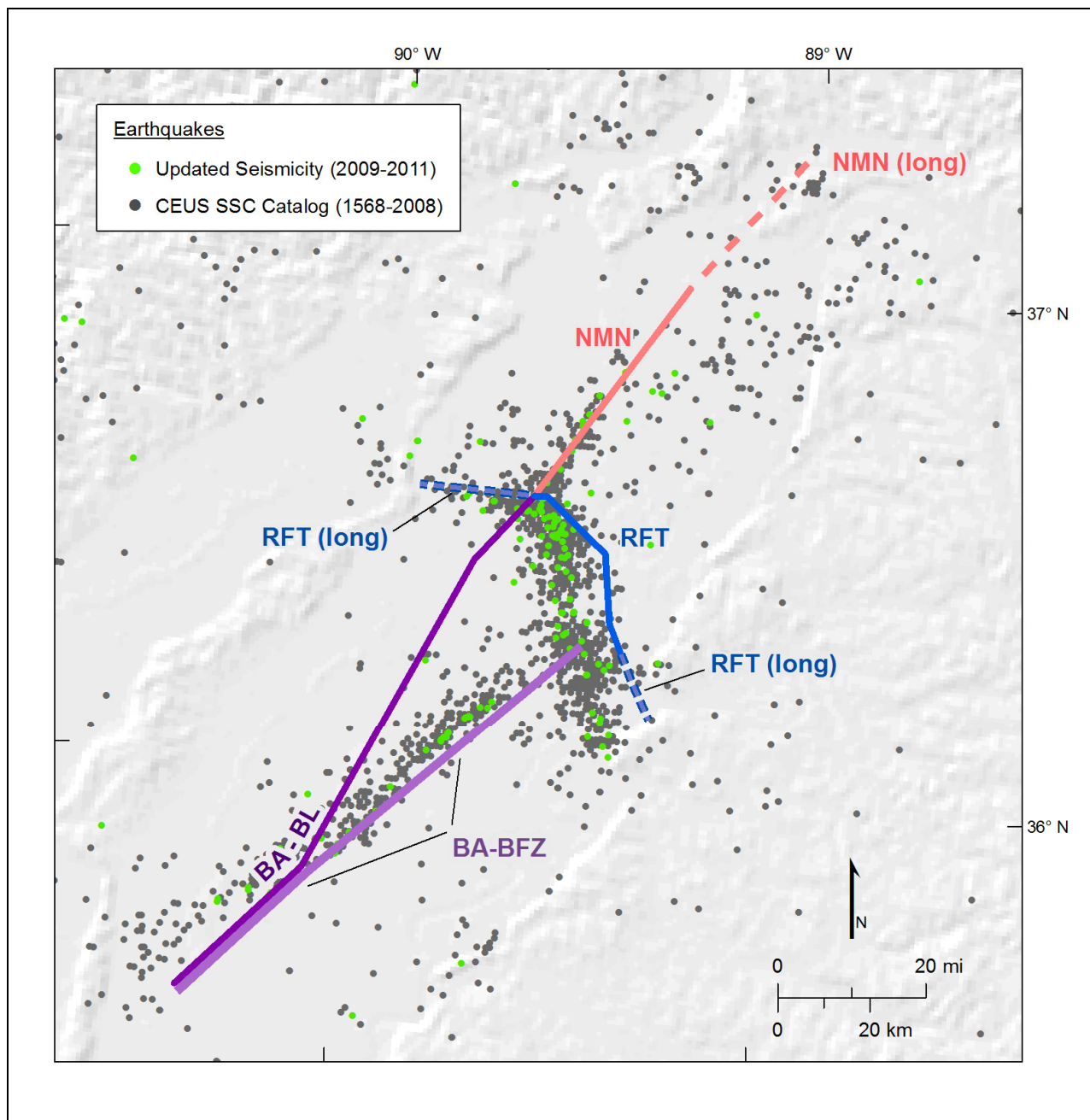


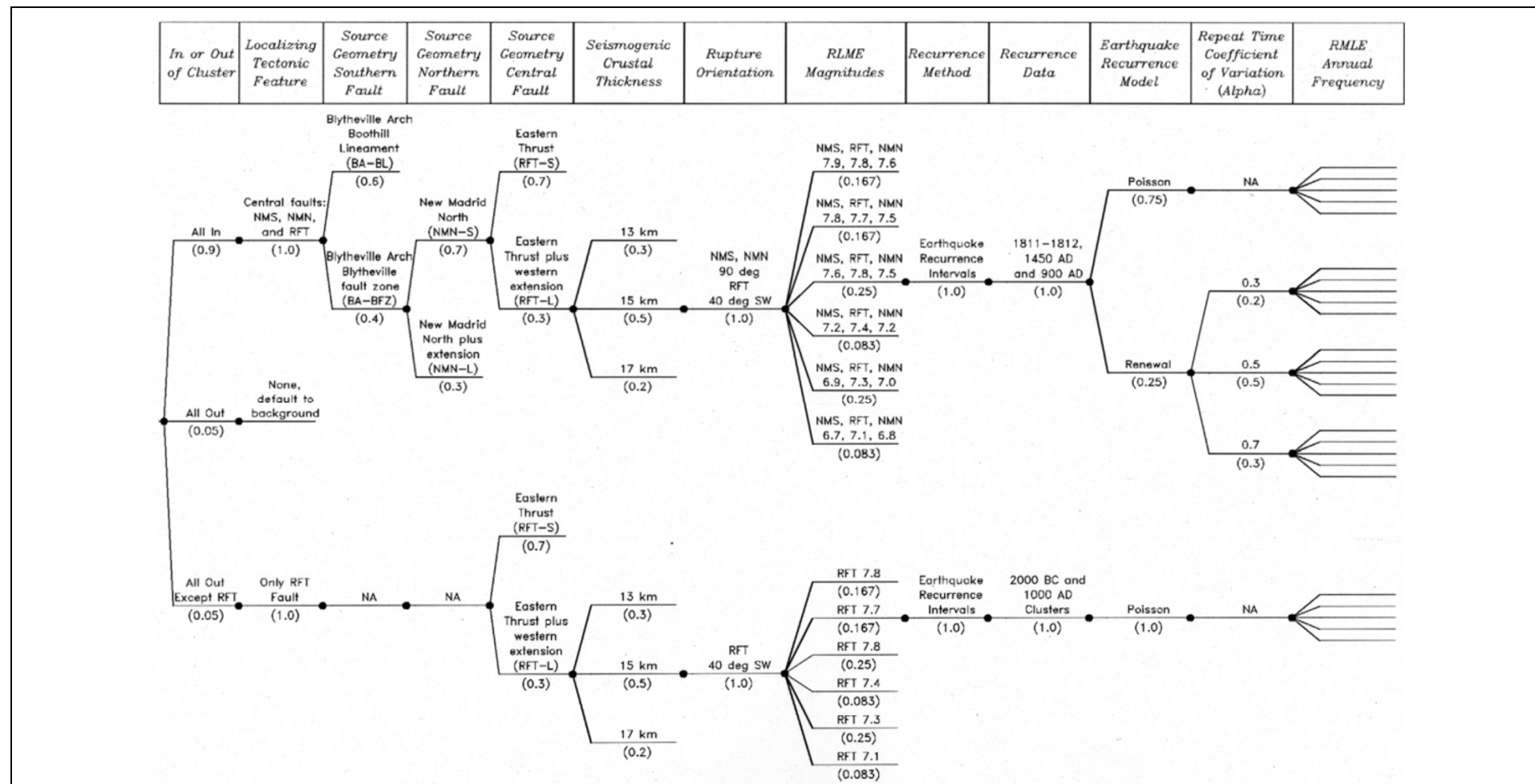
NAPS COL 2.0-27-A
NAPS ESP VAR 2.0-4

Figure 2.5.2-226

**Elements of the New Madrid Fault System (NMFS)
RLME (Modified After Figure 6.1.5-4 of CEUS SSC
Report)**

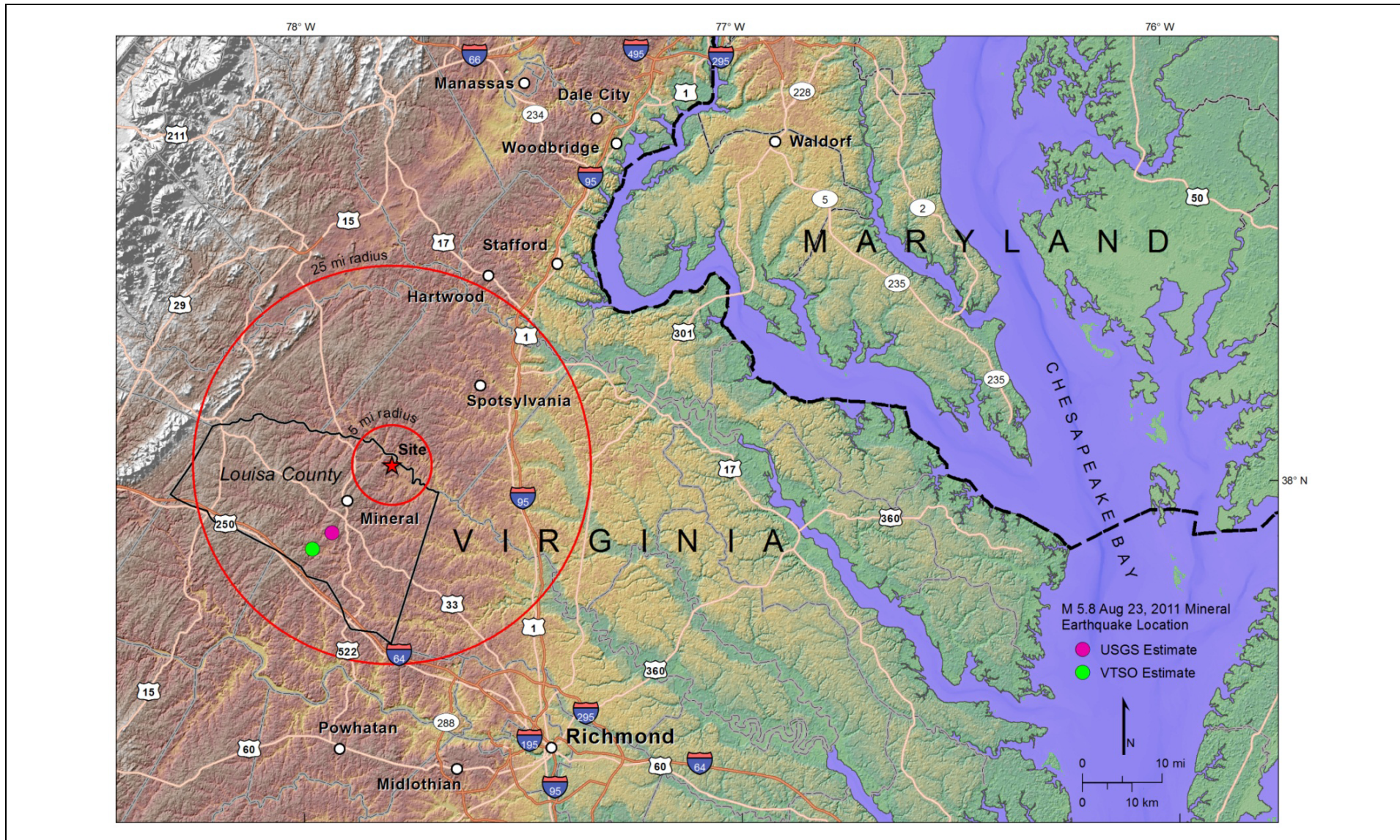


NOTE: Individual fault segments are the New Madrid North fault (NMN), the Reelfoot thrust (RFT), the Blytheville arch (BA), the Bootheel Lineament (BL), and the Blytheville fault zone (BFZ). Seismicity includes mainshocks and dependent events of $E[M] \geq 2.2$. Fault geometries modified after [Reference 2.5-223](#).

