LANL TA-03

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Date: August 28, 2002
Refer to: ER2002-0601

Mr. John Young, Corrective Action Project Leader
Permits Management Program
NMED – Hazardous Waste Bureau
2905 Rodeo Park Drive East
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Santa Fe, NM 87505-6303

AUG 2002

SUBJECT: CORRECTIONS TO THE RESPONSE TO THE REQUEST FOR SUPPLEMENTAL INFORMATION (RSI) FOR THE VOLUNTARY CORRECTIVE ACTION (VCA) COMPLETION REPORT FOR POTENTIAL RELEASE SITE (PRS) 03-056(c)

Dear Mr. Young:

Enclosed are two copies of the Los Alamos National Laboratory (LANL) Environmental Restoration (ER) Project's correction to the response to your RSI (ER2002-0405) for the "VCA Completion Report for PRS 03-056(c)" The ER Project Office provided response to the RSI on June 19, 2002; however, the attached corrections and/or clarifications and the format in which they are presented are based on an August 14, 2002, teleconference between Ms. Gabriela Lopez Escobedo (ER Project Industrial Sites Team Leader) and Ms. Neelam Dhawan (NMED-HWB Staff).

If you have any questions, please contact Gabriela Lopez Escobedo at (505) 665-7352 or David Gregory at (505) 667-5808.

Sincerely,

David McInroy, Acting Program Manager
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Sincerely,

Everett Trollinger, Project Manager
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Enclosure: Correction to RSI (ER2002-0600)

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Correction to the "Response to the Request for Supplemental Information (RSI) for the Voluntary Corrective Action (VCA) Completion Report for Potential Release Site (PRS) 03-056(c)"

INTRODUCTION

This document provides correction and clarification to the "Response to the Request for Supplemental Information for the VCA Completion Report for PRS 03-0-56(c)," dated June 19, 2002, from the Los Alamos National Laboratory (LANL) Environmental Restoration (ER) Project to the New Mexico Environment Department (NMED) Hazardous Waste Bureau (HWB). To facilitate review of this response, only those original comments and RSI responses that need correction or clarification have been included here. In addition, the section needing correction or clarification has been highlighted in gray. LANL's correction or clarification follows each NMED comment/LANL response.

SPECIFIC COMMENTS

NMED Comment

1. ***Table 1.0-1, Chronology of ER Project Activities at PRS 3-056(c), page 2:***
   Please include the request and approval dates of contained-in determination for the waste generated at the site during the VCA activities. LANL sent a request for "no longer contained in" determination to NMED on November 21, 2000. NMED approved the request on December 6, 2000.

LANL Response

1. Table 1.0-1 has been revised to include the request for "No Longer-Contained-in Determination for Potential Release Site (PRS) 03-056(c)," submitted on November 21, 2000 (LANL 2000, 64630), and the NMED approval of the request on December 6, 2000 (NMED-HWB 2000, 70136). Please see the shaded rows in revised Table 1.0-1 below.

Revised Table 1.0-1
Chronology of ER Project Activities at PRS 03-056(c)

Date	Activity (Reference)	Synopsis of Activity
November 1991	Site sampled (LANL 1993, 20947)	Environmental Management Group at the Laboratory samples the site, preceding a slope-stabilization project. PCBs are detected (maximum of 9600 ppm).
June 1993	RFI work plan (LANL 1993, 20947)	The "RFI Work Plan for OU 1114" was submitted to EPA; the work plan included a sampling and analysis plan for PRS 03-056(c).
August 1994	RFI sampling at site (LANL 1995, 52951)	PRS 03-056(c) sampled as part of Phase I RFI by ER Project. PCBs were detected from <1 to 9600 ppm; mercury and tetrachloroethene were also detected.
June 1, 1995	EC plan submitted (LANL 1995, 52951)	EC plan for PRS 03-056(c) submitted to EPA.
August 9, 1995	Received list of deficiencies from EPA (EPA 1995, 55740)	EPA commented on EC plan and submitted list of deficiencies; disagreed with the 10 ppm cleanup level proposed and required a more stringent cleanup level.

