiously as possible; additional dismantlement activities would be performed (e.g., cutting) to allow for movement of material to storage.

Above-grade portions of components or components that are entirely above grade would generally be dismantled before below-grade components or portions of components that are below grade. The activities required for above-grade components would include removal of equipment and stored materials, surface decontamination, dismantlement of structures, and interim storage of the resultant materials. After above-grade decontamination and dismantlement, foundations, slabs, pads, and subsurface utilities would be addressed in parallel with remediation of adjacent environmental media that are a part of a separate action. The proposed action would generate about 500,000 ft^3 of waste and debris prior to the final ROD. Total volume of material generated as a result of this action is estimated based on results in the OU3 RI/FS Work Plan Addendum to be approximately 12,500,000 ft^3 of waste and debris.

Approximately 6 interim storage facilities would be constructed in the CSF to hold the debris and waste generated until a final CERCLA ROD is issued. The facilities would be tension support structures constructed with metallic frames covered by synthetic fabric. These structures would shelter debris, control run on and run off, and minimize release of dust. The structures individually would have a nominal 30,000 ft^2 of usable floor space for a nominal

300,000 ft^3 of materials storage each. The structures would be located on an area of about 12 acres of ungrazed, managed field located adjacent to the northeast corner of the former Production Area.

A limited quantity of the waste and debris generated by the proposed action (less than 10% by volume) may be transported to licensed, off-site facilities for disposal. Such limited off-site disposal prior to the final decision on waste disposition would allow the proposed action to continue at a reasonable rate, without any constraints due to limitations in on-site storage space.

ENVIRONMENTAL IMPACTS: The proposed action was analyzed for potential health effects on the general public and on workers and for general environmental effects. The results of the analyses are summarized below.

Potential Health Effects on the General Public: The structures and other improvements would be decontaminated and dismantled in a manner that would minimize the likelihood of airborne releases. Loose radioactive contamination and most material and equipment currently located within the structures would be removed prior to dismantlement in order to minimize airborne releases of contaminated material. Waste resulting from the decontamination and dismantlement activities would be containerized as appropriate. Stringent engineering controls would be implemented during each of these activities such that no measurable or significant increase in airborne contaminant concentrations is expected to be measured at the site perimeter.

Radioactive particulates, radon, and external gamma exposure rates are currently measured at the site perimeter as part of the FEMP's ongoing environmental monitoring program. Specific measurements would be taken for contaminants at the site perimeter during activities that could potentially result in releases. If levels of contaminants were significantly increased above the range of current levels at the site perimeter during implementation of the proposed action, more stringent engineering measures would be implemented so that off-site releases would be effectively controlled. Therefore, no member of the general public is expected to receive a significant incremental radiation dose or chemical exposure via the air pathway as a result of the proposed action. Calculations performed using conservative assumptions

indicate that the maximally exposed off-site resident would receive a dose of approximately 0.06 mrem/yr due to the action. By comparison, an average individual in the United States receives a dose of approximately 300 mrem/yr from natural background radiation. The maximally exposed member of the public is estimated to receive a radiation dose of about 0.9 mrem for the entire action. The corresponding incremental lifetime risk of cancer incidence is about 5.5×10^{-7}. The population residing within 5 miles of the site and the general public located near the off-site transportation route would receive doses corresponding to a collective incremental lifetime risk of 7.8×10^{-4}.

No exposures of the general public are expected via the surface water pathway because potentially contaminated surface water would be retained on-site and monitored consistent with the site's existing NPDES permit. Contaminated water would be treated in the water treatment plant at the site, as appropriate, prior to release. All surface water released from the site would be discharged through permitted outfalls in compliance with the permit.

Potential Health Effects on Workers: Exposures of workers conducting the action would be kept as low as reasonably achievable (ALARA) by following standard health physics and industrial hygiene practices and maintaining strict compliance with worker-protection requirements, including DOE limits for occupational exposure. Dust-control measures -- such as vacuuming and directing the exhaust through HEPA filters, wet wiping contaminated surfaces, and using localized ventilation -- would be employed to minimize particulate emissions during implementation of the proposed action. Respiratory protective equipment (e.g., full-face respirators and self-contained breathing units) would be used if such dust-control measures did not maintain airborne contaminant concentrations at acceptably low levels. Both the general work area and the breathing zone would be monitored for radioactive and chemical contaminants as part of a comprehensive monitoring program.

The level of contamination in the structures is highly variable, ranging from minimal (if any) contamination in auxiliary structures to considerable contamination in the process buildings. The potential for worker exposure to radioactive and chemical contaminants would be highest while the structure and other improvements were being decontaminated. Monitors would be used to determine airborne contaminant concentrations in the work areas to evaluate compliance with requirements for protecting worker health and safety.

