**Response to the Notice of Disapproval for the**
**Nest Box Monitoring Report for the Upper Pajarito Canyon Watershed**
**Los Alamos National Laboratory EPA ID No: NM0890010515, HWB-LANL-10-075,**
**Dated October 8, 2010**

## INTRODUCTION

To facilitate review of this response, the New Mexico Environment Department's (NMED's) comments are included verbatim. Los Alamos National Laboratory's (LANL's or the Laboratory's) responses follow each NMED comment.

## SPECIFIC COMMENTS

### NMED Comment

1. *The conclusion of the Report indicates that further characterization of metals for cavity-nesting birds and their food in the Pajarito watershed reaches is not warranted based on the exposure evaluation calculated using nest box insects collected in 2009. This conclusion is based upon limited data. Metals data (excluding mercury) were available for two sampling events (2007 and 2009), while mercury data were only available for a single sampling event (2009). As noted in the* Pajarito Canyon Biota Investigation Work Plan*, (July 2006) (IWP), "[t]he primary tool for risk characterization of potential effects on abundance is trend analysis versus predicted hazard quotient (HQ) for constituents of potential ecological concern (COPECs) (e.g., polychlorinated biphenyls (PCBs) and inorganic constituents). Concentrations in eggs and insects will be used to generate central tendency estimates and upper bound concentrations (95% upper confidence limit) of inorganic chemicals, PCBs, and semi-volatile organic chemicals (SVOCs) in eggs and insects."*

   *Sufficient data have not been collected to adequately develop any trends or conduct statistical analyses. One year of data for mercury is not adequate to assess trends or develop a central tendency estimate or upper bound concentration. Based on the limited data provided in the Report, the date objectives of the biota investigation work plan have not been met and additional data for inorganics (in addition to the proposed PCB data) are needed.*

### LANL Response

1. Inorganic chemicals (including mercury) will be added to the analyses proposed in the report.

### NMED Comment

2. *The IWP indicates that nest box studies will include an evaluation of the potential impacts from semi-volatile organic chemicals (SVOCs). It is not clear from the Report that sampling is proposed or planned for SVOCs. The Permittees must indicate when they will be evaluated or provide sound technical reasoning for not evaluating them.*

### LANL Response

2. As stated in the NMED-approved Pajarito Canyon Investigation Report, Revision 1 (PCIR), "Cyanide and phthalate esters [bis(2-ethylhexyl)phthalate, di-n-butyl phthalate] were not measured in tissues,

but these COPECs have very limited spatial extent in sediments (Section 7.1, Table 7.1-1). Their omission does not represent a significant uncertainty for this assessment" (p. 84). LANL has added information on the frequency and magnitude of phthalate ester detections in the revised report to support this statement. Thus, LANL does not propose any additional monitoring for semivolatile organic compounds.

**NMED Comment**

3. *The nest box report further states that, "Other lines of evidence for evaluating risks to cavity-nesting birds include field measures of nest success. Such studies have not identified any potential for ecological risk in the Pajarito watershed. For example, robust evaluations based on a long record of observations of sex ratios of fledgling birds have shown no statistically significant differences in sex ratios between canyons or watersheds (Fair et al. 2009, 106686). Thus, there is no indication of contaminant effects on sex ratios across the monitoring network or based on the field measures of nest success evaluated in this report. Overall, the weight-of-evidence indicates that COPECs in the Pajarito reaches do not pose a potential risk to population abundance or persistence and species diversity of avian ground invertivore feeding guild species."*

   *State whether the referenced data consist of a sole year or several years of observations (e.g., 2006 to present). The biota work plan indicates that shell thickness would also be monitored and that scatter plots to evaluate trends in nest success and eggshell thickness along gradients in elevation or COPEC concentrations will be developed. The Permittees must indicate whether or not these data have been collected. Discuss whether or not sufficient data have been collected to develop a trend analysis. The Permittees must indicate whether or not any robust analysis of all data has been conducted.*

**LANL Response**

3. The Fair et al. report cited in PCIR is a comprehensive statistical analysis of gender ratios for the entire cavity-nesting bird monitoring network. The time period covered by these analyses was 1997 to 2008. Eggshell thickness or other measures of nest success were not evaluated by Fair et al. However, statistical analyses of nest success (including eggshell thickness) are presented in the NMED-approved PCIR in Appendix E (pp. E-3–E-4; Figures E-1.2-11 through E-1.2-34), which states, "there is no evidence of impairment of nesting success at Laboratory locations relative to reference locations" (p. E-2).

   Because additional analyses of insects collected from the cavity-nesting bird monitoring network is planned, LANL proposes to include an evaluation of the nest monitoring data in the subsequent report that will summarize these associated nest success results. These data (and an evaluation of the nest monitoring data) will be reported by August 31, 2011, or by August 31 of subsequent years if sample submission is delayed because of insufficient sample mass.