Date	Activity (Reference)	Synopsis of Activity
August 1995–March 1996	LANL executed corrective action at site	LANL conducted remedial activities (an EC): 1000 yd^3 of soil containing >10 ppm total PCBs removed from slopes and mesa top. LANL performed human health and ecological risk assessment to support the decision to leave <10 ppm PCBs on-site, and LANL responded to the notice of deficiency (NOD). LANL and the Department of Energy (DOE) engaged in discussions with the EPA about the cleanup level for the site.
April 1996	Status report (LANL 1996, 55746) submitted	LANL submitted status report to EPA and justified the 10 ppm cleanup level.
March 13, 1996	NOD received from NMED (NMED 1996, 54179)	NMED submitted NOD on status report; requested justification for 10 ppm cleanup level.
May 2, 1996	Response to NOD (LANL 1996, 54398) submitted	LANL submitted response to NOD with justification for cleanup level, with copies to EPA Region 6 TSCA.
November 6, 1996	Conference call	In a conference call with NMED and EPA Region 6 TSCA, ER Project personnel indicated that no further activity could be pursued until a regulatory decision was received on proposed cleanup level (i.e., response to the May 2, 1996, NOD response).
June 10, 1997	Correspondence sent to DOE from EPA	EPA Region 6 TSCA provided e-mail documenting the cleanup level established by the EPA Region 6 TSCA PCB program office for PRS 3-056(c). The cleanup level was established at less than 1 ppm.
September 1999	LANL submits VCA plan (LANL 1999, 64711)	VCA plan is submitted to NMED and EPA Region 6 TSCA for review and approval. Plan presents the approach for executing a cleanup at the site to meet the <1 ppm cleanup level.
August 2000	LANL makes application for risk based disposal approval (LANL 2000, 68684)	LANL prepared an application to EPA Region 6, requesting approval for disposal of <50 ppm PCB-contaminated soil as PCB remediation waste.
August 31, 2000	Approval of VCA plan (NMED 2000, 68683)	NMED approves VCA plan.
September 2000	VCA begins	VCA excavation activities begin at PRS 3-0565(c).
November 2000	EPA approves application (EPA 200, 68772)	EPA Region 6 approved the cleanup and disposal application, making it possible to dispose of most of the waste from the cleanup at an industrial landfill.
November, 2000	No Longer Contained-in Determination Request (LANL 2000, 64630).	LANL submitted request for "No Longer Contained-in Determination for Potential Release Site (PRS) 03-056(c)" to NMED
December, 2000	NMED approves "No Longer Contained-in Determination" (NMED-HWB 2000, 70136)	NMED approved the request for "No Longer-Contained-in Determination for Potential Release Site (PRS) 03-056(c)".
March 2001	Excavation activities completed	Excavation activities that are part of the VCA are completed.
April 18, 2001	NMED/LANL meeting	Draft site restoration plan is presented and discussed with NMED at the monthly meeting between NMED Hazardous Waste Bureau (NMED HWB) and LANL. NMED agrees to proceeding with site restoration.
August 2001	Site restoration	Site restoration at PRS 3-056(c) is completed.

LANL Correction

1. In Table 1.0-1 above, in the row dated September 2000, instead of PRS 3-0565(c) the correct number is PRS 3-056(c).

NMED Comment

5. ***Table 2.4-3, PRS 3-056(c) Results of RFI Inorganic Data Review, page 24:***
LANL Statement: *For cadmium soil samples, under column 4 (Rationale) "Retained as a COPC because detection limits in two samples were greater than soil BV."*
NMED Comment: *Correct the rationale for retention of cadmium as a COPC to state that it was retained because one sample value was above BV. Correct the caption for the table, results are from a VCA not an RFI.*

LANL Response

5. Cadmium was retained because one sample value was above BV. Please see the shaded row in revised Table 2.4-3, below, for the correct rationale.

