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Department of Energy
Office of Legacy Management

December 3, 2009

Mr. Timothy Fischer, Remedial Project Manager
United States Environmental Protection Agency
Region V-SR-6J
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

Mr. Thomas Schneider, Project Manager
Ohio Environmental Protection Agency
Southwest District Office
401 East Fifth Street
Dayton, Ohio 45402-2911

Dear Mr. Fischer and Mr. Schneider:

Subject: **Ohio Environmental Protection Agency Request for Summary Information Concerning the Fernald Boundary Air Monitoring History**

Reference: 1) Letter, T. Schneider to J. Powell, "Re: Cessation of Boundary Air Monitoring," dated October 20, 2009

Enclosed for your review is the summary information concerning the Fernald boundary air monitoring history that OEPA requested (Reference 1).

If you have any questions or require any additional information, please call me at (513) 648-3148.

Sincerely,

Jane Powell

Jane Powell
Fernald Preserve Site Manager
DOE-LM-20.1

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1000 Independence Ave., S.W., Washington, DC 20585	□	11025 Dover St., Suite 1000, Westminster, CO 80021
10995 Hamilton-Cleves Highway, Harrison, OH 45030	□	955 Mound Road, Miamisburg, OH 45342
232 Energy Way, N. Las Vegas, NV 89030	□	
REPLY TO: Harrison Office		

Enclosure

cc w/enclosure:
M. Murphy, USEPA-V, A-18J
Project Record File (thru W. Sumner)
Administrative Records (thru W. Sumner)

cc w/o enclosure:
T. Pauling, DOE-LM
F. Johnston, Stoller
G. Lupton, Stoller

Fernald Boundary Air Monitoring History

Background

The property boundary radiological air particulate monitoring program has been used to track and evaluate airborne emissions from Fernald since the late 1970s. During the production years, the primary emission sources were point sources (i.e., stacks and vents) from process facilities. Emission estimates from these stacks and vents were the primary method used to estimate airborne releases. The property boundary air monitors served to estimate cumulative airborne releases beyond the property. Data from these property boundary monitors were reported in annual DOE environmental monitoring reports beginning in 1980.

With the Clean Air Act Amendments of 1990, compliance with National Emission Standards for Hazardous Air Pollutants Subpart H was necessary and was demonstrated by calculating an effective dose equivalent to members of the public using approved sampling methods and computer models. The primary inputs to these calculations and models were the various emission estimates from the production facilities stacks and vents. The compliance standard was 10 mrem/year effective dose equivalents.

Remediation Impacts and Monitoring Changes

As remediation of the site began in earnest, the dominant emission sources became associated with construction activities in the form of fugitive emissions (i.e., excavation, hauling and processing of waste and contaminated soil, demolition of production facilities, and general activities supporting the remediation process). In 1997, DOE petitioned and USEPA approved an alternate method for demonstrating compliance with the NESHAP Subpart H compliance standard using environmental measurements. These measurements were from sixteen air monitoring stations placed around the property boundary and two air monitoring stations located off-property used to estimate background (In 2002, approval was granted to use only one background location).

As the end of remediation was approaching, DOE petitioned the regulatory agencies for a reduction in the number of air monitoring stations based on wind direction and the location of the on-site disposal facility.

The final year of soil remediation at the Fernald Preserve was 2006. As the number of sources of airborne contamination decreased throughout 2006, so did the number of active air monitoring stations (AMS). AMS-4, 5, 7, 23, 25, and 28 were removed from service in April 2006; thorium monitor WPTH-2 was removed from service in August 2006; and AMS-9C, 22, 26, 27, and 29 were removed from service in December 2006. Since December 2006, six air monitoring stations remained in service at five boundary locations (i.e., AMS-2, 3, 6, 8A, and 24) and one background location (i.e., AMS-12). All air monitoring stations that were active between 1997 and 2009 are shown in Figure 1.

The five remaining boundary monitors are used to demonstrate that wind erosion of the remediated soil and air emissions from controlled burns (conducted in 2009) pose no significant threat to the public or the environment. An evaluation of the data collected from the air monitoring stations during the past three years demonstrates that radiological concentrations in air remain low (i.e. at or near background).

Data Evaluation

The monthly/bimonthly total uranium air particulate data collected from the six remaining air monitoring stations during the past three years are presented in Figure 2. The quarterly isotopic composite air particulate data (i.e. radium-226, thorium-228, thorium-230, thorium-232, uranium-234, uranium-235, and uranium-238) collected from the six remaining air monitoring stations during the past three years are presented in Figures 3 through 9.

Additionally, an evaluation of the annual National Emissions Standards for Hazardous Air Pollutants (NESHAP) maximum effective dose data from 1997 through 2008 (Figure 10) shows that since 2001, the calculated annual dose at the Fernald Preserve boundary is below one millirem, which is the NESHAP threshold for the monitoring requirement, and is an order of magnitude lower than it was at any time during the soil remediation process. The final NESHAP annual report for 2009 will be submitted to the agencies with the 2009 annual site environmental report by June 1, 2010.

Future Activities

DOE will evaluate all future remediation related projects (e.g. Decontamination/Decommissioning of the Converted Advanced Waste Water Treatment Facility) to determine if project specific air monitoring is required in consideration of the potential for emissions and established remedial action commitments.

