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**CATEGORICAL EXCLUSION DETERMINATION -
IN SITU HORIZONTAL GROUT BARRIER
DEMONSTRATION, PHASES I AND II NEPA
DOC. NO. 432**

10/21/93

**NEPA DOC. 432
DOE-FN/DOE-HQ
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CAT EXC**

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

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CATEGORICAL EXCLUSION (CX) DETERMINATION

In Situ Horizontal Grout Barrier Demonstration, Phases I and II
NEPA Document No. 432
Fernald Environmental Management Project (FEMP)
Fernald, Ohio

Proposed Action

The United States Department of Energy (DOE) at the Fernald Environmental Management Project (FEMP) proposes to develop a new technology system for constructing in situ horizontal grout barriers through the use of technologies recently developed by the DOE's Office of Technology Development and an industrial contractor.

Location

The proposed action will occur within a 600 by 200-foot plot of previously leased pasture, east of the north access road and northwest of the Sewage Treatment Plant, which is located at the eastern edge of the FEMP. The 1050 acre FEMP is located in a rural area of southwest Ohio, 18 miles northwest of downtown Cincinnati, Ohio.

Background

In situ horizontal grout barriers are useful for contaminant control at several DOE facilities. Suitable barrier materials, such as polyethylene grout, were developed recently by the DOE. The DOE has also made advances in horizontal drilling technology. The DOE advances in materials and the new horizontal drilling capacity now provide the pathway for the FEMP to develop a systems approach to construct horizontal barriers. These horizontal barrier systems can be matched up with existing vertical barrier systems to form complete, competent in situ containment vaults. Examples of practical uses of these vaults include in situ containment of buried waste and underground storage tanks. At the FEMP, this technology may be used to achieve in situ containment of the waste pits and clearwell found within Operable Unit 1.

While the recent advances in technology have been successful, further development is needed to make in situ horizontal grout barrier systems practical for actual use. The objectives of the FEMP demonstration are to develop reliable equipment to form larger panel units of practical width and to demonstrate that panels can be joined to form a continuous large bottom that does not leak. Once this technology is developed, it will be prepared for commercialization, apprenticeship, and technology transfer with other DOE sites.

Description of Proposed Action

The in situ horizontal grout barrier technology demonstration will be conducted in three phases. Phase I will involve the placing of four horizontal grout slabs, joining them into a prototype horizontal barrier, and evaluating the resultant barrier for continuity and integrity. Phase II will integrate the

In Situ Horizontal Grout Barrier Demonstration, Phases I and II

horizontal barrier developed in Phase I with vertical grout wall technology to form and evaluate a complete prototype land containment system vault. Phase III will commercialize and transfer the land containment system technology to other sites with more challenging soils and to actual waste sites. This CX determination is applicable to only Phase I and Phase II of this demonstration.

The four horizontal slabs will be constructed as follows: using horizontal drilling technology and/or an excavator, well casings will be placed under the simulated waste area. Two casings will be placed roughly 10 feet apart. These casings will angle down, level off at a depth of eight to 12 feet, pass under the simulated waste area, then angle upward, emerging 100 feet from the point of entry. Cables will be threaded through the casings, which will be attached to the horizontal jet grouting bar at one end and to a bulldozer at the other end. The bulldozer will pull the cables, causing the horizontal jet grouting bar to follow the path of the well casings. As the jet grouting bar is being pulled down through the soil, water will be pumped through the bar, causing the jet tool to rotate and cut through the soil. After leveling off, a cement grout slurry will be pumped into the grouting bar at a pressure of 5000-10,000 pounds per square inch. This will leave behind the soil cement/grout slurry mixture which solidifies to form the horizontal barrier.

When one horizontal slab has been jet grouted, the horizontal jet grouting bar will be attached to the next two tow lines. One tow line will be from the original pass, thereby forming a seam with the original slab. Since four slabs will be formed, three seams will be produced. Ideally, the subsequent slabs will be formed before the previous one solidifies. five horizontal well casings will be used, all roughly 10 feet apart from each other in a line.

Phase II of this demonstration will involve the integration of the horizontal barrier technology described above with more conventional vertical barrier techniques. This activity will be conducted in the same location as Phase I.

As part of both phases of this technology demonstration, an independent agency will be contracted to conduct verification and testing of the barriers. All aspects of this technology demonstration will be evaluated, including horizontal drilling, grout design, barrier permeability, seam integrity, and non-intrusive and/or remote sensing technologies.