Revised Table 2.4-3
PRS 03-056(c)
Results of VCA Inorganic Data Review

Analyte	Media	Result	Rationale
Aluminum	Soil	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the soil BV
	Qbt 3	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the Qbt 3 BV
Antimony	Soil	No data	Retained for qualitative evaluation; all antimony results were rejected (R-qualified) due to poor recovery and high potential for false-negative results; data qualified as R are not of sufficient quality to use in a quantitative risk assessment
	Qbt 3	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the Qbt 3 BV
Arsenic	Soil	Retained	Retained as a COPC because one sample was detected at a concentration greater than the soil BV and range
	Qbt 3	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the Qbt 3 BV
Barium	Soil	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the soil BV
	Qbt 3	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the Qbt 3 BV
Beryllium	Soil	Eliminated	Eliminated as a COPC because the one sample concentration greater than the soil BV was within the range of the soil background data
	Qbt 3	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the Qbt 3 BV
Cadmium	Soil	Retained	Retained as a COPC because the detection limit for one sample is greater than the soil BV
	Qbt 3	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the Qbt 3BV
Calcium	Soil	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the soil BV
	Qbt 3	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the Qbt 3 BV

Revised Table 2.4-3 (continued)

Analyte	Media	Result	Rationale
Chromium, total	Soil	Eliminated	Eliminated as a COPC because one sample concentration greater than the soil BV was within the range of the soil background data
	Qbt 3	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the Qbt 2,3,4 BV
Cobalt	Soil	Retained	Retained as a COPC because one sample concentration was greater than the soil BV and range
	Qbt 3	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the Qbt 2,3,4 BV
Copper	Soil	Eliminated	Eliminated as a COPC because the two sample concentrations greater than the soil BV were within the range of the soil background data
	Qbt 3	Eliminated	Eliminated as a COPC because the one sample concentration greater than the Qbt 2,3,4 BV was within the range of the Qbt 2,3,4 background data
Iron	Soil	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the soil BV
	Qbt 3	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the Qbt 3 BV
Lead	Soil	Retained	Retained as a COPC because three sample values greater than the soil BV were also greater than the range of the soil background data
	Qbt 3	Retained	Retained as a COPC because one sample value greater than the Qbt 2,3,4 BV was also greater than the range of the tuff background data
Magnesium	Soil	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the soil BV
	Qbt 3	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the Qbt 3 BV
Manganese	Soil	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the soil BV
	Qbt 3	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the Qbt 3 BV
Mercury	Soil	Retained	Retained as a COPC because the detection limit in 1 sample value was greater than the soil BV
	Qbt 3	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than Qbt 3 BV
Nickel	Soil	Retained	Retained as a COPC because 1 sample greater than the soil BV was also greater than the soil range
	Qbt 3	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than Qbt 3 BV
Potassium	Soil	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the soil BV
	Qbt 3	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the Qbt 3 BV
Selenium	Soil	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the soil BV
	Qbt3	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the Qbt 3 BV

Revised Table 2.4-3 (continued)

Analyte	Media	Result	Rationale
Silver	Soil	Retained	Retained as a COPC because two values were greater than the soil BV and the range
	Qbt 3	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the Qbt 3 BV
Sodium	Soil	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the soil BV
	Qbt 3	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the Qbt 3 BV
Thallium	Soil	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the soil BV
	Qbt 3	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the Qbt 3 BV
Vanadium	Soil	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the soil BV
	Qbt 3	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the Qbt 3 BV
Zinc	Soil	Retained	Retained as a COPC because 6 sample values were greater than the soil BV
	Qbt 3	Eliminated	Eliminated as a COPC because it was not detected at concentrations greater than the Qbt 3 BV

LANL Correction

5. In Table 2.4-3, in the row that contains cadmium for the soil media, the text in the rationale cell is revised to state that cadmium was, "Retained as a COPC because *one sample was detected at a concentration* greater than the soil BV."