It is not expected that minor earth moving activities will require project specific air monitoring. Fugitive dust controls continue to be implemented during these projects.

DOE intends to continue the program of controlled burns of select prairies to maintain their health and vitality. Two controlled burns were conducted in 2009 for which the boundary monitors deployed were subjected to the ambient conditions as well as any particulates resulting from these controlled burns conducted on March 17 and 23, 2009. The analytical results from the March air filters indicated a slight increase in total particulates collected on each filter; however, a slight decrease in total uranium concentration at each of the station was also noted. In summary, there were no significant impacts to air quality measured at the site perimeter as a result of these burns and there is no expectation that project specific air monitoring will be required for future controlled burns.

Conclusion

Based on the data indicating emissions are at or near background and the determination by USEPA Office of Air and Radiation that three years of air monitoring following closure was appropriate, DOE will be ending the boundary air monitoring program January 4, 2010.

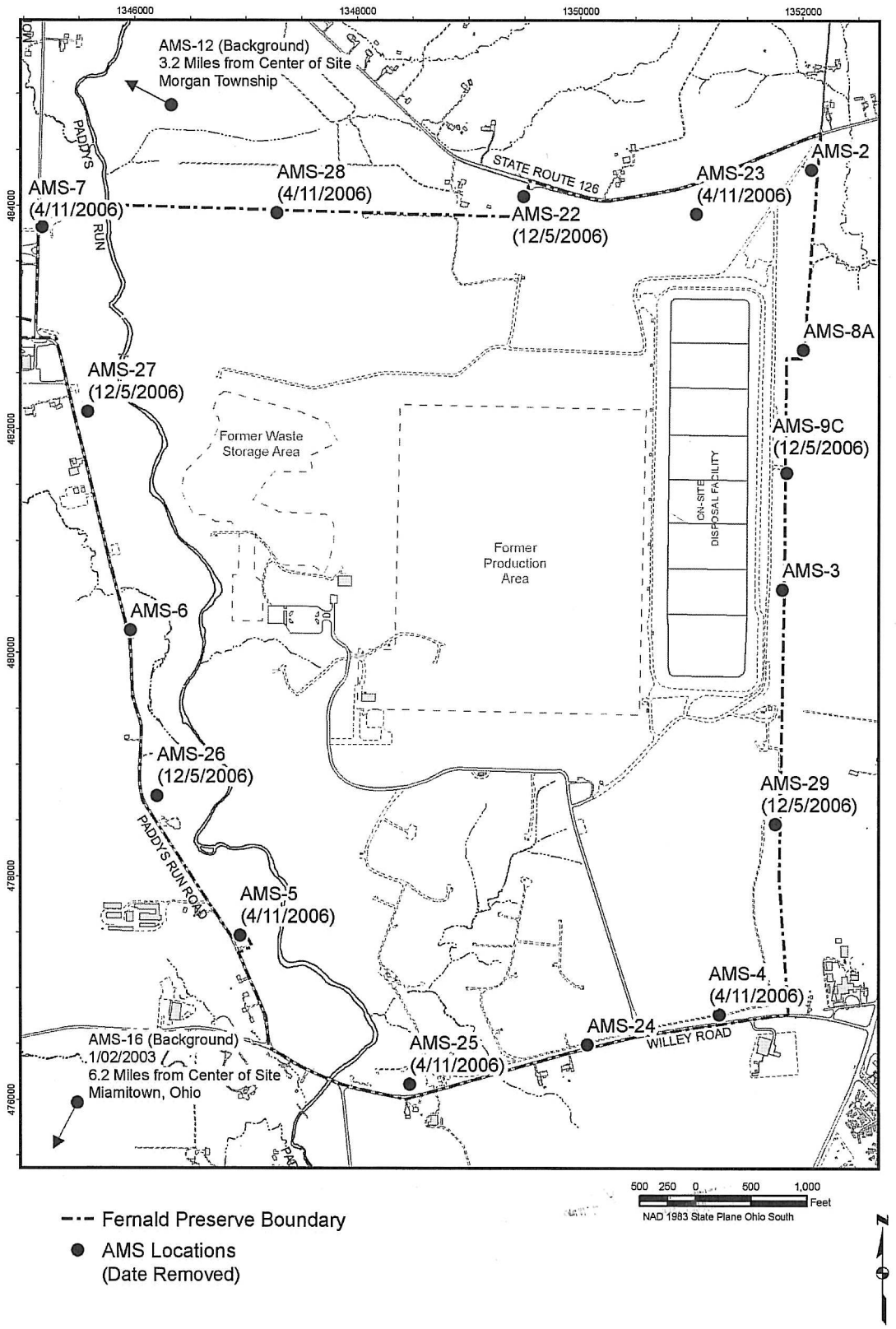

Figure 1. Current and Former Radiological Air Monitoring Locations and Date Removed from Service

Figure 2. Monthly/Bimonthly Total Uranium Concentrations in Air
Samples Collected July 2006 through August 2009

