

# Los Alamos

NATIONAL LABORATORY

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ESH-19:99-0080

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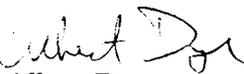
H.L. "Jody" Plum  
Office of Environment and Projects  
U.S. Department of Energy  
Los Alamos Area Office  
Los Alamos, New Mexico 87544-5000

Dear Mr. Plum:

**SUBJECT: SANDIA CANYON PCB MAMMAL STUDY**

As you requested, attached is a summary report for an ESH-20 Study on PCB concentrations found in small mammals collected from Sandia Canyon in 1995 and 1996. Kathy Bennett of ESH-20 has indicated that a more detailed, LA-MS report on the study will be completed in the near future. A copy of that report will be forwarded to your office when it is available. If you have any questions, please call me at 667-4715.

Sincerely,



Albert Dye  
Hazardous and Solid Waste Group

AD/vh

Attach: a/s

CY: Author File  
ESH-19 File



HSWA LANL G/m/98  
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## **Summary of PCB Analysis in Small Mammals within Sandia Canyon Wetland**

During the summer of 1996 concerns developed about polychlorinated biphenyls (PCB) within Sandia Canyon. The Water Quality Group (ESH-18) contacted the Ecology Group (ESH-20) to determine if there were any archived samples of small mammals collected from Sandia Canyon that could be screened for PCBs. During the summer of 1995 and 1996, the Ecology Group conducted a small mammal study in the wetland in upper Sandia Canyon. As a part of this study, all small mammals captured during the last trapping night during 1995 were collected and euthanized for confirmation of species identification. The animals were stored in a freezer. Additionally, samples were also available from the recently completed 1996 study in which all small mammals trapped were collected, euthanized and stored in a freezer, as part of collaborative effort with University of New Mexico to study genetics of small mammals and Hantavirus. Although the small mammal study was not originally designed to evaluate potential PCB uptake in small mammals, ESH-18 and ESH-20 believed the animals frozen could be used as a first level screen to determine if additional studies should be conducted to examine PCB uptake in small mammals within the Canyon.

The Ecology Group working with Paragon Laboratories and Rocky Mountain Arsenal developed a procedure for an appropriate sample composition to serve as a screen for PCBs. Rocky Mountain Arsenal had recently analyzed numerous small mammal samples for PCBs and found that submission of the entire animal served to dilute the sample

because PCBs tended to concentrate in organs and adipose tissue. Therefore, the Ecology Group with concurrence from ESH-18, decided to perform dissections on the small mammals and submitted samples composed of only adipose tissues and internal organs (including brain). This sample composition would then contribute to a conservative screen.

Thirty small mammal samples were submitted to Paragon Laboratory for PCB analysis during 1996 from the 1995 study. Animals selected for analysis came from either Web 1 or Web 2 (see attached map). These webs were closer to areas where known PCB contamination existed. No animals were selected from Web 3. In order to provide a conservative screen, animals selected for analysis were species usually found in habitats of higher moisture content, such as voles and harvest mice. These animals would spend the majority of their life within the cattail marsh and associated stream channel. Of the thirty samples submitted, nine samples had detectable levels of PCBs and were found from seven different trap locations within Web 1. Detectable levels ranged from 49  $\mu\text{g}/\text{kg}$  to 2500  $\mu\text{g}/\text{kg}$  of PCBs (Arochlor-1260) in small mammal adipose tissue and organs. Detectable levels are given on the attached map.

From these initial results ESH-18, ESH-19 and ESH-20 decided to submit samples from the 1996 small mammal study to see if similar results were obtained before developing and funding an extensive PCB uptake study in Sanda Canyon. The same procedure was used for the 1996 samples with one exception. No shrews were submitted for analysis from the 1995 study because of insufficient archived samples. However, during the 1996

study numerous shrews had been collected and archived. Shrews had been found in other studies to have higher levels of contaminants compared to other species because of their feeding strategies. Thirty-four samples were submitted for analysis. Animals selected for analysis came from either Web 1 or Web 2 (see attached map). No animals were selected from Web 3. Each sample comprised of adipose tissue and organs from 1 animal with the exception of shrew samples. Shrew samples were composite samples of five animals. Composite shrew samples were used because of very low body weights and sample volume. Three samples of shrews representing fifteen animals were submitted. Of the thirty-four samples submitted, sixteen samples had detectable levels of PCBs. Detectable levels ranged from 110  $\mu\text{g}/\text{kg}$  to 19000 $\mu\text{g}/\text{kg}$  of PCBs (Arochlor-1260) in small mammal adipose tissue and organs. All three shrew samples had detectable levels of PCBs and the highest levels were found in shrew samples. Detectable levels are given on the attached map.