NMED Comment

8. ***Section 2.5.1.1(b), Human Health Screening Evaluation, page 44:***
LANL Statement: *"The total cancer risk is approximately 6 in 100,000, or $6x10^{-5}$, if the anomalous detection of arsenic is included in the calculation, but only 2 in 100,000 ($2x10^{-5}$) if the anomalous data are excluded."*
NMED Comment: *Clarify the discrepancy between the above statement and the statement on page 47, third paragraph: "Therefore, when more restrictive data are used, the potential additive risk is approximately 2 in 1 million, which is below NMED's acceptable level".*

LANL Response

8. The statement on page 44 refers to differences in additive cancer risk estimates from inclusion/exclusion of the anomalous arsenic detection only; that is, additive cancer risk estimates from Aroclor-1260, arsenic, benzene, and tetrachloroethene are approximately 6×10^{-5}. If the anomalous detection of arsenic (the only detection above background) is excluded from this sum, and if the next highest concentration of arsenic (5.9 ppm, from location ID 03-14367, sample ID RE03-01-0018) is included in the sum, the risk estimate drops to 2×10^{-5}. These numbers are shown in the table below.

Analyte	Exposure Point Concentration (ppm)	Exposure Point Concentration (ppm)
Aroclor-1260	0.62	0.62
Arsenic	21.1[a]	5.9[b]
Benzene	0.012	0.012
Tetrachloroethene	23 (in tuff)	23 (in tuff)
Additive Cancer Risk	6×10^{-5}	2×10^{-5}

[a] UCL^{95} calculated, including uncharacteristic detection of 110 mg/kg
[b] Highest detection of arsenic, disregarding detection of 110 mg/kg

The statement on page 47 refers to differences in cancer risk for tetrachloroethene specifically, if the single positive result in tuff (23 ppm) is not considered and if the single detection in soil (0.008 ppm) is used instead. (Note that, on page 47 of the text, *0.007 ppm* for tetrachloroethene is a typographical error; it should read *0.008 ppm*.)

Analyte	Exposure Point Concentration (ppm)	Exposure Point Concentration (ppm)
Tetrachloroethene	23	0.008
Cancer risk	5×10^{-6}	1×10^{-9}

The risk estimate for tetrachloroethene is negligible if the detection limit of 0.008 is used as the exposure point concentration. Nevertheless, the additive cancer risk remains approximately 2×10^{-5} because it is predominated by the risk of approximately 1.5×10^{-5} from 5.9 ppm arsenic. Therefore, the last sentence in paragraph 3 on page. 47 should be revised to read as follows: "Therefore, when more restrictive data are used, the potential additive risk is approximately 2×10^{-5}, which is on the order of NMED's acceptable risk level."

LANL Correction

8. The shaded text in the paragraph above is replaced with "The risk estimate for tetrachloroethene is negligible if the *detected value of 0.008* is used as the exposure point concentration."

NMED Comment

9. ***Section 2.5.1.2, Ecological, page 47:***
NMED Comment: *Hazard Quotients (HQs) from comparison with LANL ESLs for PCBs indicate risk in magnitude 3-8 for avian receptors. These HQs are dismissed on the basis of the assumption used in the assessment that the site is 100% of the species' range. Potentially, the use of an appropriate adjustment factor for the home range of these avian species could reduce these HQs to below one, but nothing was done as part of this assessment to demonstrate this assertion is true. The site is located in habitat for threatened and endangered species (spotted owl) for which the bird receptor species (kestrel) serve as surrogate, which lends even more importance to further investigation of these HQs. Consideration of issues such as home range size and bioavailability need to be included in the calculations and evidence should be presented to support the mitigating effects of these considerations and to demonstrate their impact on the HQ values. LANL should perform an ecological risk assessment for the site since it failed the ecological screening assessment.*