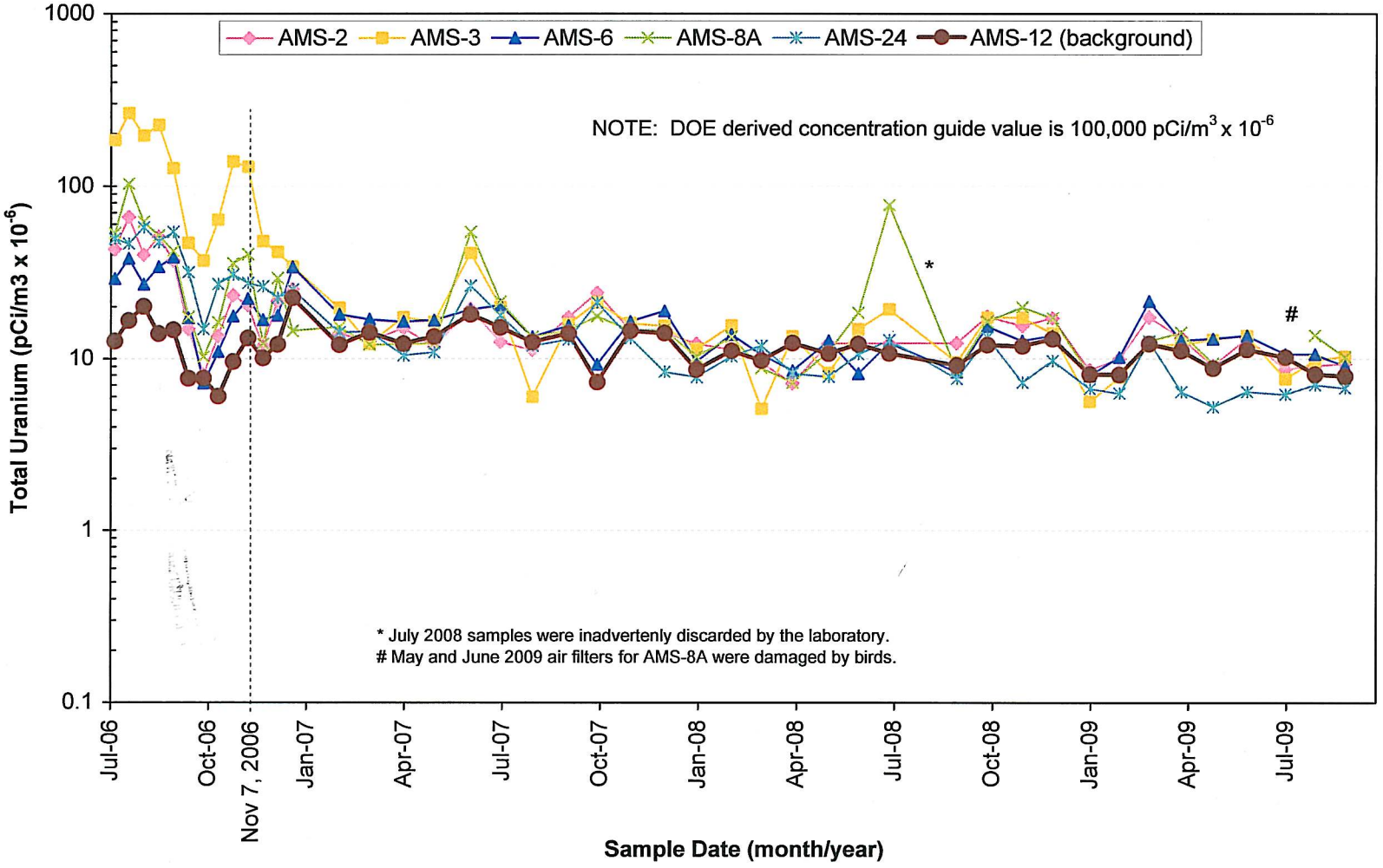

Figure 3. Quarterly Composite Radium-226 Concentrations in Air
Samples Collected July 2006 through August 2009