**NMED Comment**

4. *Several of the hazard quotients provided in Table 3 are significantly elevated (one to two orders of magnitude) compared to the target hazard level of 1.0. Based on the limited amount of available data combined with the elevated HQs, sufficient lines of evidence have not been provided to adequately demonstrate that there are no adverse impacts to cavity-nesting birds. Additional data and refinement of the risk assessment is needed to draw any conclusion as to impact on this class of birds.*

**LANL Response**

4. The largest magnitude of potential risks as indicated by hazard quotients (HQs) >1 was associated with the insects collected from reach AW-1 in 2007. The concentrations of cadmium, copper, lead, mercury, vanadium, and zinc in insect samples from reach AW-1 in 2007 led to the supplemental sampling in 2009. Much lower concentrations were measured in the 2009 samples from reach AW-1, and HQs were lower by 50% to more than an order of magnitude. The report states, "Therefore, concentrations of cadmium and lead in insects represent a potential for adverse ecological effects (based on the HQ > 1), and their distribution is consistent with a Laboratory source. Other than the 2007 samples, the maximum HQs for cadmium and lead were between 1 and 3" (p. 3). In addition, LANL proposes to include other information (such as a lowest observed adverse effect level analysis and more detailed data presentation of field observations of nest success) to support the assessment of risk for cavity-nesting birds. This information will be included in the report prepared by August 31, 2011, or by August 31 of subsequent years if sample submission is delayed because of insufficient sample mass.

**NMED Comment**

5. *In light of the results of recent air emissions modeling associated with Technical Area 16, dioxin/furan congeners must be included in the Upper Pajarito Canyon Biota Investigation.*

   *NMED agrees with the Permittees that LANS must submit insects collected in 2010 from nest boxes in the upper Pajarito Canyon watershed reaches for SVOC, PCB, and dioxin/furan congener analyses if sufficient sample mass is available. If sample mass is insufficient for these analyses, samples from 2010 must be combined with samples from subsequent years. These data must be reported by August 31, 2011, or by August 31 of subsequent years if sample submission is delayed because of insufficient sample mass.*

**LANL Response**

5. LANL agrees to add dioxins/furans to the analytical suite for insects collected from nest boxes in the upper Pajarito Canyon watershed. However, LANL offers three observations regarding this additional analysis. First, the reaches in the upper Pajarito Canyon watershed (e.g., AW-1) are approximately 1 mi from the Technical Area 16 burn units and the direction is northwest (not the direction of prevailing winds, which is to the northeast). Second, other sources of dioxins/furans can be found in this part of the Pajarito Canyon watershed, including post-fire deposits from the Cerro Grande fire. Third, to achieve appropriate detection limits, the analytical laboratory determined it will require 50 g of insects. Based on the previous sampling (Table 1 of the report), on average each nest box provides between 0.4 g and 0.8 g of insects per year. Given that the birds are territorial, each reach can include up to 10 boxes, and not all boxes may be occupied each year, a reach may supply between 2 g and 10 g of insects per year. Thus, it may take from 5 to 25 yr to obtain sufficient sample mass for dioxins/furans, if all else is excluded.

   Given these observations on the dioxin/furan chemical analysis of nest box insects, it is suggested that sample masses collected be reviewed annually to determine if sampling should continue or a report should be prepared, based on the continuing field observations of nesting success as well as the available analytical results from nest box insects.

**Cross-Reference of NMED NOD Comments and Revisions to Nest Box Monitoring Report for the Upper Pajarito Canyon Watershed**

| NMED NOD Comment No. | Summary of NOD Comment Requirement | Section(s) in Original Report | Section(s) in Revised Report | Nature of Revision |
|---|---|---|---|---|
| **Specific Comments** | | | | |
| 1 | Provide additional data for inorganic chemicals in addition to polychlorinated biphenyls. | p. 3 | p. 3 | Added inorganic chemicals to analytical suite. |
| 2 | Clarify if sampling is proposed or planned for semivolatile organic compounds (SVOCs) and indicate when they will be evaluated, or provide a sound technical reason for not evaluating them. | n/a | p.1 | Added text explaining why SVOCs will not be analyzed. |
| 3 | State whether robust analyses of all data have been conducted. | p. 3 | p. 3 | Clarified time period for assessment of gender ratios and added statement that nest monitoring data will be evaluated in the follow-up report. |
| 4 | Add data and refine the risk assessment to draw any conclusion as to impact on cavity-nesting birds. | p. 3 | p. 3 | Deleted text stating that further evaluation of cavity-nesting birds and their food. |
| 5 | Include dioxin/furan congeners in the insect chemical analyses. | n/a | p. 3 | Included dioxins and furans in the analyses with caveats. Added Table 4 to report to present detection limits and sample mass required for each analysis. |

*n/a = Not applicable.