LANL Response

9. The VCA completion report's assessment did not include a consideration of the area use factor (AUF) for wildlife species. The AUF is calculated as the ratio of an animal's home range to the area of a PRS (the maximum AUF is 1 if the home range is less than the area of the PRS). The HQs for end receptors have been recalculated and are shown in Table 1. The table also shows the difference that the AUF makes to receptors with large home ranges. The AUF-adjusted HQ values are less than 1 for all but four screening receptors: (1) deer mouse, (2) vagrant shrew, (3) robin (omnivore), and (4) robin (invertevore). Thus, consideration of AUF reduces the estimated potential for adverse ecological effects and, most importantly, reduces the HQ for the kestrel—the carnivore that serves as surrogate for the threatened and endangered Mexican spotted owl. It is also important to recognize that the PRS is considered *potential* habitat for the Mexican spotted owl; none of these owls currently inhabit this part of LANL property. The only known nesting site for the Mexican spotted owl is located in Cañon de Valle, approximately 3 km southwest of PRS 3-056(c).

Table 1
HQ Analysis for Aroclor-1260

Analyte	Receptor	ESL FY2001 (mg/kg)[a]	95UCL (mg/kg)[b]	HQ	Home Range (ha)	PRS Area (ha)	AUF	HQ, AUF-Adjusted
Aroclor-1260	Desert cottontail	1.2	0.541	0.45	1.5	0.55	0.37	0.16
	Deer mouse	0.15	0.541	3.6	0.075	0.55	1.00	3.6
	Vagrant shrew	0.075	0.541	7.2	0.39	0.55	1.00	7.2
	Red fox	0.37	0.541	1.5	699	0.55	0.0008	<0.01
	Robin (herbivore)	1.2	0.541	0.45	0.42	0.55	1.00	0.45
	Robin (omnivore)	0.096	0.541	5.6	0.42	0.55	1.00	5.6
	Robin (invertevore)	0.05	0.541	11	0.42	0.55	1.00	11
	Kestrel	0.2	0.541	2.7	13.1	0.55	0.04	0.11
	Kestrel (carnivore)	0.19	0.541	2.9	366[c]	0.55	0.0015	<0.01

[a] Source: ECORISK database (LANL 2000, 67823).
[b] Based on revised calculation of exposure point concentrations, see Tables 2 and 3.
[c] Home range for spotted owl (Gallegos et al. 1996, 57915), because the kestrel with a flesh diet serves as a surrogate for this species.

Tables 2 and 3 show the results of recalculating the Aroclor-1260 UCL without data from 9 sample locations (03-14314, 03-14313, 01-14311, 03-14315, 03-14322, 03-14325, 03-14316, 03-14308, 03-14324) that are now under 4 ft of fill and asphalt. These locations have been omitted in the recalculation because they are not available for exposure to wildlife or humans.

Table 2
Results of the Shapiro-Wilk Distributional Test

Analyte	Normal p-value	Lognormal p-value	Distribution
Aroclor-1260*	<0.0001	0.0002	Neither

* Results indicate that neither normal nor lognormal model is appropriate; therefore, results from the nonparametric bootstrap will be used for the UCL calculation.

Table 3
Summary of UCL Calculations

Analyte	Normal UCL (mg/kg)	Lognormal UCL (mg/kg)	Bootstrap UCL (mg/kg)	Count of Non-detects	Count of Samples	Maximum Non-detect (mg/kg)
Aroclor-1260	0.533	0.652	**0.541**	26	75	0.052

The bold number in Table 3 is the UCL that was chosen based on the distribution of the data.