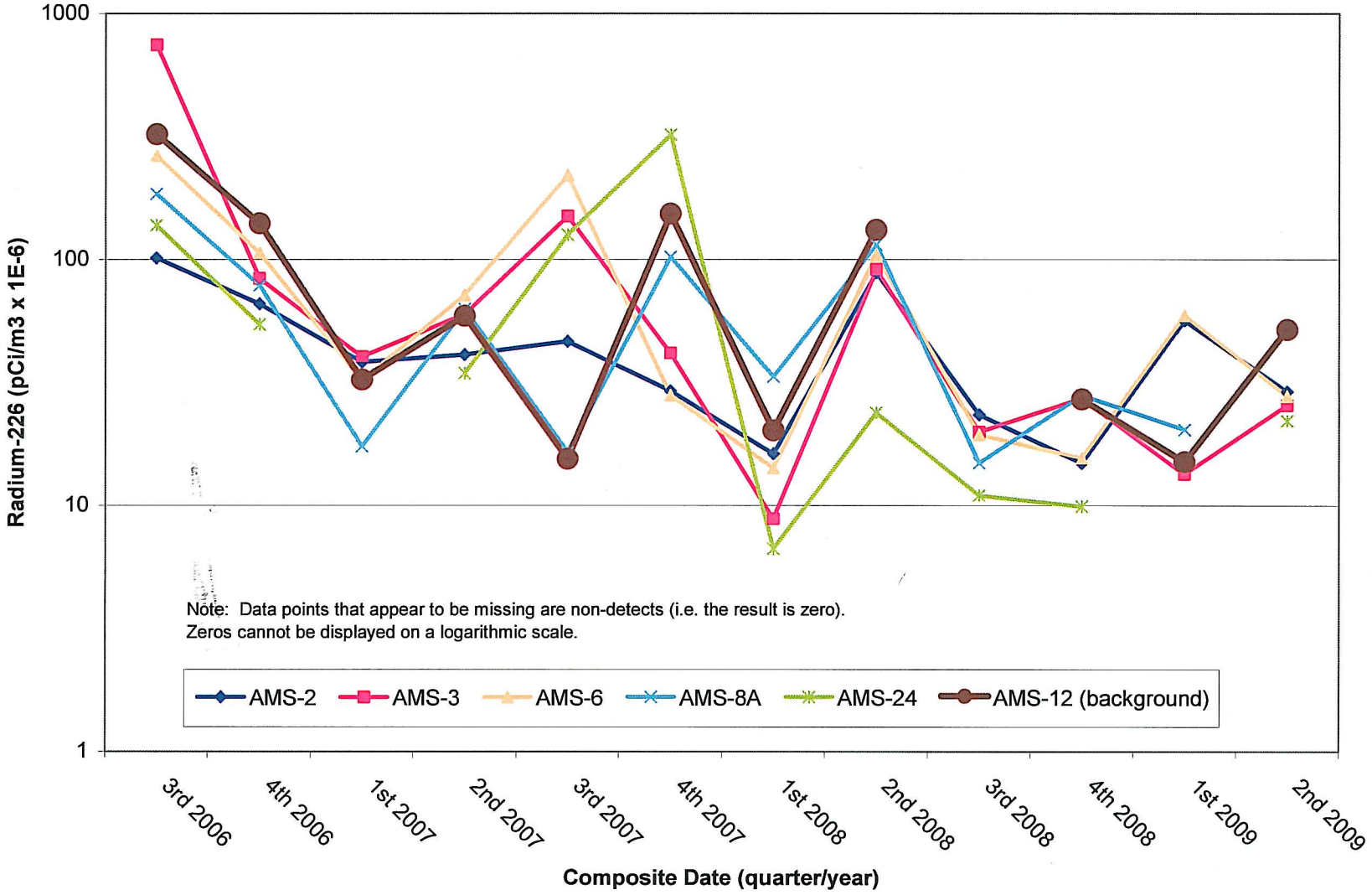

Figure 4. Quarterly Composite Thorium-228 Concentrations in Air
Samples Collected July 2006 through August 2009

