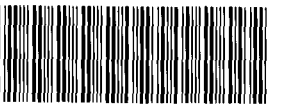
CORRES. CONTROL
OUTGOING LTR NO.

91 RF 1900



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DIST.	LTR	ENC
BRETZKE, J.C.		
BURLINGAME, A.H.		
COPP, R.D.		
CROUCHER, D.W.		
DAVIS, J.G.		
EVERED, J.E.	X	
FERRERA, D.W.		
FERRIS, L.R.		
FRAIKOR, F.J.		
FRANCIS, G.E.		
GOODWIN, R.		
HEALY, T.J.		
IDEKER, F.H.		
JENS, J. P.		
KEELE, P. B.		
KERSH, J.M.	X	
KIRBY, W.A.		
KIRKEBO, J.A.		
LEE, E.M.	X	
MAJESTIC, J.R.		
MATHEWS, T.A.		
MEURRENS, B.E.		
MORGAN, R.V.	X	
NORTH, P.		
PALMER, L.A.		
POTTER, G.L.	X	
PIZZUTO, V.M.		
RHOADES, J.I.	X	
SAFFELL, B.F.		
SWANSON, E.R.		
WIEBE, J.S.		
WILKINSON, R.B.		
WILLIAMS, R. E.		
WILSON, J. M.		
YOUNG, E.R.		
ZANE, J. O.	X	
Lundberg, DA	X	
Smith, JA	X	
Greengard, TC	X	
Guillaume, M	X	
Smith JM	X	
CORRES CONTROL	X	X
TRAFFIC		

CLASSIFICATION:

UCNI		
UNCLASSIFIED	✓	✓
CONFIDENTIAL		
SECRET		

AUTHORIZED CLASSIFIER SIGNATURE

DATE 4/6/91

IN REPLY TO LTR NO.

N/A

PC#

LTR APPROVALS:

TCG:

JEE:

ORIG & TYPIST INITIALS

MG/plf

RF-46469 (Rev. 3/91)

April 9, 1991

91-RF-1900

Robert M. Nelson, Jr.
Manager
DOE, RFO

INTERAGENCY AGREEMENT (IAG) DELIVERABLE FOR EPA AND CDH: SUBMITTAL OF FINAL HISTORICAL INFORMATION SUMMARY AND PRELIMINARY HEALTH RISK ASSESSMENT, OPERABLE UNIT NO. 3 - IHSS 200, 201 AND 202

As required by the IAG, we are transmitting the Final Historical Information Summary and Preliminary Health Risk Assessment for Operable Unit No. 3 (IHSS 200, 201 and 202) to EPA/CDH to meet the milestone delivery date of April 16, 1991. Comments received from EPA/CDH on the draft of this report have been incorporated into the final report. DOE comments from your staff and HAZWRAP have also been addressed.

A draft letter of transmittal to EPA/CDH has been provided to R. H. Birk along with the response to EPA/CDH comments. We are prepared to deliver the required number of documents to the agencies as soon as we receive your official transmittal letter. The Final Report is scheduled for a final review by EPA/CDH for 21 days.

If you have any questions or concerns regarding this document, please contact Michael Guillaume of my staff at 966-4291.

J. M. Kersh, Associate General Manager
Environmental Restoration & Waste Management

MG:plf

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

Enclosures:
As Stated

DRAFT DRAFT DRAFT DRAFT DRAFT

Mr. Gary Baughman
Hazardous Waste Facilities Unit Manager
Colorado Department of Health
4210 East 11th Avenue
Denver, CO 80220

Mr. Martin Hestmark U.S. Environmental Protection Agency, Region VIII
Attn: Rocky Flats Project Manager, 8HWM-RI
999 18th Street, Suite 500, 8WH-C
Denver, CO 80202-2405

Gentleman:

Enclosed are two copies each of the following document: "Final Historical Information Summary and Preliminary Health Risk Assessment Operable Unit No. 3 - IHSS 200, 201 and 202." The submission of this document by April 16, 1991 meets the regulatory requirements for Interagency Agreement (IAG) schedules.

Pursuant to the IAG schedule, the Environmental Protection Agency/Colorado Department of Health will have a 21-day review period for this document.

If you have any questions, please feel free to contact Robert Birk of my staff at 966-5921.

Sincerely,

David P. Simonson
Assistant Manager
for Environmental Management

Enclosures

EXECUTIVE SUMMARY

This report for Individual Hazardous Substance Sites (IHSSs, or Sites) 200 (Great Western Reservoir), 201 (Standley Lake), and 202 (Mower Reservoir) was prepared in response to requirements in the Interagency Agreement (IAG) between the U.S. Department of Energy (DOE), the U.S. Environmental Protection Agency (EPA), and the Colorado Department of Health (CDH). The sediments in these reservoirs contain low levels of plutonium as a result of past activities at the Rocky Flats Plant (RFP). The IAG identifies the following primary objectives for this report:

1. Submit all known and accumulated data describing, detailing or defining contamination within the reservoir(s) and tributaries of the reservoir(s) including surface and ground water sources, and

2. Submit a health risk assessment documenting the risks derived from all potential exposures associated with a no action alternative for remediation of the contamination.