The VCA completion report assessment used ESLs that were available in FY2001. Since the report was initially published, revised ESLs have been published (September 2001 and March 2002). The values for Aroclor-1260 were revised in these two versions of the ECORISK Database (LANL 2002, 72802). The Aroclor-1260 ESLs have changed because toxicity studies were published for this PCB mixture. Previously, the Aroclor-1260 toxicity values were based on Aroclor-1254 serving as surrogate. The Aroclor-1260 ESL for mammals is based on the rat, whereas the Aroclor-1254 toxicity value is based on the mink. Minks are known to be more sensitive to PCBs than other mammals (Moore et al., 1999, 73158), but the rat is more ecologically relevant to the types of mammals included among the screening receptors or those likely to be present at PRS 3-056(c). The ESLs have also changed for six other COPCs listed in the completion report's Table 2.5-4, but none of the other changes affected the HQ calculation or COPEC identification. (The following final soil ESLs changed between FY00 and FY01/02: arsenic increased from 0.59 mg/kg to 0.83 mg/kg; lead decreased from 76 mg/kg to 55 mg/kg; acetone increased from 1.8 mg/kg to 3.8 mg/kg; benzene decreased from 65 mg/kg to 55 mg/kg; toluene decreased from 71 mg/kg to 70 mg/kg; 1,1,1-trichloroethane decreased from 2800 mg/kg to 2500 mg/kg. Most of these changes are due to an updated bioaccumulation model in the FY01/02 ESL calculations.)

Table 4 presents the HQ values for the wildlife receptors based on the FY02 LANL ESLs and on a revised calculation of the exposure point concentration for Aroclor-1260.

Table 4
HQ Analysis for Aroclor-1260 Using FY02 LANL ESLs

Analyte	Receptor	ESL FY2002 (mg/kg)[a]	95UCL (mg/kg)[b]	HQ	Home Range (ha)	PRS Area (ha)	AUF	HQ, AUF-Adjusted
Aroclor-1260	Desert cottontail	660	0.541	<0.01	1.5	0.55	0.37	<0.01
	Deer mouse	10	0.541	0.05	0.075	0.55	1.00	0.05
	Vagrant shrew	5	0.541	0.11	0.39	0.55	1.00	0.11
	Red fox	32	0.541	0.02	699	0.55	0.0008	<0.01
	Robin (herbivore)	15	0.541	0.04	0.42	0.55	1.00	0.04
	Robin (omnivore)	0.86	0.541	0.63	0.42	0.55	1.00	0.63
	Robin (invertevore)	0.44	0.541	1.2	0.42	0.55	1.00	1.2
	Kestrel	1.8	0.541	0.30	13.1	0.55	0.04	0.01
	Kestrel (carnivore)	2.2	0.541	0.25	366[c]	0.55	0.0015	<0.01

[a] Source: ECORISK database (LANL 2002, 72802).

[b] Based on revised calculation of exposure point concentrations, see Tables 2 and 3.

[c] Home range for spotted owl (Gallegos et al. 1996, 57915), because the kestrel with a flesh diet serves as a surrogate for this species.

The analysis using FY02 ESLs calculates HQ values for avian receptors in the range of 0.3 to 1.2, which further supports the elimination of Aroclor-1260 as a COPEC. Consideration of AUFs for the kestrel or the kestrel (carnivore) further lowers the HQ values for Aroclor-1260, as illustrated by the AUF-adjusted HQ values presented in Table 4.

Therefore, even after considering the AUF and the revised ESLs, Aroclor-1260 remains eliminated from further consideration as a COPEC.

LANL Correction

9. The text in the shaded cell within Table 1 of the response to comment 9 above is revised as follows: the ESL FY2001 for dessert cottontail is 12 instead of 1.2, and as a result the HQ is 0.045 instead of 0.45 and the HQ AUF-Adjusted is 0.016 instead of 0.16. The corrected HQ and HQ AUF adjusted are much lower than originally reported. Also for clarification, the receptor "robin invertevore," which is called out in the response's Table 1 and Table 4, is the same receptor as the robin insectivore described in the VCA report. The term *invertevore* is more inclusive than *insectivore,* but both terms refer to the same receptor.