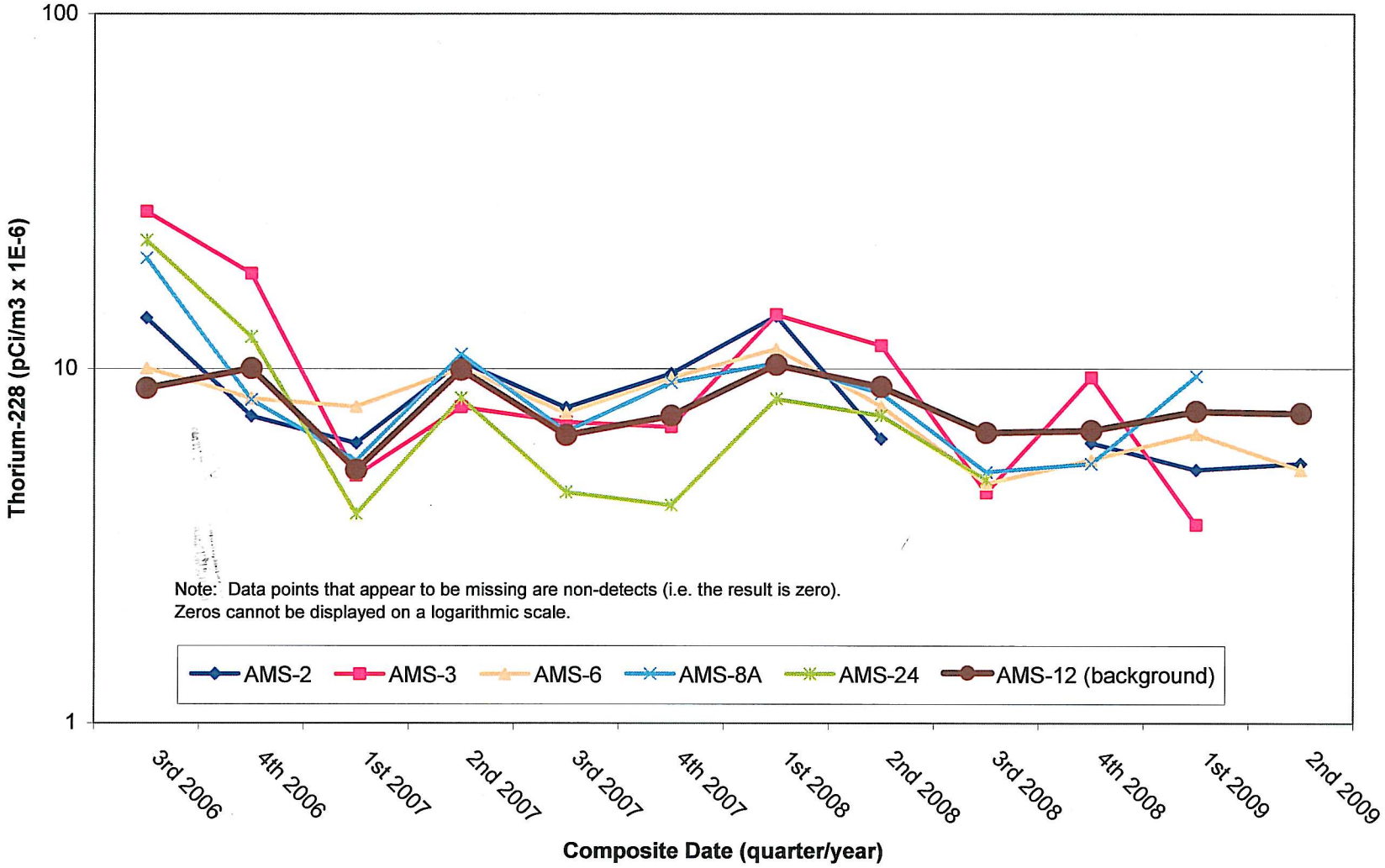

Figure 5. Quarterly Composite Thorium-230 Concentrations in Air
Samples Collected July 2006 through August 2009

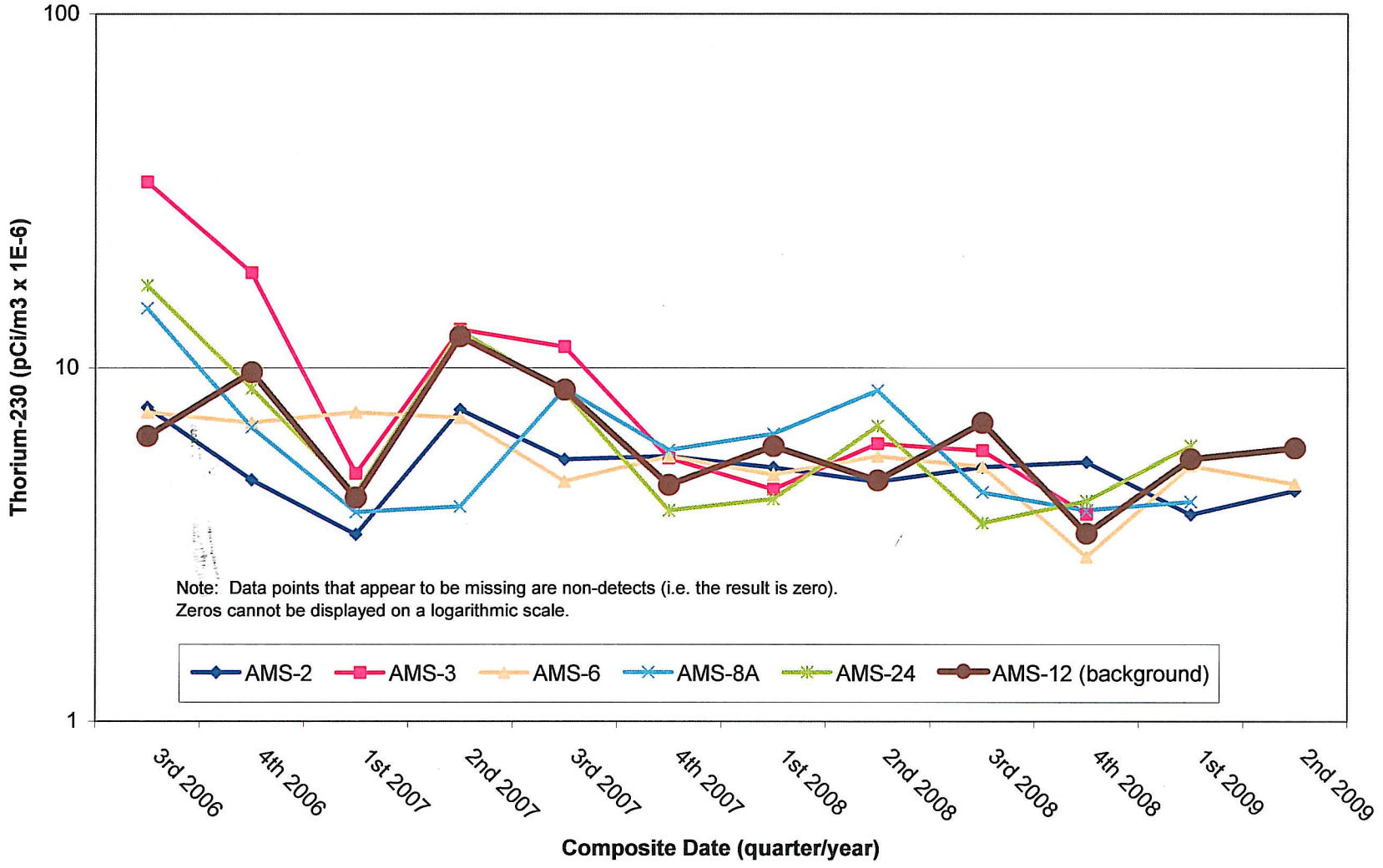

Figure 6. Quarterly Composite Thorium-232 Concentrations in Air
Samples Collected July 2006 through August 2009