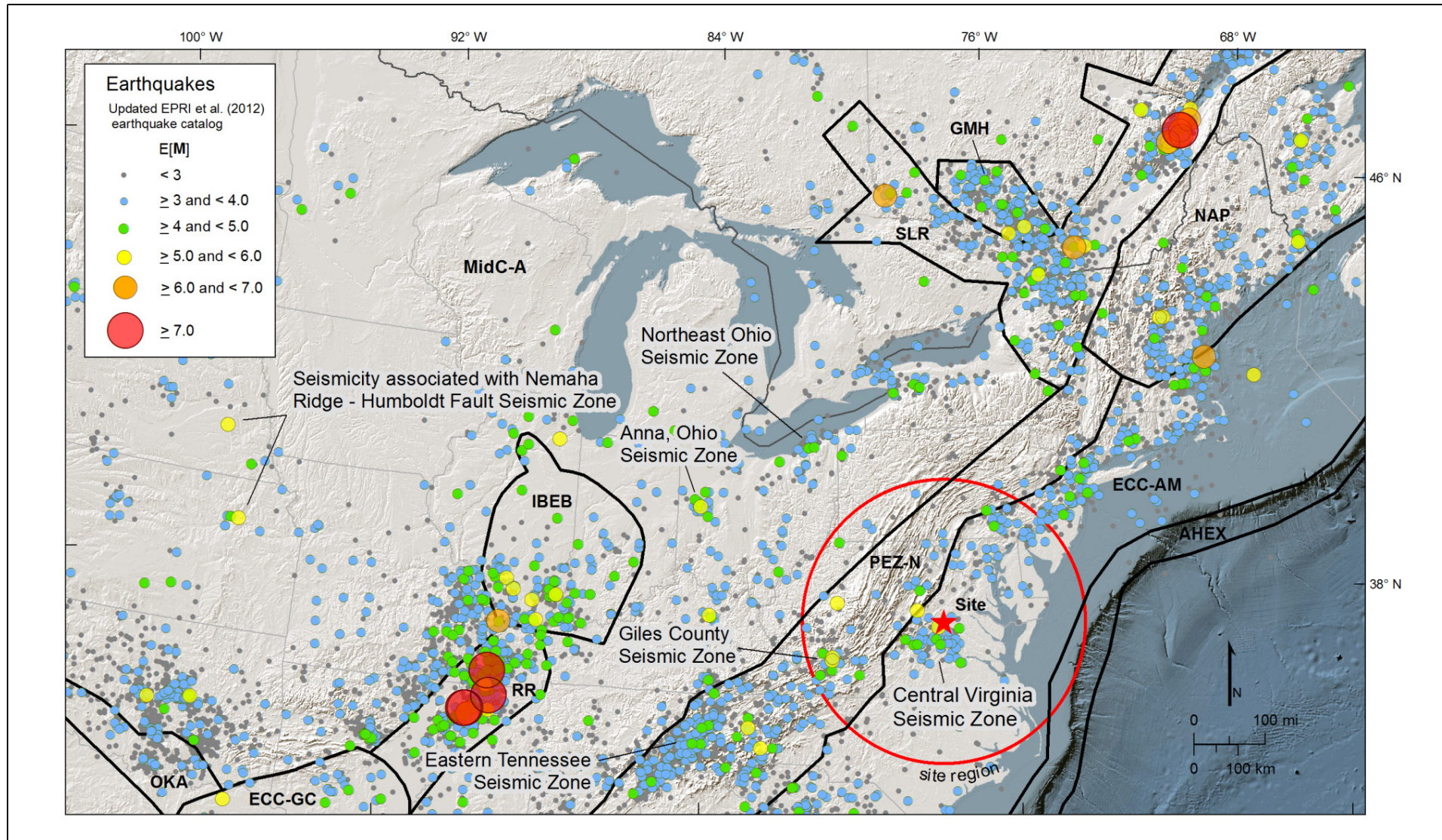


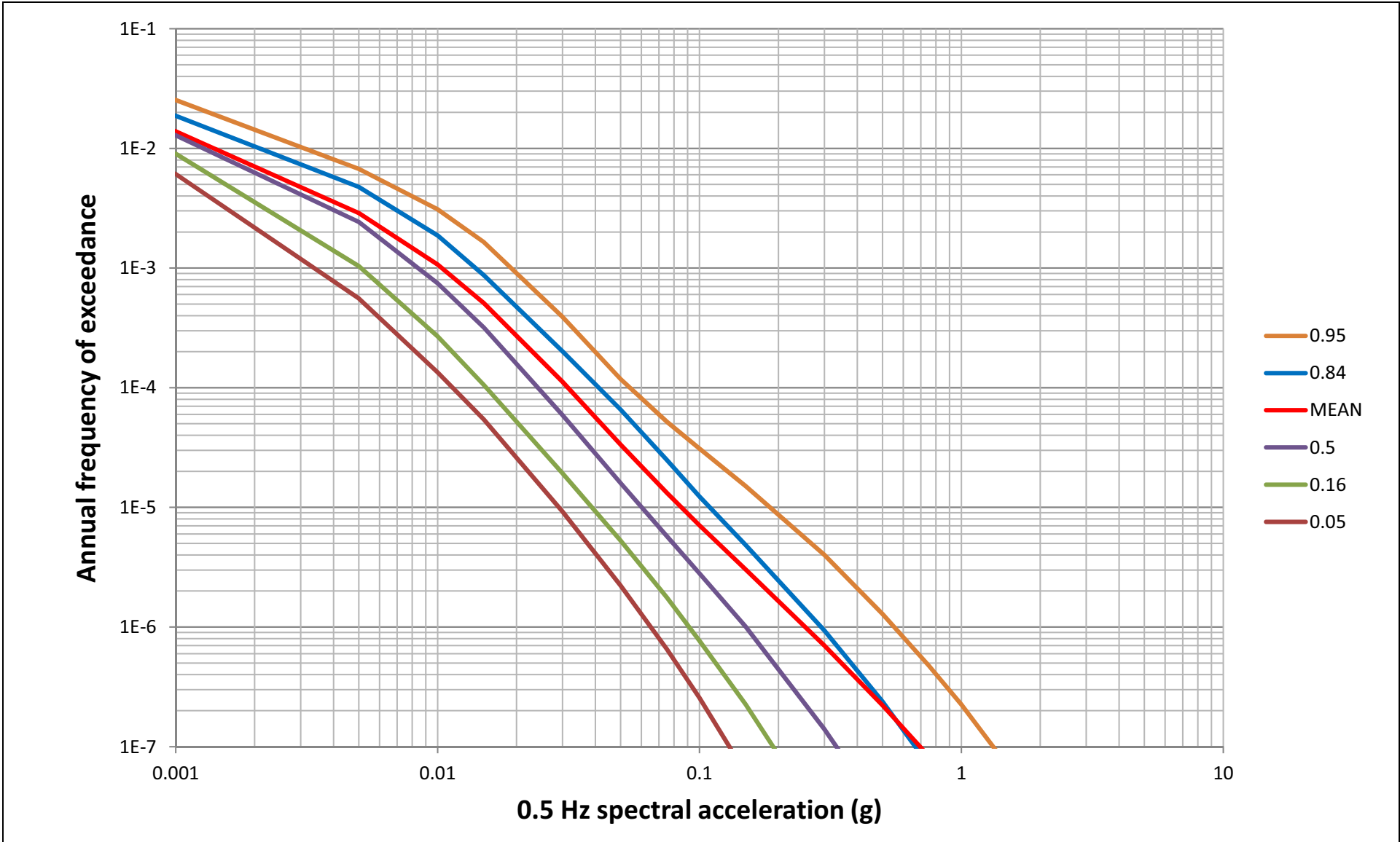
NOTES: For RLME annual frequency information, see Tables H-5.5-2 through H-5.5-6 from the CEUS SSC Report.

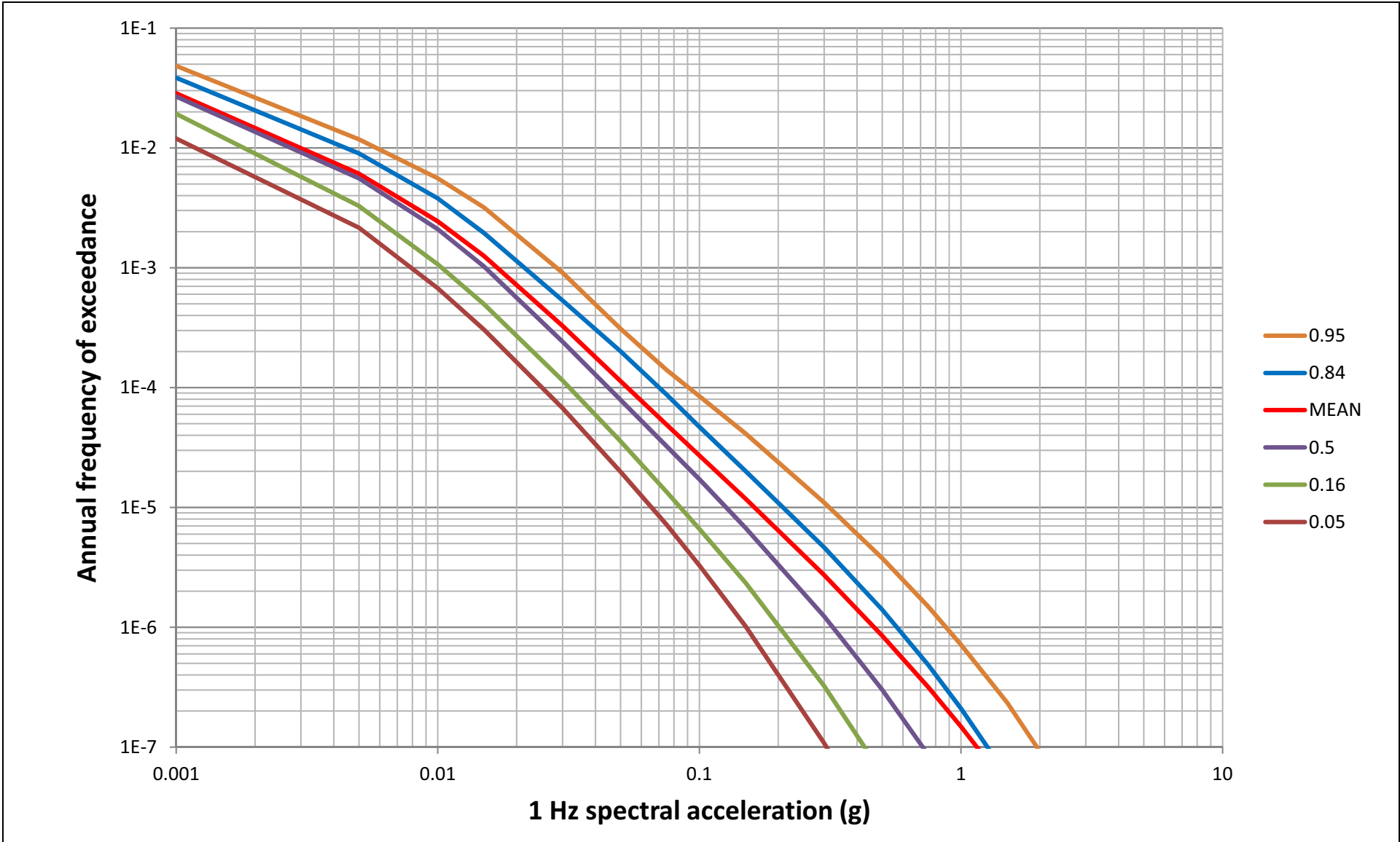
The weights on the suite of Seismogenic Crustal Thicknesses (depths) are updated values from what was published in the CEUS SSC Report, as indicated in the June 27, 2012 Updates file on the CEUS SSC Report web site (<http://www.ceus-ssc.org>). These weights differ slightly from the values in the published CEUS SSC Report, Table 5.4-2, shown in Table 2.5.2-210. As discussed in the FSAR, a single depth of 15 km was used, the justification of which is appropriate regardless the depth weights.