The annual radiation exposure to a decontamination worker is conservatively estimated to be about 210 mrem effective dose equivalent from external gamma exposure and inhalation of contaminated dust. This value is well below the DOE administrative control limit of 2,000 mrem/yr given the in DOE Radiological Control Manual and the 5,000 mrem/yr limit for occupational workers given in DOE Order 5480.11. This radiation exposure would result in an annual incremental lifetime radiological risk (i.e., the risk of cancer over the remainder of the worker's lifetime from this one year of radiation exposure) of about 1×10^{-4}. Planned use of the ALARA principle during decontamination activities would reduce these exposures to lower levels. Exposure to natural sources of radiation -- i.e., radon, terrestrial radiation, and cosmic rays -- results in an effective dose equivalent of about 300 mrem/yr.

The maximally exposed individual worker will receive a dose of about 3.4 Rem for the entire project with a corresponding individual incremental lifetime risk of cancer incidence of 1.6×10^{-3}. The collective incremental lifetime risk for all remediation workers is about 0.3 on the basis of about 2560 person-years of effort.

The major occupational safety concern for workers would be the physical hazard associated with dismantlement activities. The total number of occupational fatalities associated with the proposed action is estimated to be about 0.18 per year, and the estimated total cases of injuries is about 11 per year. These estimates are based on U.S. Department of Labor (DOL) for construction worker statistics applied to the total estimated 2,560 person-years of effort for the proposed action. DOE past performance for DOE facilities suggests fewer accidents than predicted using the DOL statistics.

Other workers at the site not directly involved in the proposed action could be exposed to airborne contaminants released during project activities. The actual exposures of these workers would depend on their proximity to the release points. The major exposure pathway would be inhalation of airborne contaminants. The dose to an individual worker not directly involved in this action would not be expected to exceed 0.4 mrem for the action. The incremental lifetime radiological risk to such a worker for the action is estimated to be about 1.7×10^{-7}. The collective incremental lifetime radiological risk for all such on-site workers is about 4.7×10^{-5} for the action, assuming 1600 exposed workers.

Potential Environmental Effects: Implementation of the proposed action would, during the short term, disturb small areas of soil in the vicinity of the various structures being dismantled. Because these areas were previously disturbed during construction and operation activities at the site, no long-term adverse environmental impacts are expected. The construction of the CSF would disturb approximately 12 acres of ungrazed managed field, with minimal habitat, would also have minimal impact on the environment. Decontamination and dismantlement activities would also potentially remove about 1.2 acres of wetlands that consist of man-made drainageways with minimal quality habitat, based on a wetlands assessment prepared in accordance with 10 CFR 1022.

Local surface waters would not be adversely impacted by the proposed action because only small areas would be affected by surface alterations and activities would primarily be located outside the 100-year and 500-year floodplains. A surface water management program (e.g., use of runoff controls) would be implemented as a part of the proposed action to ensure minimal impacts to off-site surface water. Appropriate erosion control measures such as silt fences, straw bales, and sediment traps would be used during all construction. As noted above, all potentially contaminated water would be retained and treated as necessary before release.

Removal of below-grade structures has the potential to impact perched ground water and the Great Miami Aquifer. However, efforts would be made to minimize impacts to ground water during remedial activities. Monitoring wells would be used to detect any release to the perched ground water and the aquifer. If releases are detected, appropriate response actions would be implemented. Overall, removal of contaminant sources associated with the structures and other components would minimize the potential for impacts to surface water and groundwater.

Dust released during decontamination, dismantlement, or temporary storage activities could impact air quality in the immediate vicinity of the work area during the short term. The potential for dust generation would be minimized by limiting on-site vehicular traffic and by implementing good engineering practices, such as wetting or covering exposed surfaces. Activities would be sequenced to minimize the generation of contaminated dust (e.g., wall openings would be sealed prior to decontamination activities such that the structure itself

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would serve as a release control). In addition, equipment used for decontamination activities would contain appropriate emission control devices (e.g., air would be exhausted through HEPA filters). Airborne concentrations of radioactive and chemical contaminants are not expected to increase at the site perimeter as a result of this action. Contingency plans and tiered engineering controls would be implemented to ensure that air quality off-site is not adversely impacted during the action period.

Adverse impacts to vegetation and wildlife related to noise or dust resulting from the proposed action would be minimal. The affected area is primarily composed of buildings and does not provide unique wildlife habitat. Plant species in the area are restricted in distribution. Flora and fauna are not likely to be exposed to significant airborne contaminants during the action period because such releases would be controlled. The construction of the CSF would result in the disturbance of about 12 acres of ungrazed, managed field, which currently provides minimal habitat or food source for terrestrial wildlife.

The implementation of the proposed action would have little or no impact on the socioeconomic structure at or around the site. Most workers would come from the existing labor pool at the site.

There are no cultural resources within the former Production Area. Therefore, no effect on cultural resources would occur within that area. The affected areas outside the fenced Production Area would be investigated to determine the presence of any such resources, and if any are found, appropriate action would be taken, in consultation with the Ohio State Historical Preservation Office, to either preserve the resources or to relocate them.

POTENTIAL CUMULATIVE IMPACTS: Potential cumulative impacts associated with the proposed action and a separate connected action were analyzed in the EA. The results of these analyses are summarized below in terms of potential cumulative health effects and potential environmental effects. The connected action is the Safe Shutdown removal action, which will ensure the proper shutdown of all process facilities prior to final remediation.