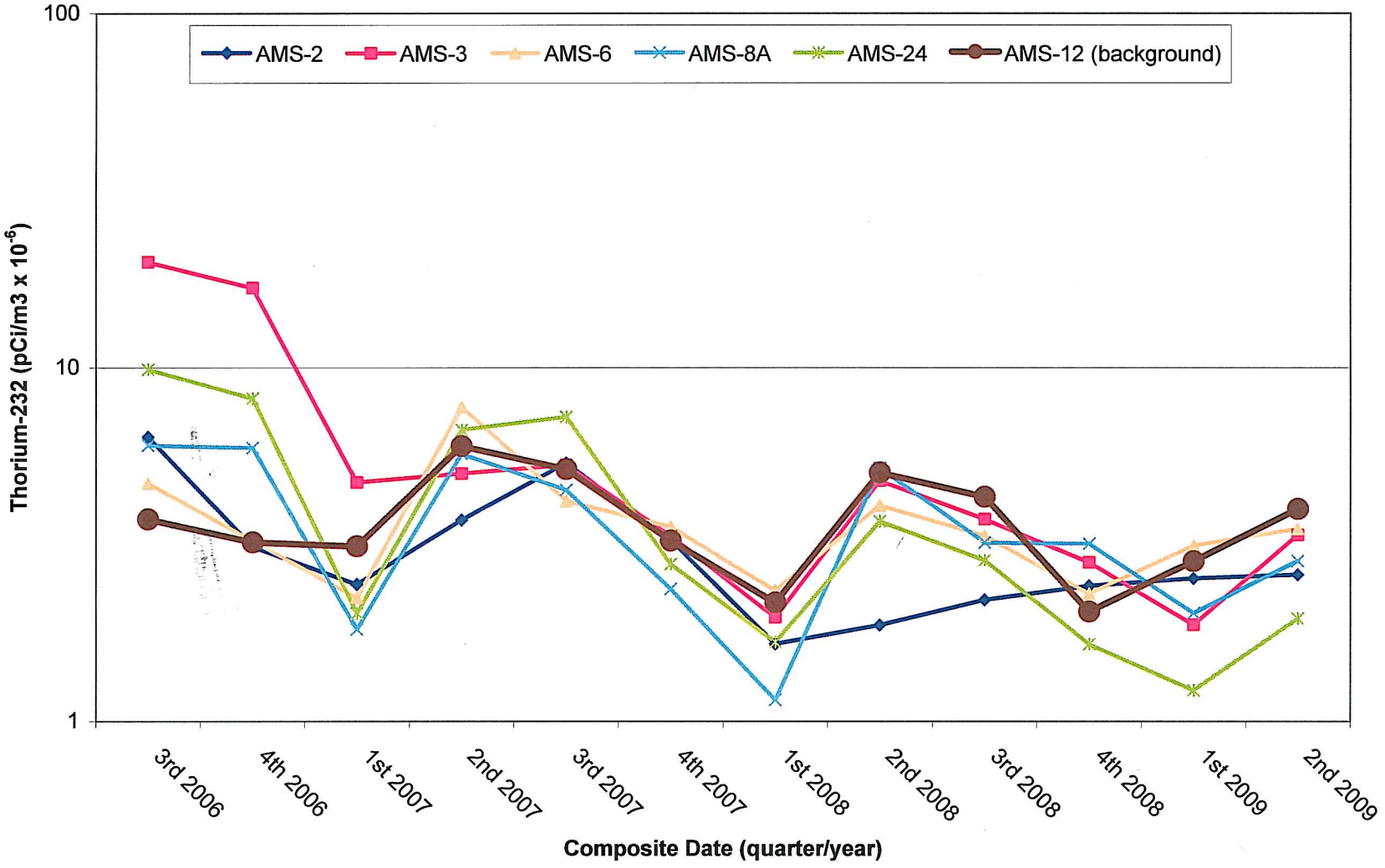

Figure 7. Quarterly Composite Uranium-234 Concentrations in Air
Samples Collected July 2006 through August 2009