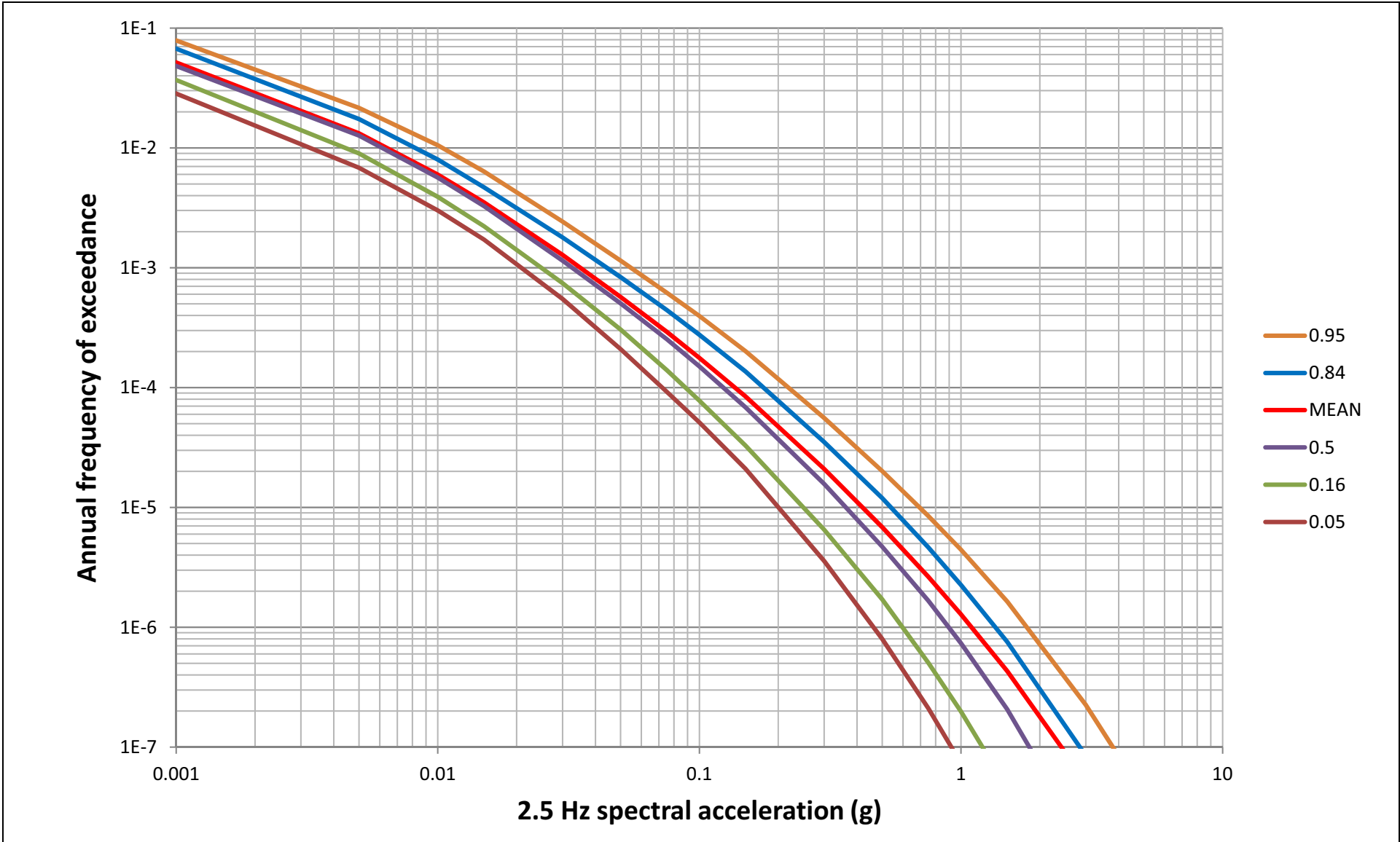


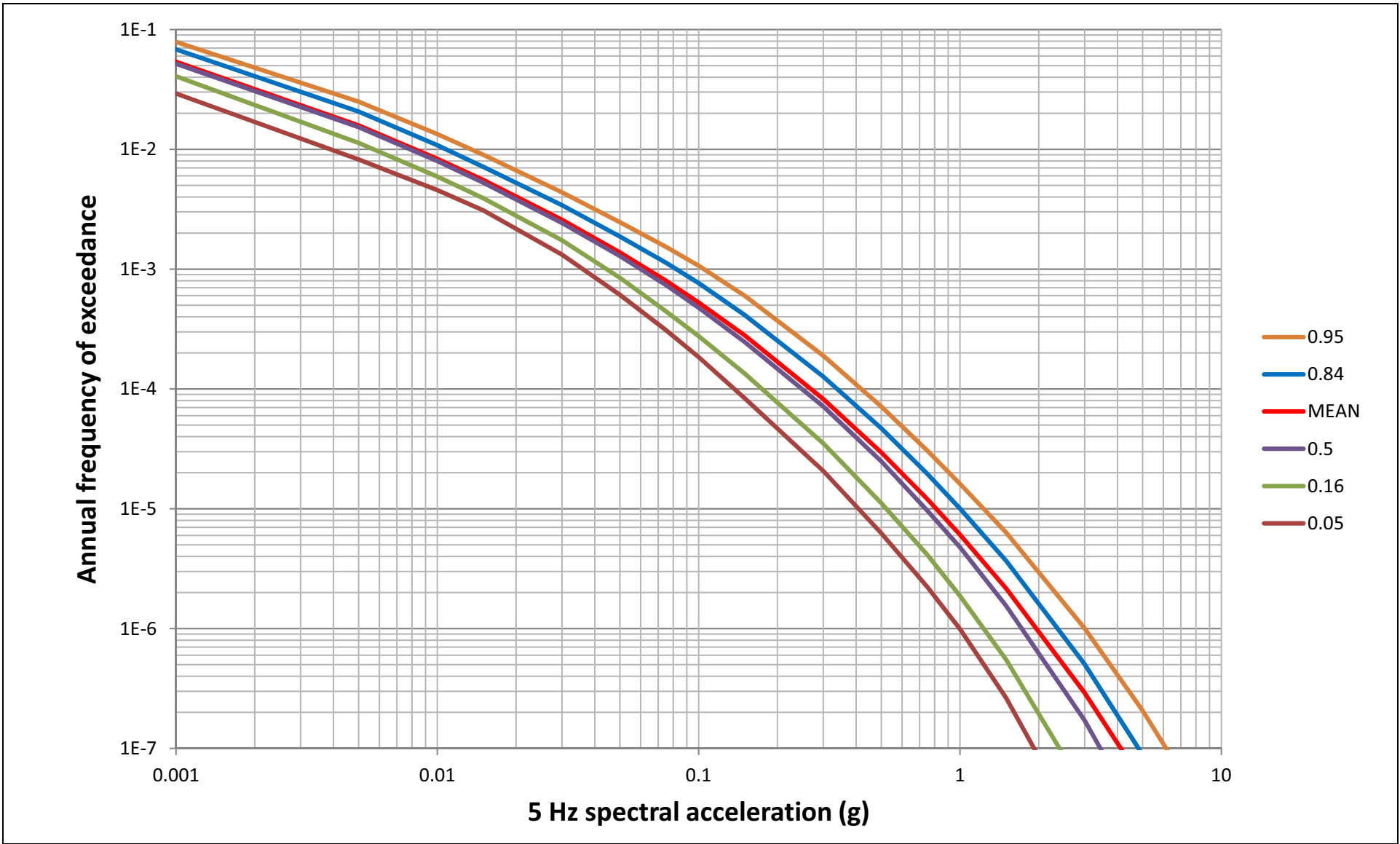
Distribution of Seismicity from the Updated CEUS SSC Report Earthquake Catalog Illustrating Areas of Elevated Seismicity Described in the Text, Along with CEUS SSC Report Seismotectonic Source Zones (Modified from Figure 7.1-1 of [Reference 2.5-223](#))