After evaluating over 30 documents containing data relevant to Sites 200-202, it became evident it would be impractical to append the entire body of existing data to this document. The IAG data submission requirement is addressed by summarizing pertinent data throughout the report, by including a bibliography listing general references and available documentation of data for Sites 200-202, and by appending specific data sources for the three Sites to the report.

The existing data for Sites 200-202 were collected for the purpose of site characterization rather than to support a rigorous quantitative health risk assessment. After evaluating the existing data against EPA guidance for data useability in risk assessments it became apparent that the data do not meet current quality control standards necessary to support a quantitative risk assessment. As a result, this report includes a qualitative human health risk assessment for Sites 200-202. In addition, a "generic" risk assessment calculation is included which shows the steps and many assumptions underlying a quantitative risk assessment, and which generates risk values based on hypothetical plutonium concentrations in reservoir sediments and water under various exposure scenarios. This calculation is useful in helping to determine whether known contamination at the three reservoirs poses an imminent health risk to the public. The following discussions provide

a brief summary of the information provided in this report in support of the objectives listed above.

Sites 200 (Great Western Reservoir), 201 (Standley Lake), and 202 (Mower Reservoir) comprise three of the four Sites within Operable Unit No. 3 (OU 3). OU 3 differs from other RFP OUs in that it is located outside the RFP boundary. The three reservoirs are located outside the eastern boundary of the RFP. Great Western Reservoir serves as the municipal water supply for the City of Broomfield, while Standley Lake supplies water to the cities of Thornton, Northglenn and Westminster. Mower Reservoir is a much smaller, privately-owned impoundment used for agricultural purposes (i.e., cattle watering and irrigation).

Past environmental investigations of Sites 200-202 have shown that plutonium concentrations in the bottom sediments of all three reservoirs exceed estimated background (nuclear testing fallout) concentrations. The elevated plutonium concentrations are attributed to historical airborne (fugitive dust) and waterborne releases from the RFP. These releases resulted primarily from RFP operations in the 1950s, 1960s, and 1970s. Pollution control measures implemented at the RFP since this time have effectively eliminated the sources of the plutonium.

The information presented in this report points to the following conclusions about Sites 200-202:

- Plutonium and americium (a decay product of plutonium) are the only known contaminants in the reservoirs attributable to RFP releases. This conclusion is based on extensive water quality monitoring data for Great Western Reservoir and Standley Lake and analysis of bottom sediment samples for numerous potential RFP-derived contaminants, including various radionuclides and beryllium.

- A plutonium-bearing horizon of bottom sediments in Great Western Reservoir and Standley Lake has been covered by subsequent sedimentation. The highest sediment plutonium concentrations were found to exist in the deepest areas of each reservoir. The concentrations of plutonium in the sediments in areas of highest exposure potential (i.e., near-shore areas) of Great Western Reservoir and Standley Lake are above background levels, as measured by several past studies in sediments of Colorado Front Range reservoirs believed to be unaffected by RFP releases.

- Maximum plutonium concentrations measured to date in Great Western Reservoir sediments are several times higher than those measured to date in Standley Lake sediments.

- Only four sediment samples have been collected (all in 1970) to assess plutonium concentrations in Mower Reservoir sediments. The highest plutonium concentrations measured were roughly twice the estimated background concentration due to atmospheric testing fallout, and were several times lower than the highest concentrations measured to date in Standley Lake.

- Plutonium is strongly adsorbed to the clay-rich sediments typical in impoundments near the RFP. Studies have shown that plutonium in the reservoir sediment columns is effectively immobilized.

- Routine water quality monitoring indicates that water quality in Standley Lake and Great Western Reservoir has not been measurably impacted by plutonium in the reservoir sediments. A single water sample collected in 1970 from Mower Reservoir showed background plutonium concentrations (background is due to atmospheric testing fallout).

- Residential tap water derived from Standley Lake and Great Western Reservoir is routinely analyzed for plutonium. Results consistently indicate that plutonium concentrations are well below CDH drinking water standards.

- Of the many potential exposure pathways identified for the reservoirs, the airborne pathway from reentrainment of exposed sediments is considered the most significant pathway that can convey plutonium to human receptors from Sites 200-202. Airborne plutonium concentrations measured by air monitors downwind of Sites 200-202 have remained well below the 0.02 picocuries per cubic meter (pCi/m^3), or 0.0007 becquerel per cubic meter (Bq/m^3) standard set by DOE. All potential exposure pathways, however, will be addressed under scheduled RCRA Facility Investigation/Remedial Investigation (RFI/RI) activities at Sites 200-202.

Additional data necessary to support a quantitative risk assessment for Sites 200-202 will be collected during scheduled RFI/RI activities. This report will serve as the basis for the RFI/RI scoping process. Risk assessment and site characterization needs will be integrated in the RFI/RI to ensure that all potential site contaminants and exposure pathways are identified and characterized to the extent necessary to perform a quantitative human health risk assessment.