The grout slabs are expected to be left in place after installation and evaluation. Due to the size of these slabs, this alteration to the area is not substantial. Soil excavated as part of the installation and evaluation processes will be returned after verification and evaluation are complete. Also, Best Management Practices will be used to minimize the amount of soil erosion due to the use of water.

Phase I and Phase II archeological surveys for cultural resources are being conducted in accordance with the National Historic Preservation Act, Section 106. Reports of these surveys will be submitted to the State Historic Preservation Office (SHPO) for review and approval. Any archeological artifacts discovered will be archived by a SHPO-approved curator of cultural resources.

In Situ Horizontal Grout Barrier Demonstration, Phases I and II

Categorical Exclusion to be Applied

The authority for finding this project to be subject to NEPA Categorical Exclusion is contained in Subpart D of 10 CFR Part 1021, entitled "National Environmental Policy Act Implementing Procedures and Guidelines." The Final Rule and Notice, effective May 26, 1992, includes a list of Categorical Exclusions that are classes of actions that normally do not require the preparation of either an Environmental Impact Statement or an Environmental Assessment.

The Final Rule and Notice specifically lists in Part 1021, Appendix B to Subpart D, Sec. 1021.410, B6.2, the following as a type of action that is a Categorical Exclusion applicable to Specific Agency Actions:

The siting, construction, and operation of temporary (generally less than two years) pilot-scale waste collection and treatment facilities, and pilot-scale (generally less than one acre) waste stabilization and containment facilities (including siting, construction, and operation of a small-scale laboratory building or renovation of a room in an existing building for sample analysis) if the action (1) supports remedial investigations/feasibility studies under CERCLA, or similar studies under RCRA, such as RCRA facility investigations/corrective measure studies, or other authorities, and (2) would not unduly limit the choice of reasonable remedial alternatives (by permanently altering substantial site area or by committing large amounts of funds relative to the scope of the remedial alternatives).

As a technology demonstration in support of CERCLA Remedial Investigation/Feasibility Studies at the FEMP, Phase I and II of the In Situ Horizontal Grout Barrier Demonstration will not violate applicable statutory, regulatory, or permit requirements; it will not require siting and construction or major expansion of waste disposal, recovery, or treatment facilities; and it will not adversely impact any environmentally sensitive areas (e.g., wetlands, floodplains, or the sole-source aquifer).

Compliance Action

I have determined that the proposed action meets the requirements for the CX referenced. Therefore, the proposed action is categorically excluded from further NEPA review and documentation.

Approval: _____

Phil Hamkic
 J. Phil Hamkic, Manager

U.S. Department of Energy, Fernald Field Office

Date: _____

10-21-93

memorandum

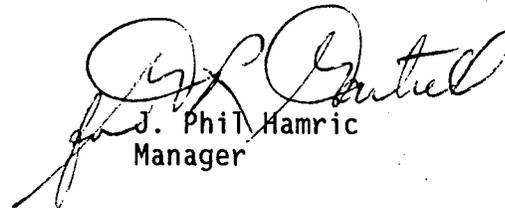
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DATE: OCT 21 1993
REPLY TO: DOE-0149-94
ATTN OF: FN:Skintik
SUBJECT: CATEGORICAL EXCLUSION DETERMINATION (CX 432) IN SITU HORIZONTAL GROUT BARRIER DEMONSTRATION, PHASES I AND II
TO: Carol Borgstrom, EH-25, FORS

The subject categorical exclusion (attachment) under Subpart D of the Department of Energy's National Environmental Policy Act Procedures and Guidelines, 10 CFR 1021, effective May 26, 1992, has been approved and is being forwarded for your review.

The Department of Energy, Fernald Field Office (DOE-FN) requests that you notify us within two weeks, in accordance with the Interim Procedural Guidelines for implementation of SEN-15-90, whether you have any objection to this determination.

If you have any questions regarding this matter, please contact Ed Skintik at (513) 648-3151.


J. Phil Hamric
Manager

Attachment: As Stated

cc w/att:

R. S. Scott, EM-20, FORS
K. A. Chaney, EM-424, TREV
L. Harris, EM-431, TREV
W. E. Woods, FERMCO/19
Admin Record Coordinator, FERMCO