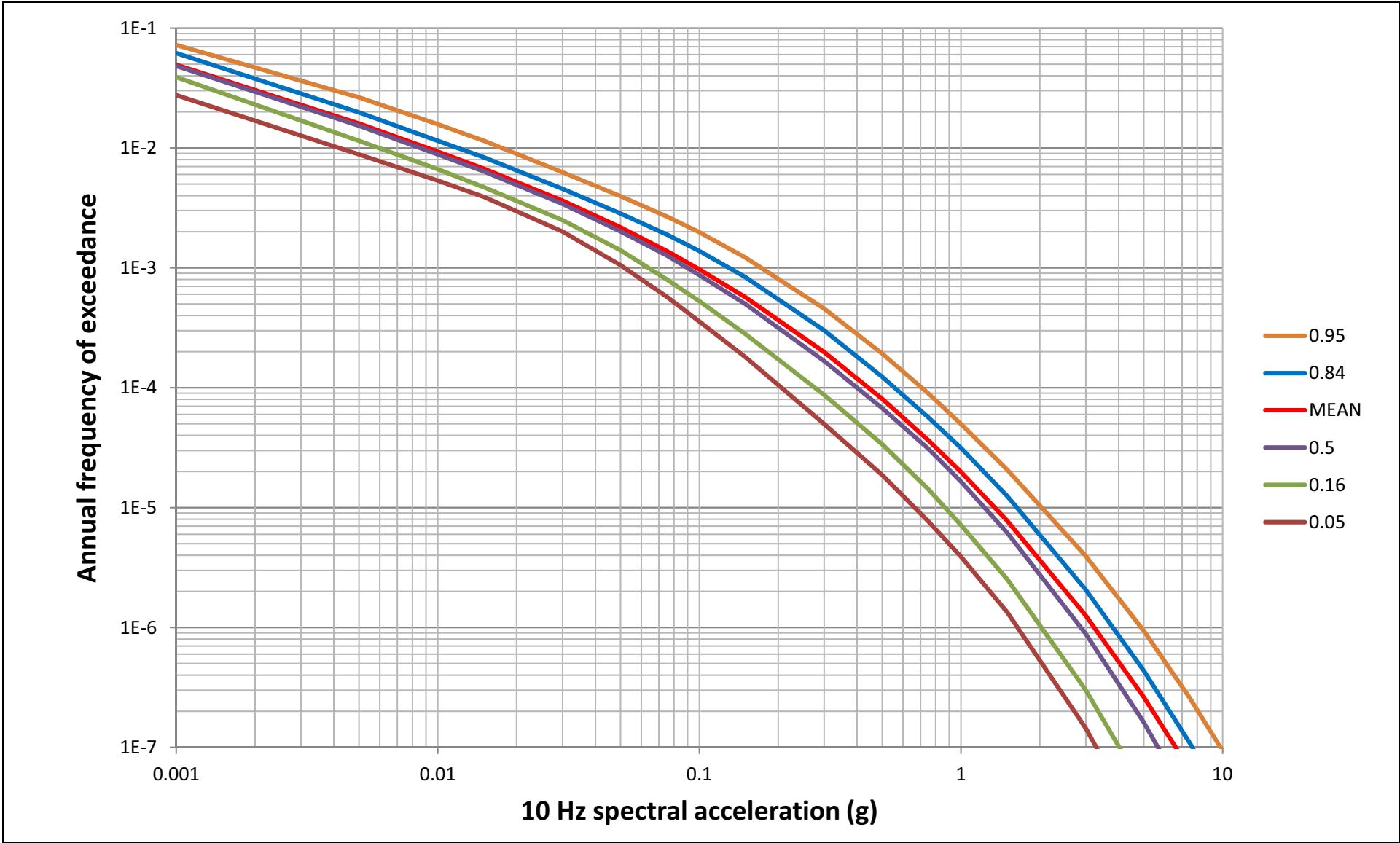


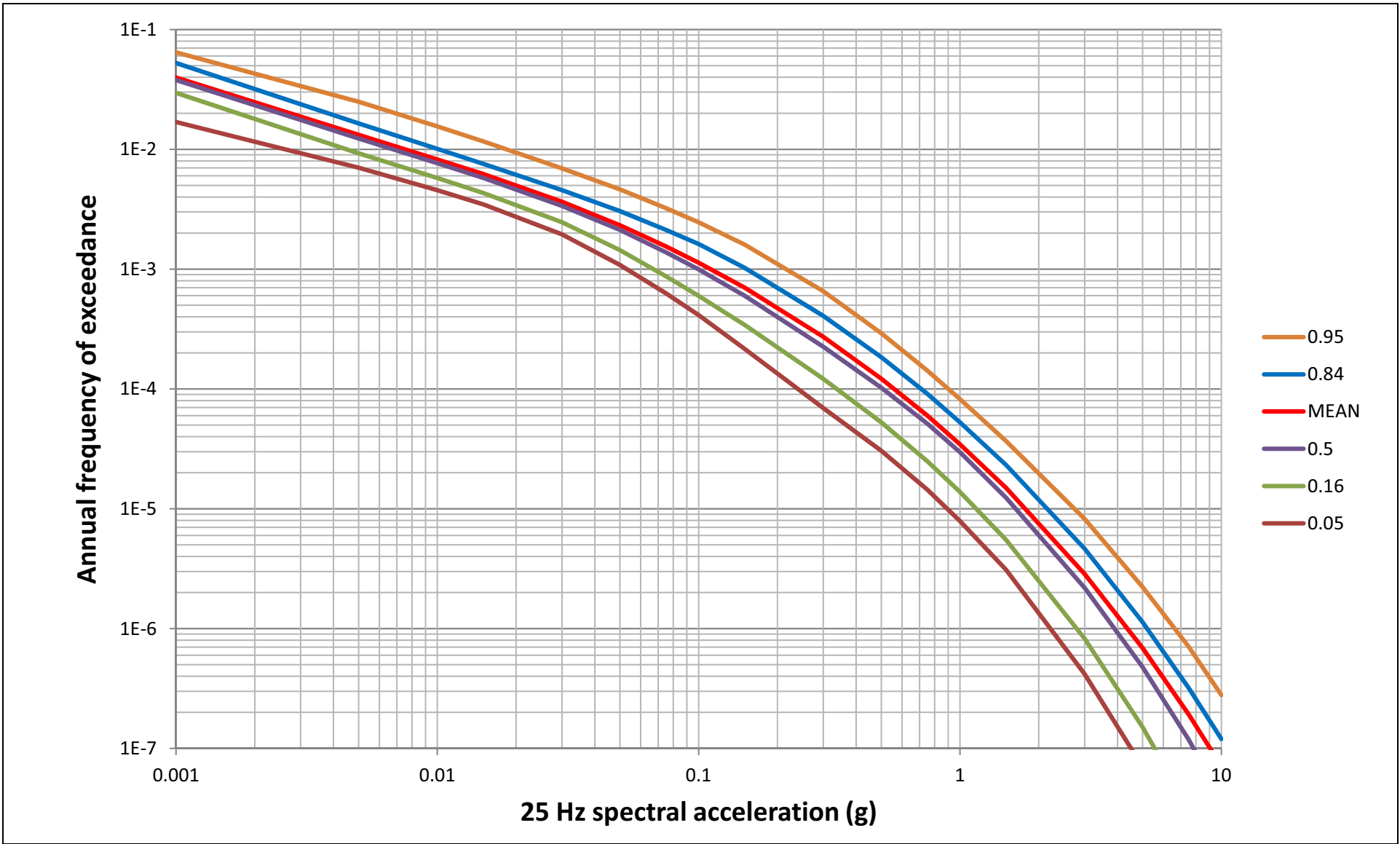


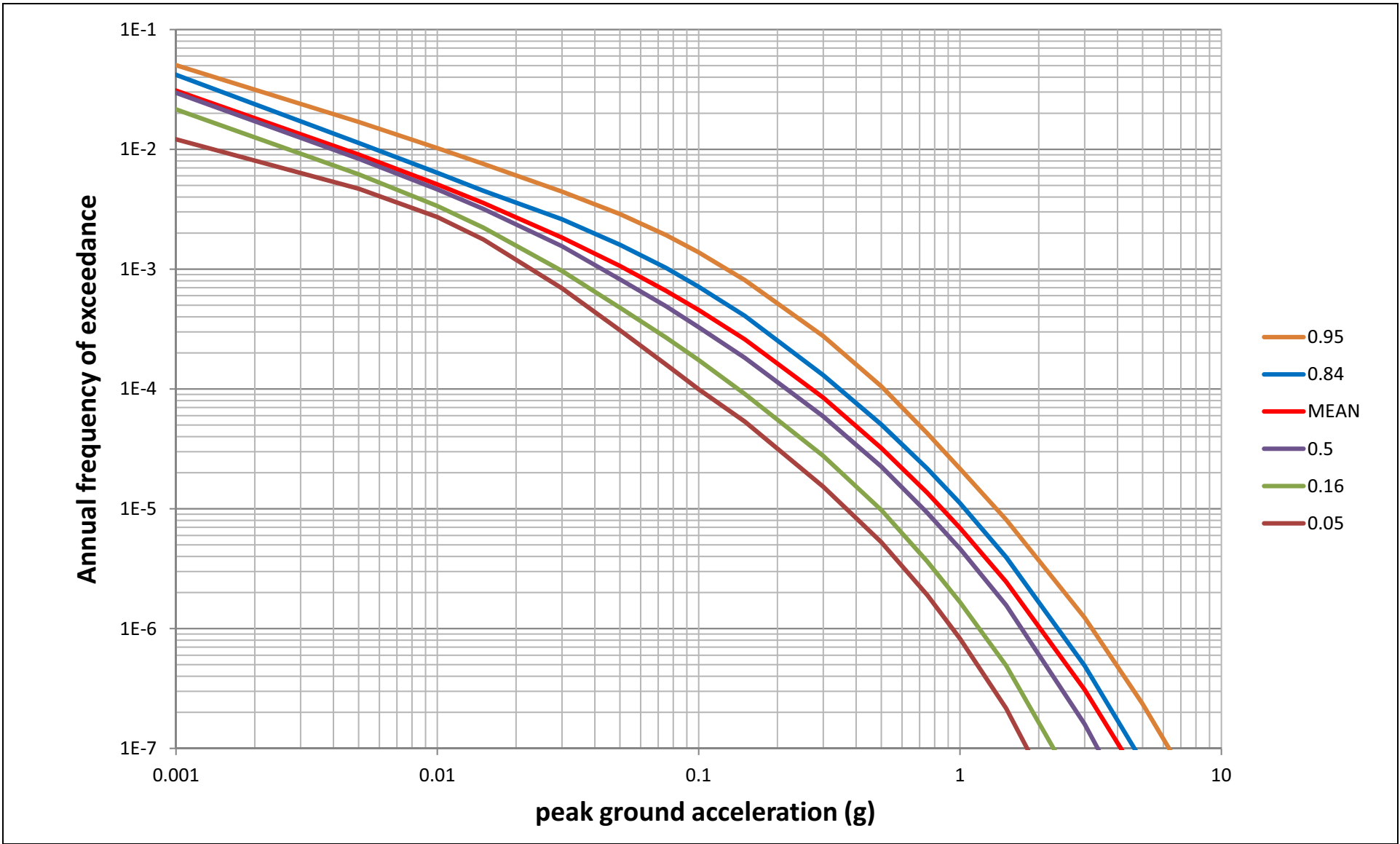




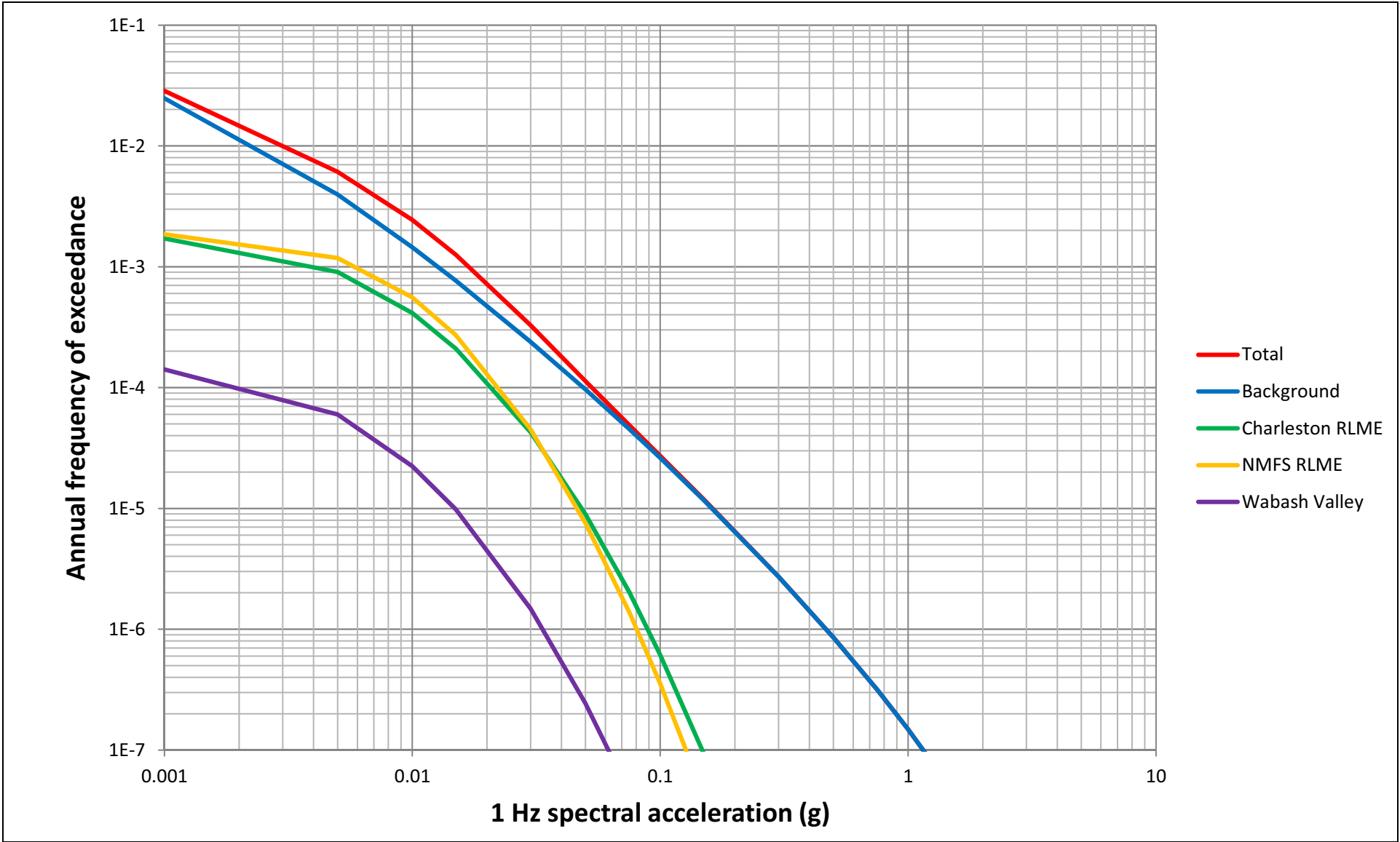








NAPS COL 2.0-27-A Figure 2.5.2-237 1 Hz Mean Rock Hazard from Background, Charleston, New Madrid and Wabash Valley
NAPS ESP VAR 2.0-4



