

7787

R-009-101.84

**PROPOSAL TO DISCONTINUE PLANS TO CONSTRUCT AN ADVANCED  
WASTE WATER TREATMENT CARBON FILTRATION PRETREATMENT  
UNIT**

07/18/96

DOE-0874-96

DOE-FN          EPAS

3

LETTER

7787



**Department of Energy**

**Ohio Field Office  
Fernald Area Office**

P. O. Box 538705  
Cincinnati, Ohio 45253-8705  
(513) 648-3155



JUL 18 1996

DOE-0874-96

**Mr. James A. Saric, Remedial Project Director  
U.S. Environmental Protection Agency  
Region V - SRF-5J  
77 West Jackson Boulevard  
Chicago, Illinois 60604-3590**

**Mr. Tom Schneider, Project Manager  
Ohio Environmental Protection Agency  
401 East 5th Street  
Dayton, Ohio 45402-2911**

Dear Mr. Saric and Mr. Schneider:

**PROPOSAL TO DISCONTINUE PLANS TO CONSTRUCT AN ADVANCED WASTEWATER TREATMENT CARBON FILTRATION PRETREATMENT UNIT**

During the March 1996 meeting between representatives of the Fernald Environmental Management Project (FEMP), the U.S. Environmental Protection Agency (U.S. EPA), and the Ohio Environmental Protection Agency (OEPA), the need to construct an Advanced Wastewater Treatment (AWWT) pretreatment unit was discussed. The pretreatment unit was to have been an activated carbon unit capable of removing listed Resource Conservation and Recovery Act (RCRA) waste constituents from waste streams prior to entry into the AWWT. Such a pretreatment unit is discussed in the Operable Unit 5 (OU5) Record of Decision (ROD), and was intended to replace the carbon unit residing in Plant 8. The Plant 8 system had been previously evaluated through the implementation of Removal Action 1: "Removal of Contaminated Waters Beneath FEMP Buildings" which was approved by both the U.S. EPA and OEPA. The estimated cost of the activated carbon pretreatment unit at the AWWT is approximately \$1.9M.

As described during the March 1996 meeting, the 400 gpm branch of the AWWT contains activated carbon as part of its treatment train. The Department of Energy (DOE) suggested that the existing carbon filtration included in the 400 gpm system provides an equivalent level of treatment as would a separate pretreatment unit, and recommends discontinuing plans to construct an additional carbon filtration system. The OEPA questioned the technical equivalency of the carbon treatment component of the 400 gpm system to the existing Plant 8 system and requested an evaluation summary prior to agreeing to canceling construction of the replacement pretreatment unit. The following paragraphs provide the requested information. A review of the AWWT Activated Carbon

Filter System indicates that comparable or better performance of Volatile Organic Constituents (VOC) removal should be achieved at the AWWT as compared with the existing Plant 8 system. Below is a comparison of the Plant 8 and the AWWT carbon systems.

**Plant 8 System:**

- a. Flow = 12 gpm
- b. Each unit is 2 ft. in diameter with 7 cu. ft. of 12X40 virgin activated carbon.
- c. VOC concentrations are measured after lead unit in each train. When breakthrough is detected the lead unit is replaced, lag unit is rotated to lead position, and a fresh unit is placed in the lag position.
- d. Flow/cu.ft. For lead units  
 $= 12/(2*7) = 0.857 \text{ gpm/cu.ft.}$   
 $= 8.73 \text{ minutes contact time}$
- e. Flow/sq. ft. = 1.91 gpm/sq. ft.

**AWWT Carbon System:**

- a. Flow = 400 gpm
- b. Each unit is 6.5 ft. in diameter with 240 cu.ft. of 12X40 virgin activated carbon.
- c. Flow/cu.ft. =  $400/3(240) = 0.556 \text{ gpm/cu.ft.}$   
 $= 13.46 \text{ minutes contact time}$
- d. Flow/sq.ft. = 4gpm/sq.ft.

This comparison indicates that the AWWT system has a greater (i.e., more favorable) contact time compared with the Plant 8 system. Although the AWWT system does not have filter units in series, sampling ports exist along the length of the unit vessel for determination of the VOC concentration profile in the unit. These sampling ports provide a performance measurement capability similar to the existing Plant 8 system. Flow per square foot is acceptable in both systems - less than 5 gpm per square foot is generally recommended by vendors.

The AWWT carbon units pretreat waste streams to remove VOCs prior to entering the ion exchange resins for uranium removal; however, some sludges are generated by clarification and filtration prior to VOC removal. Sludges exhibiting contaminant concentrations below the Waste Acceptance Criteria (WAC) for the On-Site Disposal Facility will be disposed of in the On-Site Property Disposal Facility. Sludges failing the WAC will be characterized and disposed of at an appropriate licensed Off-Site Disposal Facility.

If you require additional information or have questions regarding this proposal, please contact Kathleen Nickel at (513) 648-3166, or Robert Janke at (513) 648-3124.

Sincerely,



Johnny W. Reising  
Fernald Remedial Action  
Project Manager

FN:Nickel

cc:

- L. Griffin, EM-423/GTN
- R. L. Nace, EM-423/GTN
- S. Smiley, DOE-OH
- G. Jablonowski, USEPA-V, 5HRE-8J  
Manager, TPSS/DERR, OEPA-Columbus
- F. Bell, ATSDR
- D. S. Ward, GeoTrans
- R. Vandegrift, ODOH
- S. McLellan, PRC
- D. J. Carr, FERMCO/52-5
- T. Hagen, FERMCO/65-2
- J. Harmon, FERMCO/90
- W. Hertel, FERMCO/52-5
- M. Jewett, FERMCO/52-5
- C. Little, FERMCO/2  
AR Coordinator/78