



AQS, Inc.
2112 Deer Run Drive
South Weber, Utah 84405

(801) 476-1365
www.aqsnet.com

October 8, 2012

DCN: NMED-2012-24

Mr. David Cobrain
New Mexico Environment Department
Hazardous Waste Bureau
2905 Rodeo Park Dr. East
Building One
Santa Fe, NM 87505

RE: Review of the baseline ecological risk assessment presented in *Phase II Supplemental Assessment at AOC A (SS-19)*, Cannon Air Force Base, New Mexico, February 2012.

Dear Mr. Cobrain:

In an email dated October 2, 2012, Lane Address requested a review of the baseline ecological risk assessment (ERA) portion of the *Phase II Supplemental Assessment at Area of Concern (AOC) A* at Cannon Air Force Base (CAFB), New Mexico, and specifically, whether this baseline ERA would meet the requirements for NMED approval. It is not clear whether the site met the NMED requirements for clean closure based on a residential scenario (although the lead concentrations associated with this assessment are well below residential levels); this letter only addresses the baseline ERA conducted on the additional soil samples analyzed for lead at AOC A.

A baseline ERA was conducted at AOC A because detected concentrations of lead in four of the additional soil samples slightly exceeded Los Alamos National Laboratory's (LANL's) Ecological Screening Levels (ESLs) for the American robin and the Montane shrew. However, the baseline ERA concluded that the site would provide little or no suitable foraging habitat since the site is industrially developed: 67% of the site is covered in roads/parking lots/buildings, and the remaining 33% consists of regularly maintained lawns. Therefore, further ecological evaluation was not conducted at AOC A.

While the site may potentially provide some foraging habitat for ecological receptors, it is agreed that it would not be significant due to the limited area (possibility of 33% of the site) and the relatively small size of the site. The assessment provided by CAFB was limited to an initial screening (Tier 1) based on conservative toxicity data (no-observed adverse effect levels, NOAELs). Because the initial screening did result in slightly elevated hazard quotients (HQs), further quantitative ecological evaluation should have been conducted for the American robin and Montane shrew receptors using an application of lowest observed adverse effect levels (LOAELs) and area use and population area use factors.

We assumed that the average home ranges of 1.1 acres for the American Robin and 0.96 acres for the Montane shrew. In addition, we assumed that only 33% of the acreage at the site was suitable for habitat. Using modifications of the area use factors and population use factors along with LOAEL-based LANL ESLs, more refined HQs were calculated as shown in the below tables.

Table 1 - Refined HQ for American Robin, Insectivore.

Constituent	Maximum (mg/kg)	LOAEL-based ESL American Robin (Avian Insectivore) (mg/kg)	AUF	PAUF	Adjusted Individual HQ	Adjusted Population HQ
Lead	1.12E+02	2.80E+01	1.80E-01	4.50E-03	7.20E-01	1.80E-02

ESL = LANL ecological screening level based on LOAEL.

AUF (area use factor) = exposure area/home range. Exposure area is 33% of site area (0.6 acre) = 0.2 acre. Average home range for American robin is 1.1 acre (USEPA, 1993).

PAUF (population area use factor) = exposure area/population area. Exposure area is 33% of 0.6 acre = 0.2 acre. Population area for American robin is 44 acres (USEPA, 1993).

Table 2 - Refined HQ for American Robin, Omnivore.

Constituent	Maximum (mg/kg)	LOAEL-based ESL American Robin (Avian Omnivore) (mg/kg)	AUF	PAUF	Adjusted Individual HQ	Adjusted Population HQ
Lead	1.12E+02	3.30E+01	1.80E-01	4.50E-03	6.11E-01	1.53E-02

ESL = LANL ecological screening level based on LOAEL.

AUF = exposure area/home range. Exposure area is 33% of site area (0.6 acre) = 0.2 acre. Average home range for American robin is 1.1 acre (USEPA, 1993).

PAUF = exposure area/population area. Exposure area is 33% of site area (0.6 acre) = 0.2 acre. Population area for American robin is 44 acres (USEPA, 1993).

Table 3 - Refined HQ for American Robin, Herbivore.

Constituent	Maximum (mg/kg)	LOAEL-based ESL American Robin (Avian Herbivore) (mg/kg)	AUF	PAUF	Adjusted Individual HQ	Adjusted Population HQ
Lead	1.12E+02	4.20E+01	1.80E-01	4.50E-03	4.80E-01	1.20E-02

ESL = LANL ecological screening level based on LOAEL.

AUF = exposure area/home range. Exposure area is 33% of site area (0.6 acre) = 0.2 acre. Average home range for American robin is 1.1 acre (USEPA, 1993).

PAUF = exposure area/population area. Exposure area is 33% of site area (0.6 acre) = 0.2 acre. Population area for American robin is 44 acres (USEPA, 1993).

Table 4 - Refined HQ for Montane Shrew.

Constituent	Maximum (mg/kg)	LOAEL-based ESL Montane Shrew (mg/kg)	AUF	PAUF	Adjusted Individual HQ	Adjusted Population HQ
Lead	1.12E+02	1.30E+02	2.08E-01	5.00E-03	1.79E-01	4.31E-03

ESL = LANL ecological screening level based on LOAEL.

AUF = exposure area/home range. Exposure area is 33% of site area (0.6 acre) = 0.2 acre. Average home range for Montane shrew is 0.96 acre (USEPA, 1993).

PAUF = exposure area/population area. Exposure area is 33% of site area (0.6 acre) = 0.2 acre. Population area for Montane shrew is 39 acres (USEPA, 1993).

Reference: US EPA, 1993. *Wildlife Exposure Factors Handbook*. EPA/600/R-93/187. December.

The calculated ecological HQs would be well below target levels for both individual American robin and Montane shrew receptors and populations based on a more refined assessment, indicating that lead in soil at AOC A would not likely pose ecological risk. Therefore, the conclusion of the baseline ERA presented in the *Phase II Supplemental Assessment at Area of Concern (AOC) A*, as clarified with this assessment, is adequate and would meet NMED requirements for approval.

If you or any of your staff have questions, please contact me at (801) 451-2864 or via email at paigewalton@msn.com.

Thank you,



Paige Walton
AQS Senior Scientist and Program Manager

cc: Lane Andress, NMED (electronic)
Joel Workman, AQS (electronic)
Sunny McBride, AQS (electronic)