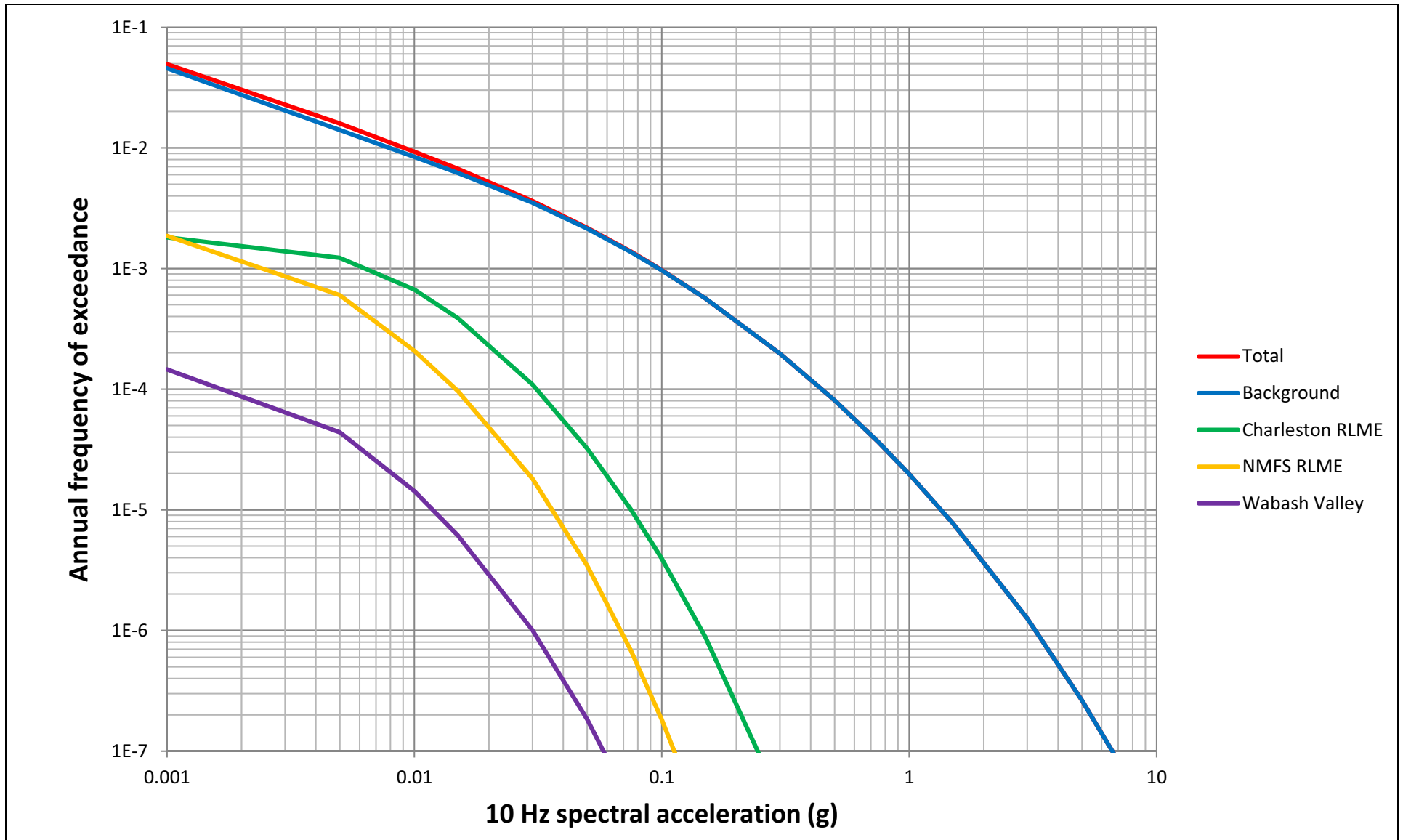


Figure 2.5.2-239 1 Hz Mean Rock Hazard from Individual Weighted Background Sources