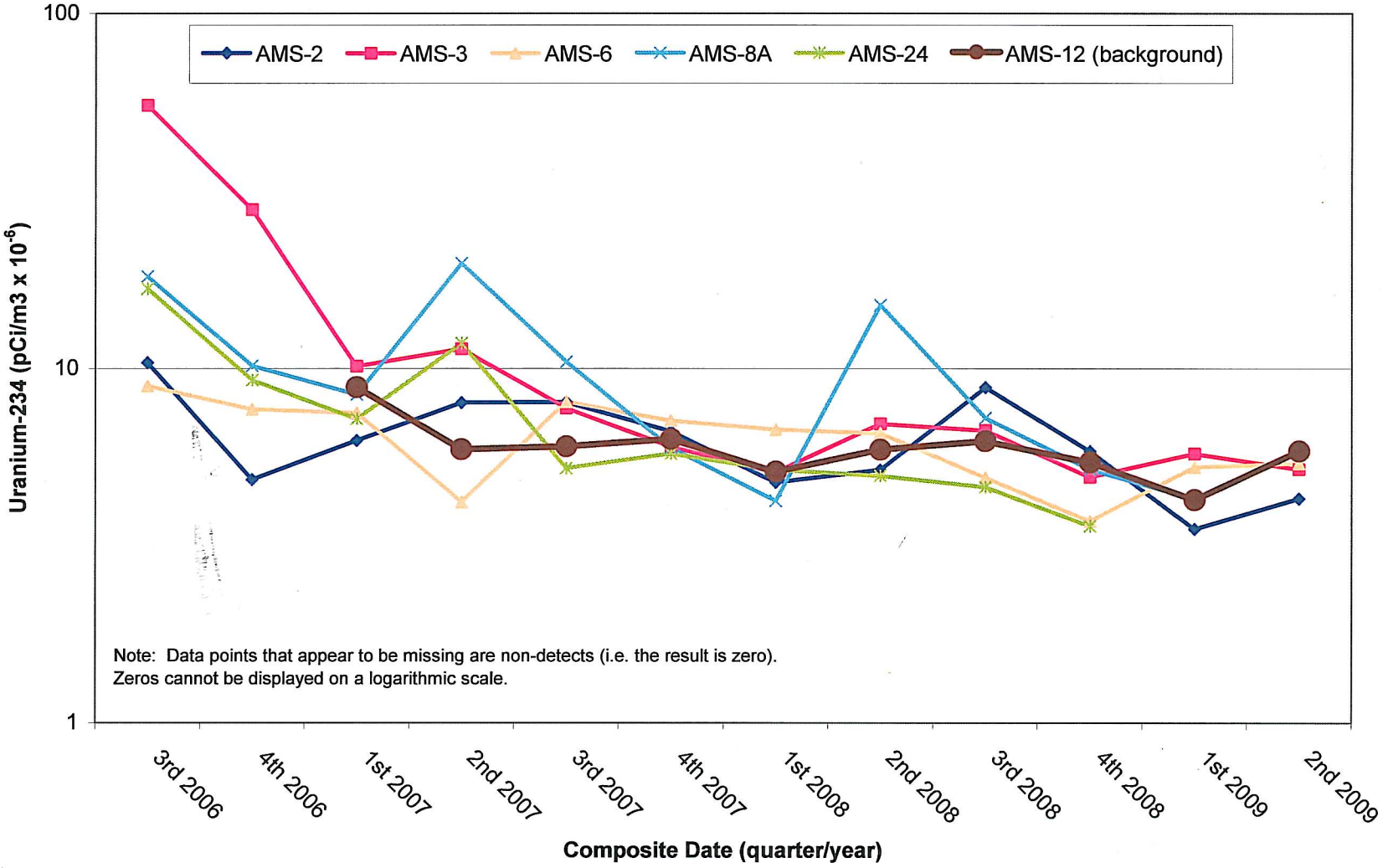

Figure 8. Quarterly Composite Uranium-235 Concentrations in Air
Samples Collected July 2006 through August 2009