After receiving two years of screening data, during 1998 a background/control site was selected as a reference to the 1995 and 1996 samples. A site was selected in the Jemez Mountains with no known history of PCB contamination (Figure 1). The site was a wetland community in a canyon bottom where similar small mammal composition to Sandia Canyon was likely. Traps were arranged in a transect configuration rather than a web configuration used in Sandia Canyon. Transects were used because of topographical constraints in the canyon. Forty samples were submitted to Paragon Laboratory for PCB analysis, but only thirty samples yielded results due to a laboratory misprocessing. Of

the thirty samples analyzed, one sample was a composite shrew sample. No detectable levels of PCBs were found in any of the samples.

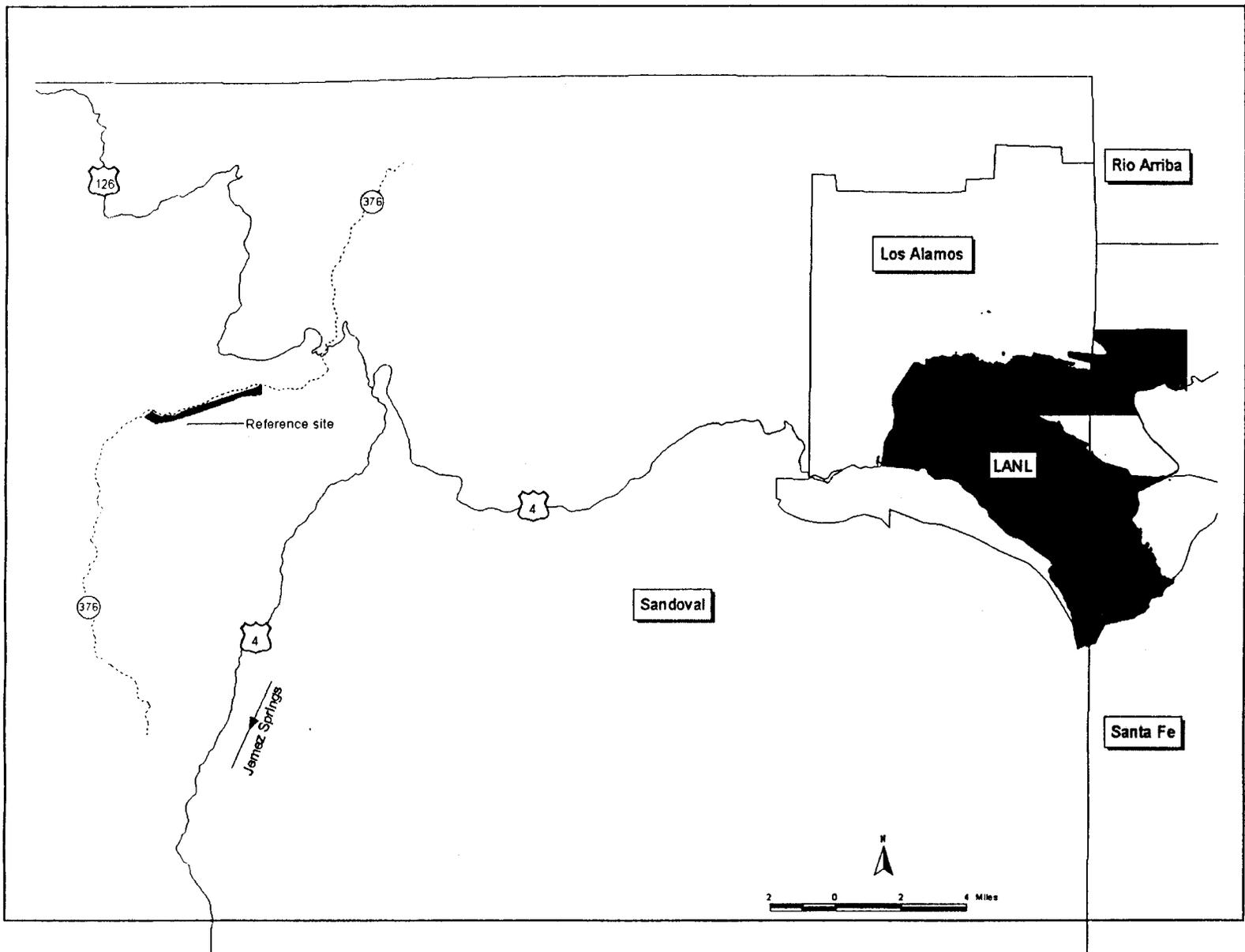


Figure 1. Location of reference site in the Jemez Mountains.