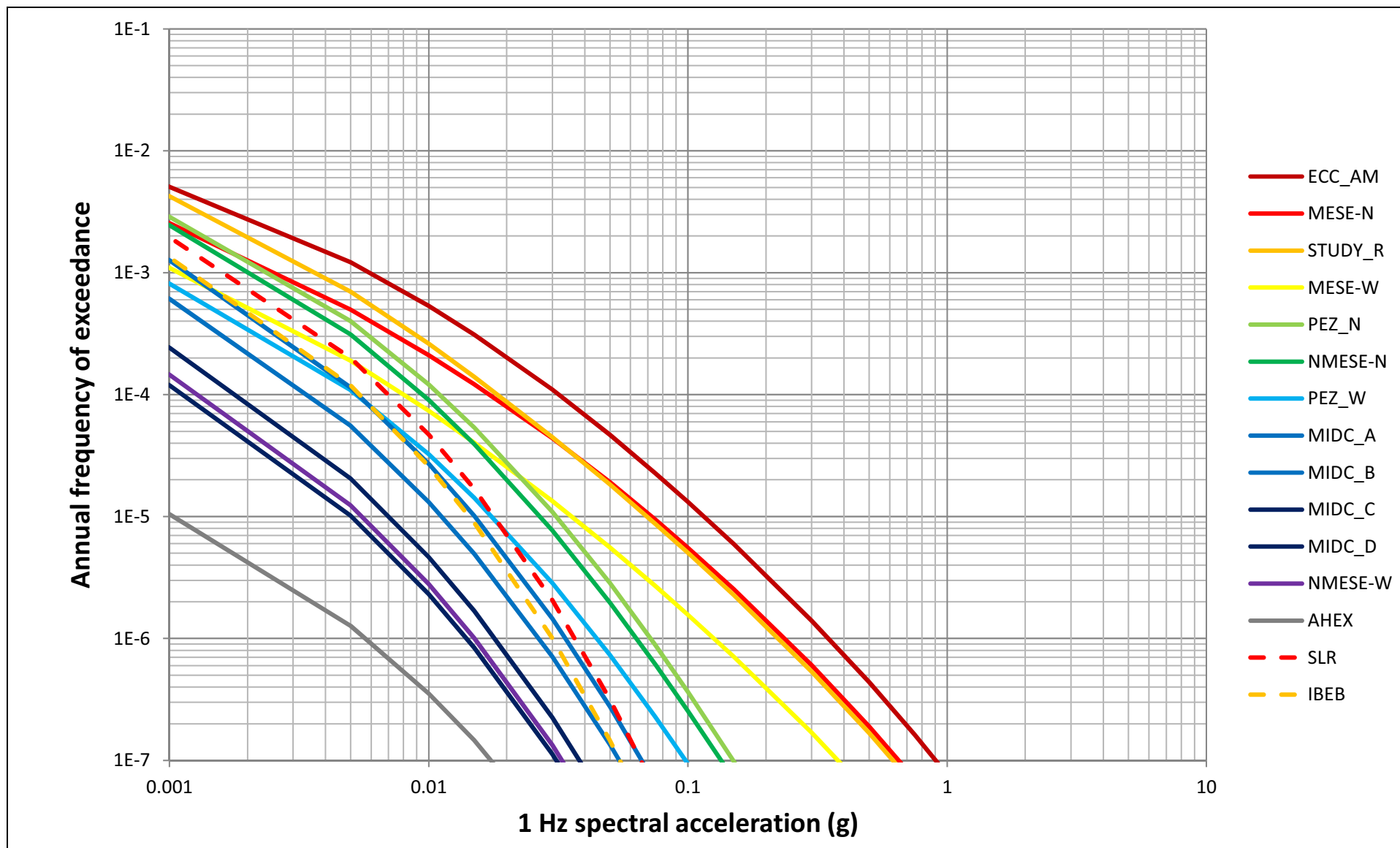
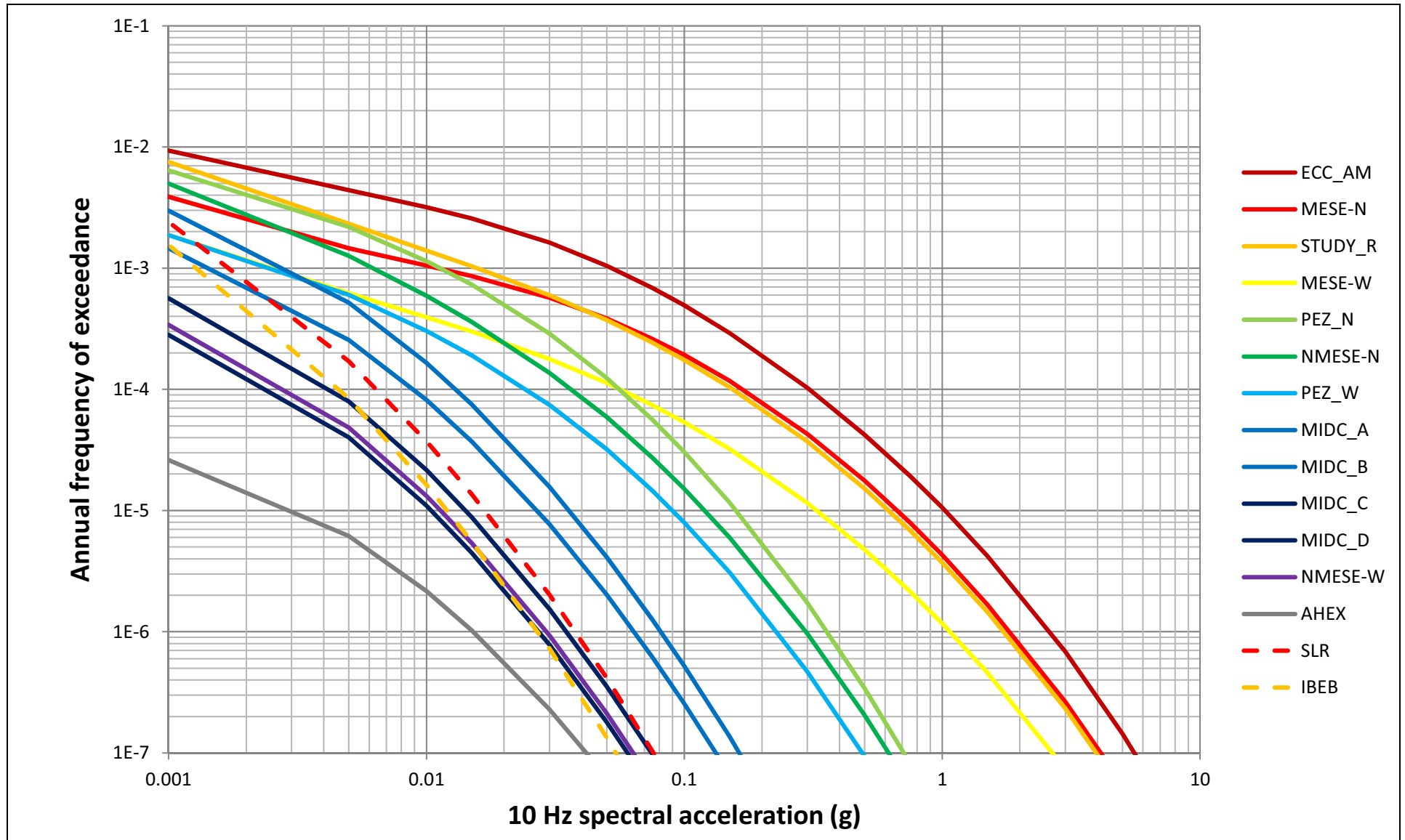