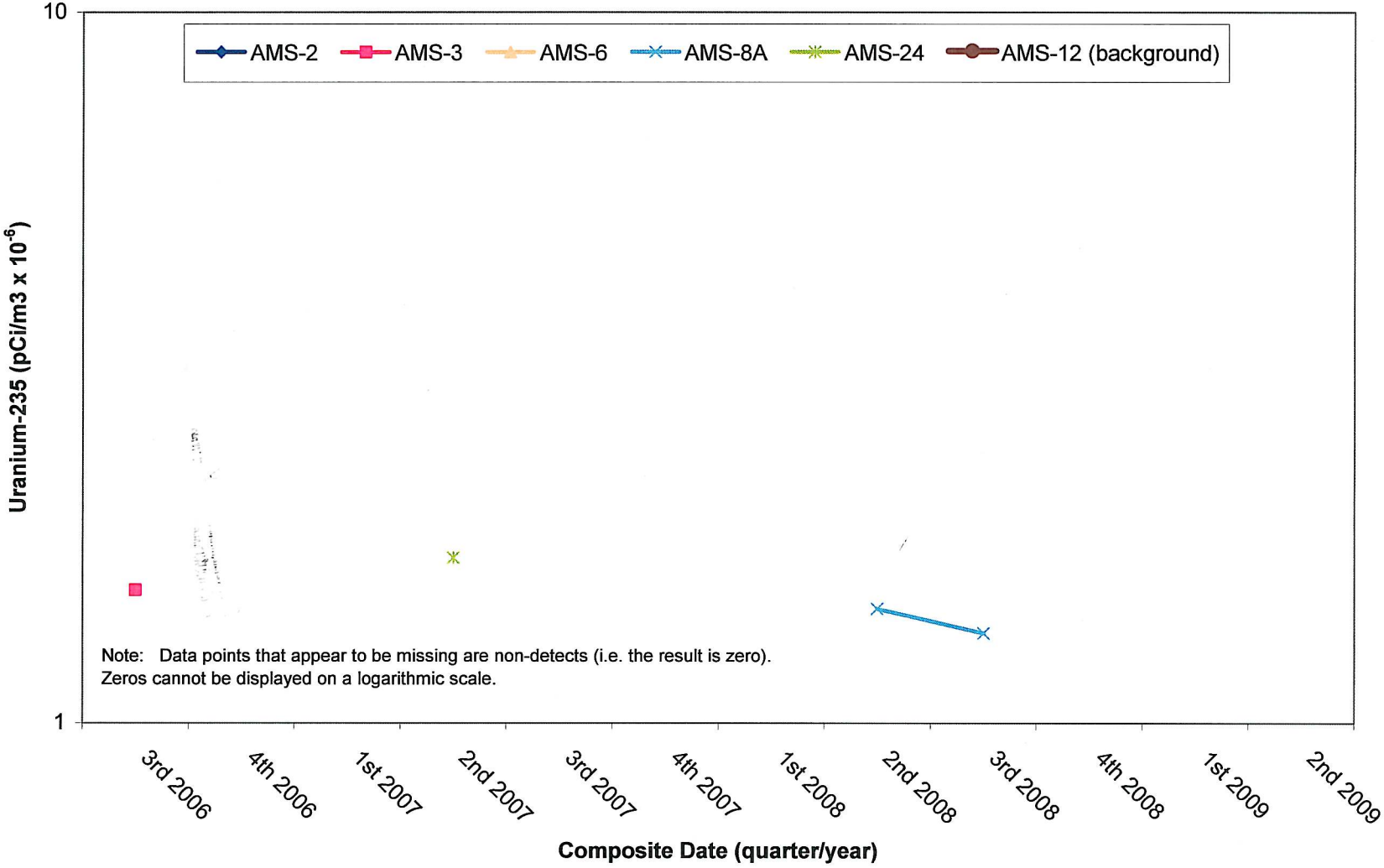

Figure 9. Quarterly Composite Uranium-238 Concentrations in Air
Samples Collected July 2006 through August 2009

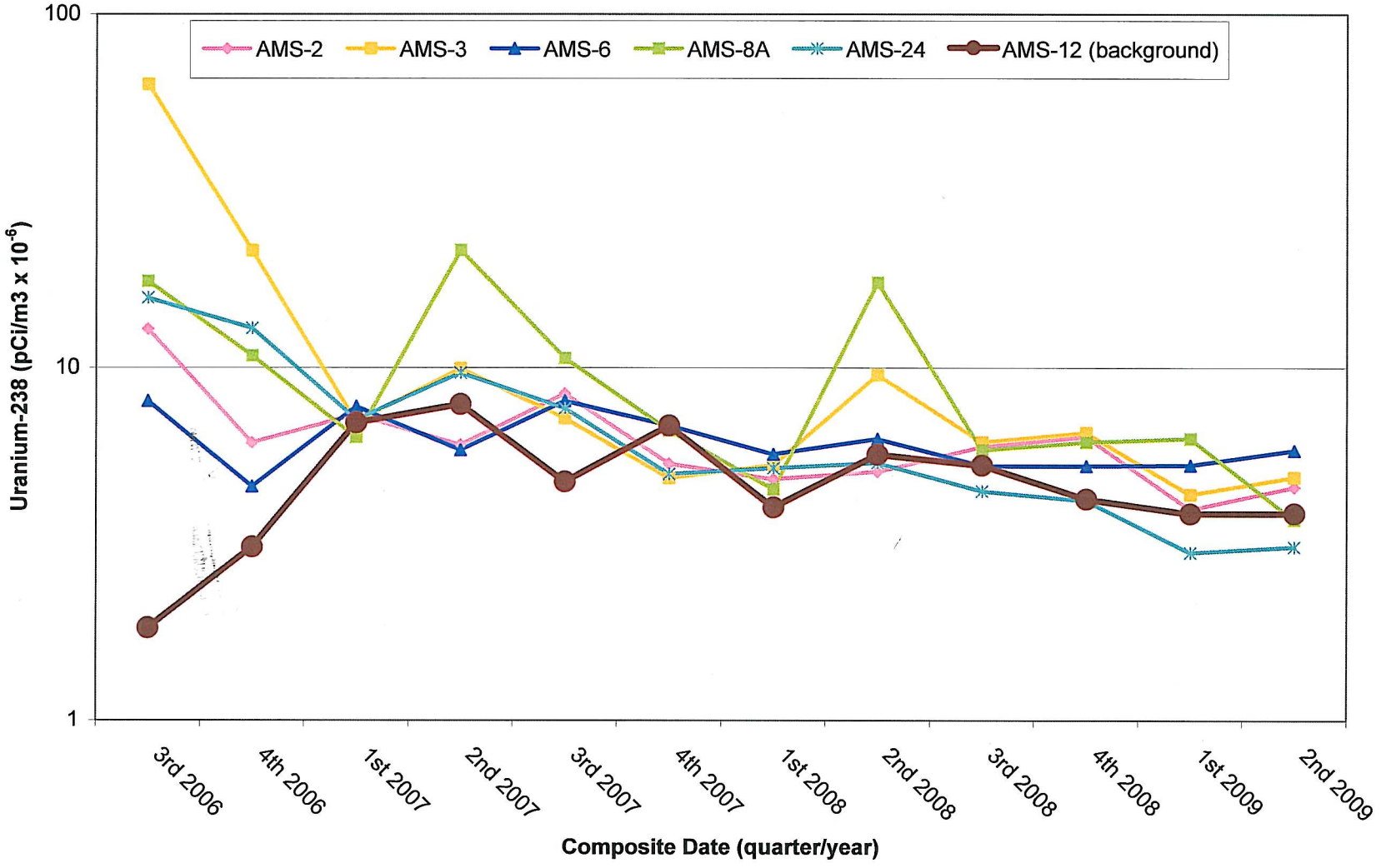

Figure 10. Annual NESHAP Dose