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CORRES. CONTROL  
OUTGOING LTR NO.

# EG&G ROCKY FLATS

91RF7603

EG&G ROCKY FLATS, INC.  
ROCKY FLATS PLANT, P.O. BOX 464, GOLDEN, COLORADO 80402-0464 • (303) 966-7000

October 31, 1991

91-RF-7603

DIST.	LTR	ENC
BENJAMIN, A.		
BERMAN, H.S.		
BRETZKE, J.C.		
BURLINGAME, A.H.		
COPP, R.D.		
CROUCHER, D.W.		
DAVIS, J.G.		
EVERED, J.E.	X	
FERRERA, D.W.		
FRANCIS, G.E.	X	
GOODWIN, R.		
HANNI, B.J.		
HARMAN, I. K.		
HEALY, T.J.		
IDEKER, E.H.		
JENS, J. P.		
KERSH, J.M.	X	
KIRBY, W.A.		
KUESTER, A.W.		
KRIEG, D.		
LEE, E.M.	X	
MAJESTIC, J.R.		
MARK, G.E.		
MEURRENS, B.E.		
MORGAN, R.V.	X	
POTTER, G.L.	X	
PIZZITO, V.M.		
SAFFELL, B.F.		
SANDLIN, N.B.		
SHEPLER, I.R.		
SWANSON, E.R.		
WIEBE, J.S.		
WILKINSON, R.B.		
WILSON, J.M.		
YOUNG, E.R.		
ZANE, J. O.		
Wharf, F. H.	X	
Jemison, E.A.	X	
Nesta, S.M.	X	X
Rhoades, J.W.	X	
ROFFER, J.P.	X	X
VAUGHN, J.H.	X	X
FLORY, R. C.	X	X
MOORE, W.A.	X	X
BURMESTER, M.	X	X
E. W. M.	X	X
ROBERTS, B.L.	X	X
CORRES CONTROL	X	X
TRAFFIC		

Robert M. Nelson, Jr.  
Manager  
DOE, RFO

Attn: F. R. Lockhart

SUPPLEMENTAL EA - DRAIN CONSTRUCTION, 881 HILLSIDE (8413) - JEE-0395-91

The subject letter requested EG&G to address specific concerns regarding the French Drain project. The attached information responds to this request, and supplements the Environmental Assessment of January, 1990.

If you have any questions, please contact Steve Nesta at 273-6076, digital page 4290, or Jack Vrouwe of my staff at 273-6005.

  
J.E. Evered, Director  
Environmental Management

JHV:img

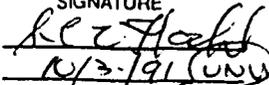
Orig. and 1 cc - R. M. Nelson, Jr.

Attachment:  
As Stated

cc:  
P. M. Powell

CLASSIFICATION:

UCNI	X	Y
UNCLASSIFIED	X	Y
CONFIDENTIAL		
SECRET		

AUTHORIZED CLASSIFIER  
SIGNATURE  
  
DATE 10/31/91 (UNU)

IN REPLY TO LTR NO.  
3999

PC#  
LTR APPROVALS:  
SAN  
JEE  
ORIG & TYPING INITIALS  
JHV

ADMIN RECORD

REVIEWED FOR CLASSIFICATION/UCNI  
BY G. T. Ostdiek  
DATE 8-25-92

**DOE EA-xxxx**

**Supplement Analysis to  
Environmental Assessment for  
881 Hillside (High Priority Sites)  
Interim Remedial Action**

U.S. Department of Energy  
Rocky Flats Plant  
Golden, Colorado



**October 1991**

## SUPPLEMENTAL ANALYSIS

This report is a Supplemental Analysis in response to a request by DOE, RFO for clarification of several concerns pertaining to the French Drain project. These concerns cover the following areas:

- Hillside slumping and its impact on the drain (lifetime operation)
- Water quality and quantity impacts from drain construction and operation on Woman Creek system
- Siting and stability of effluent tanks at treatment building 891
- Worker health and safety

### Hillside slumping and its impact on the drain (lifetime operation)

The French Drain Geotechnical Investigation Report of October 5, 1990, provided no assurance of soil stability on the 881 Hillside. Therefore, the authors of the Investigation Report were requested to review this subject. They confirmed that it is likely the slope will remain stable. However, in their expert opinion, they cannot rule out the possibility of the Hillside above the French Drain slumping during its lifetime.