Potential Cumulative Health Effects: Potential cumulative health impacts were analyzed for three types of receptors: workers involved in the proposed action and the Safe Shutdown

action (action workers), other on-site workers not involved in either of the actions, and off-site residents. Based on the analyses performed, no worker is expected to receive a radiation dose above 210 mrem in any one year, well below the 2,000 mrem/yr DOE administrative control limit. The maximum incremental risk of a cancer incidence to a single worker due to the 16 years of exposure would be about 1.7×10^{-3}. The cumulative collective risk to workers from all exposures over the duration of the two actions would be about 0.3. The total number of workers involved in the two actions is expected to be about 300 in any one year and the actions are expected to last a total of 16 years.

It is very unlikely that the same individual would be the most exposed worker every year during the duration of both connected actions. However, in the unlikely event that a single worker would be exposed at the maximum every year, his cumulative dose would be 3.4 rem. The incremental lifetime risk to this hypothetical worker would be about 1.6×10^{-3} from all years of exposure. The cumulative collective cancer risk to the other on-site workers is about 7.4×10^{-5}. The total number of on-site workers would be approximately 1,600; about 1,000 of these would be office workers.

The cumulative dose to the maximally exposed off-site resident would be about 6.3×10^{-2} mrem/yr or 1.0 mrem over the duration of the two connected actions. The individual's incremental lifetime cancer risk would be about 3.8×10^{-8} from one year of exposure and 6.2×10^{-7} from all years of exposure. The cumulative incremental cancer risk to residents within five miles of the site (approximately 23,000 people) over the duration of the actions would be approximately 8.9×10^{-4} from exposure over the duration of the actions. By comparison, a member of the public would receive approximately 5,000 times more radiation dose from natural background (not related to FEMP actions) in the same period. The risks due to the natural radioactive background is 300 times higher.

The cumulative incremental cancer risk to the general public located along the off-site transportation route would be about 3×10^{-4}.

Potential Cumulative Environmental Effects: Potential adverse environmental impacts associated with the proposed action and Safe Shutdown are expected to be minor. Construction and dismantlement activities for the proposed action would be primarily focused

on the central areas of the site, but will include some structures near the east boundary and an effluent pipeline which traverses the site boundary to the east. Safe Shutdown would involve no construction. No areas off site would be affected by either action (except for a pipeline to the Great Miami River). A surface water management program would be enacted during the proposed action to minimize potential impacts to off-site surface water. No effects to surface water are expected for Safe Shutdown. Air quality impacts that might result from either action would be minimized by controlling emissions with engineering measures and using monitoring systems and contingency plans to ensure environmental protection. Any cumulative environmental impacts of the proposed action and Safe Shutdown would be temporary and would be limited to the short term.

ALTERNATIVES CONSIDERED: In the EA, DOE considered the following alternatives to the proposed action of accelerated decontamination and dismantlement of structures and other improvements: (1) no action , (2) no interim action, and (3) accelerated decontamination only.

The no-action alternative was determined to be unacceptable because the risks posed by the contaminated components would remain unmitigated under this alternative. The existing threat of environmental releases would continue, as would safety hazards posed to on-site personnel. In addition, the no-action alternative is inconsistent with current plans for comprehensive remediation of the site. Impacts similar to those for the no-action alternative would be associated with the no interim action alternative during the period before remediation begins.

The structures and other improvements in the operable unit would be decontaminated and dismantled under the proposed action, the no interim action, or the accelerated decontamination alternatives (the latter two within the scope of the final ROD for the operable unit). Therefore, the evaluation of the three action alternatives focused on their ability to facilitate completion of site cleanup activities.

The accelerated decontamination and dismantlement alternative would reduce the threat of environmental releases and current safety hazards associated with the contaminated structures and other improvements and would support future cleanup actions. The contaminated material would be placed in controlled storage, thus greatly reducing the

likelihood of future releases to the environment. Further, subsurface areas of the site could be more easily characterized if the structures were removed. This alternative is consistent with and would contribute to the efficient performance of overall remedial action being planned for the site. In contrast, the no interim action alternative would not facilitate site cleanup because the actions needed to address the structures and other improvements would not be accelerated. Similarly, the No Action Alternative would allow structures and other components to remain in place and no safety hazards would be eliminated. Based on these considerations, the accelerated decontamination and dismantlement alternative was identified as the preferred alternative.

The accelerated decontamination and dismantlement alternative would minimize potential risks to human health and the environment associated with contaminant releases from the structures and other components and would reduce the potential for adverse impacts to worker safety. This alternative can be implemented using standard engineering practices and equipment, and it is cost-effective.

DETERMINATION: The proposed management of the structures and other improvements in OU3 at the FEMP, involving decontamination and dismantlement with interim storage of most resultant wastes on-site until a final decision (ROD) concerning waste disposition is made, does not constitute a major Federal action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act. Therefore, an environmental impact statement is not required. This finding is based on the analyses in the EA. Nothing herein is intended to represent a statement on the legal applicability of NEPA to remedial actions under CERCLA.