The occurrence of a slump, and its repair, will affect the environment in the repair area. A slump also may affect a localized portion of the South Interceptor Ditch. Depending on the location of the slump, silt may reach Woman Creek. However, it is improbable that contaminated groundwater would reach Woman Creek. In summary, the French Drain will protect Woman Creek from radiological contamination and increase stability of the hillside.

The following discussions provide additional information about the potential and impact of slumping:

One of the primary causes of soil movement (landslides) is an increase in pore pressure within the soil. This increase in (water) pressure results in a decrease in the shear strength or sliding resistance of the soil. One of the recommended techniques to reduce pore pressure is to install a drain through the primary slip surface. Construction of the French Drain will therefore significantly increase the shear strength along the soil-bedrock interface.

The French Drain will help to stabilize the soil on the 881 Hillside. If slumping were to occur in spite of this stabilization, siting of Woman Creek and the South Interceptor Ditch would be possible. However, the French Drain's migration barrier downgradient of the slump would remain effective. And, because the migration rate of the groundwater is low, prompt repair action will prevent radiological contamination of Woman Creek.

Section 4.1.3 of the French Drain Geotechnical Investigation Report evaluates the type and size of slumps that might occur on the 881 Hillside. This evaluation used a mapping of 34 active or recent slumps on the Rocky Flats site. In the report's conclusion, the volume of the most likely slump on the 881 Hillside is 370 cubic yards. The slump would cover an area of 3200 square feet. It would have a length of 44 feet and a width of 75 feet.

The estimated cost for repairing a typical slump occurring along the French Drain alignment is \$110,000. Repairs could be completed within 10 to 20 working days. The estimate includes the earthwork necessary to excavate and replace the failed area with proper material. It also includes the cost for welding the liner and replacing the collection pipe. A 50% surcharge in the estimate allows for expected cost escalation, and a volume of 800 cubic yards in the estimate provides for uncertainties in restabilizing the slump.

#### Water quality and quantity impacts from drain construction and operation on Woman Creek system

The French Drain project will cause about 275,000 square feet of construction disturbance on the hillside. Erosion bales will prevent hillside runoff onto the construction area. Additional control measures to prevent runoff will include benches, berms and silt fences. There should be no silt loading to Woman Creek and the wetlands as the French Drain construction is above the South Interceptor Ditch. Excavation, stockpiling of soil, vehicle traffic and other construction activities will not disturb the South Interceptor Ditch and its Wetlands.

The purpose of the French Drain is to prevent contaminated groundwater at the 881 location from reaching Woman Creek. The drain will intercept and collect this contaminated alluvial groundwater that now slowly flows towards the creek.

There is a theory that Woman Creek gains and loses water through an interchange with the alluvial material along its length. The creek's interaction with ground water and surface water is complex, as it can vary with time and location. There is no evaluation, nor understanding of this interaction and the influence of the French Drain. However, projects are now underway to determine these interactions by measuring discharges at multiple locations along the Woman Creek drainage.

#### Sitting and stability of effluent tanks at treatment building 891

The location of the three effluent tanks will be next to the western wall of building 891. This location is on level stable ground about fifty feet from the edge of a shallow downslope to the South. Construction of the tanks will be according to applicable American Water Works Association (AWWA) specifications.

#### Worker health and safety

The EA contains detail analyses of contamination health risks to both construction workers and the RFP site population. Applicable Occupational Health and Safety Administration (OSHA) regulations will govern the excavation activities. These regulations are per 29CFR 1926.650, as amended on 31 October 1989 (Volume 57, No. 209 of the Federal Register). Specific requirements of 29 CFR 1926.651 include daily safety inspections of excavations, the adjacent areas, and protective systems. EG&G will arrange with a professional engineer for these daily inspections.

The construction contractor has submitted a "Safety, Health, and Emergency Response Plan for the Remedial Action, 881 Hillside Phase IIB Construction." EG&G has reviewed and approved this plan. The plan mandates health and safety measures for all personnel on the job site. It also defines the responsibilities of both the EG&G and the contractor Project Health and Safety Officers.

## Conclusion

The French Drain project will cause destruction of wetland, foraging, and nesting habitat in the construction area. Construction will not directly affect the South Interceptor Ditch and its wetlands, nor Woman Creek. The installed French Drain is expected to help stabilize the 881 Hillside; however, siltation of the South Interceptor Ditch and Woman Creek is possible were a slump to occur.

Although the French Drain is expected to prevent radionuclide contaminated groundwater from reaching Woman Creek, a slump event could deposit contaminated surficial material in the SID or the creek.