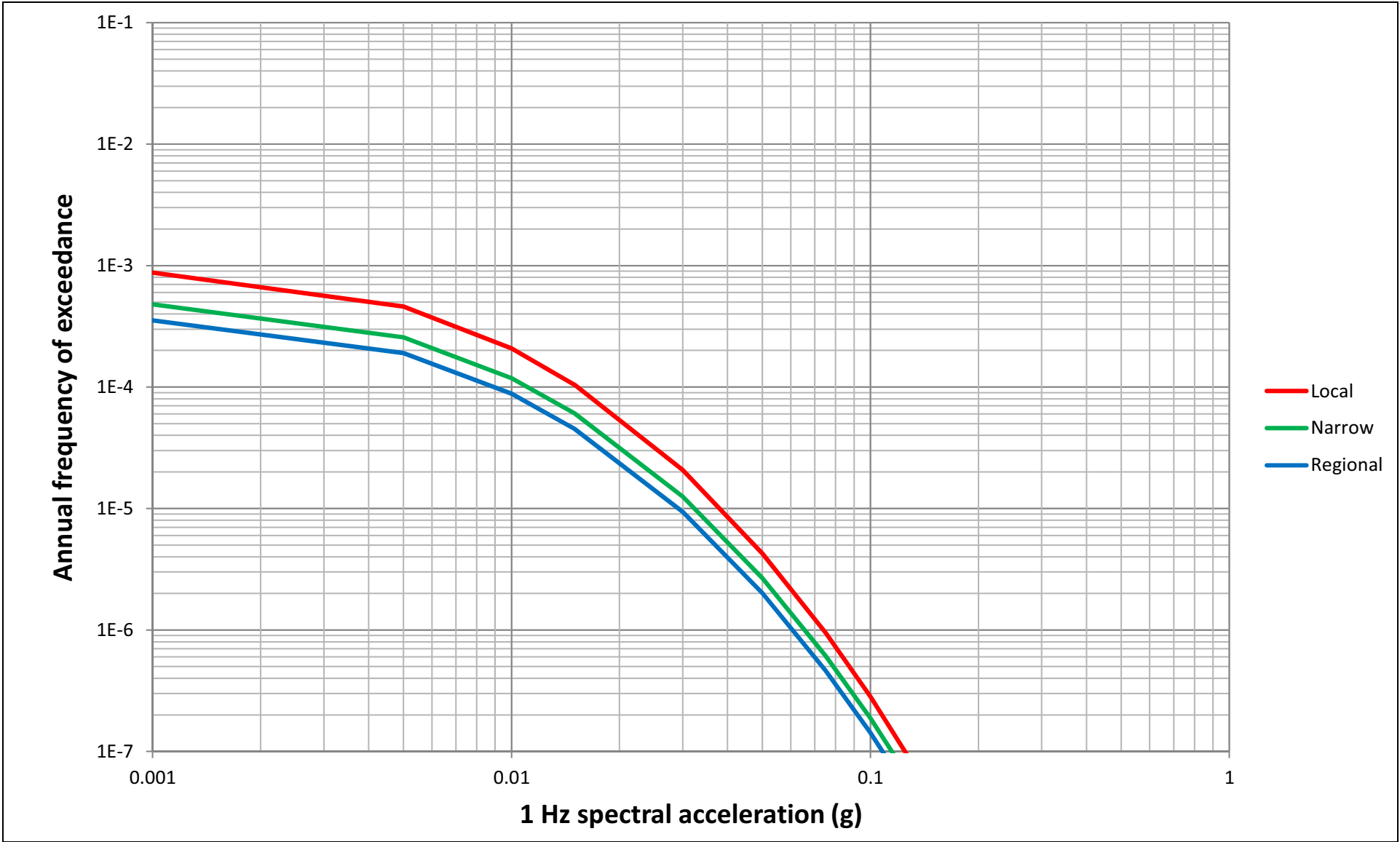
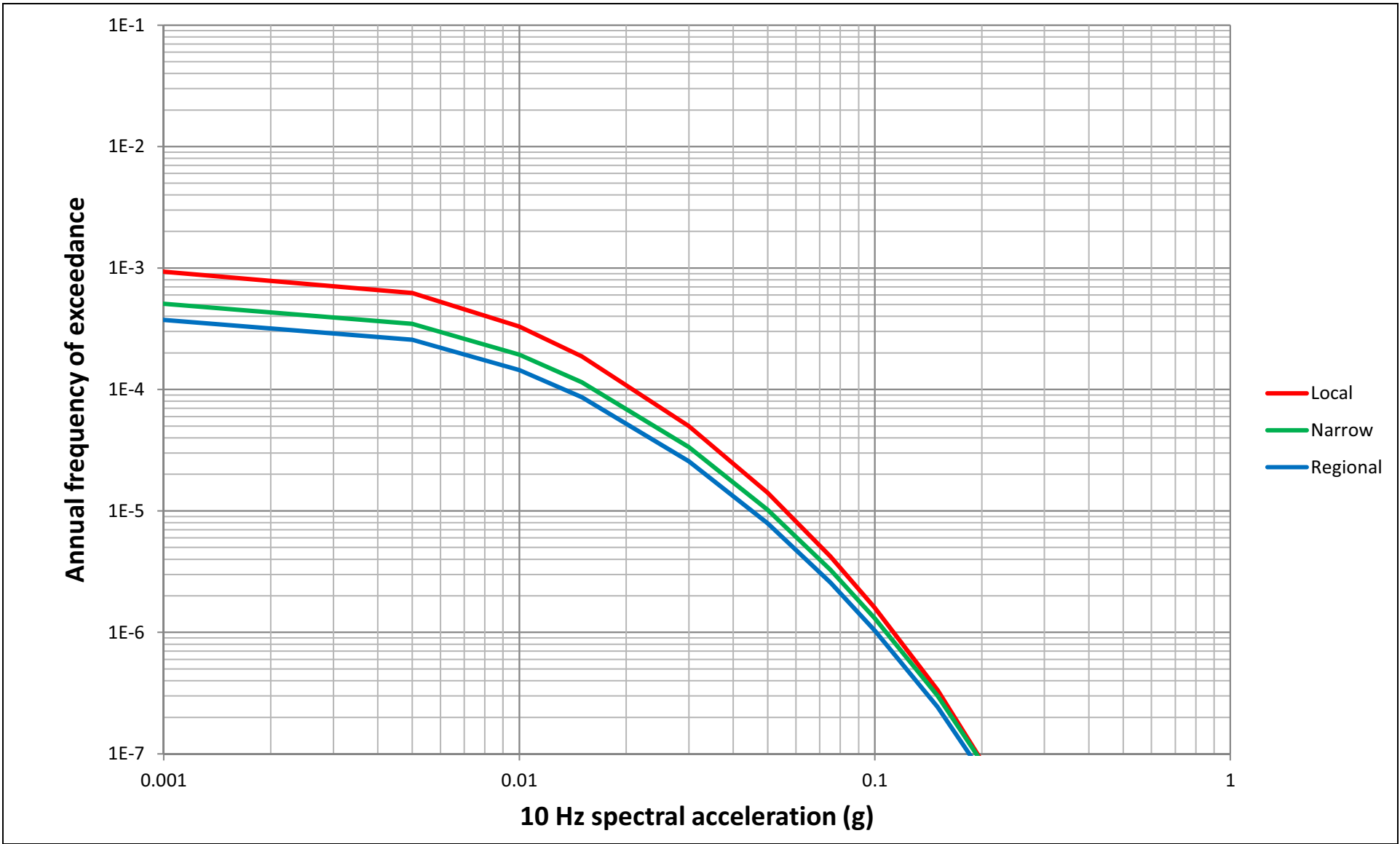
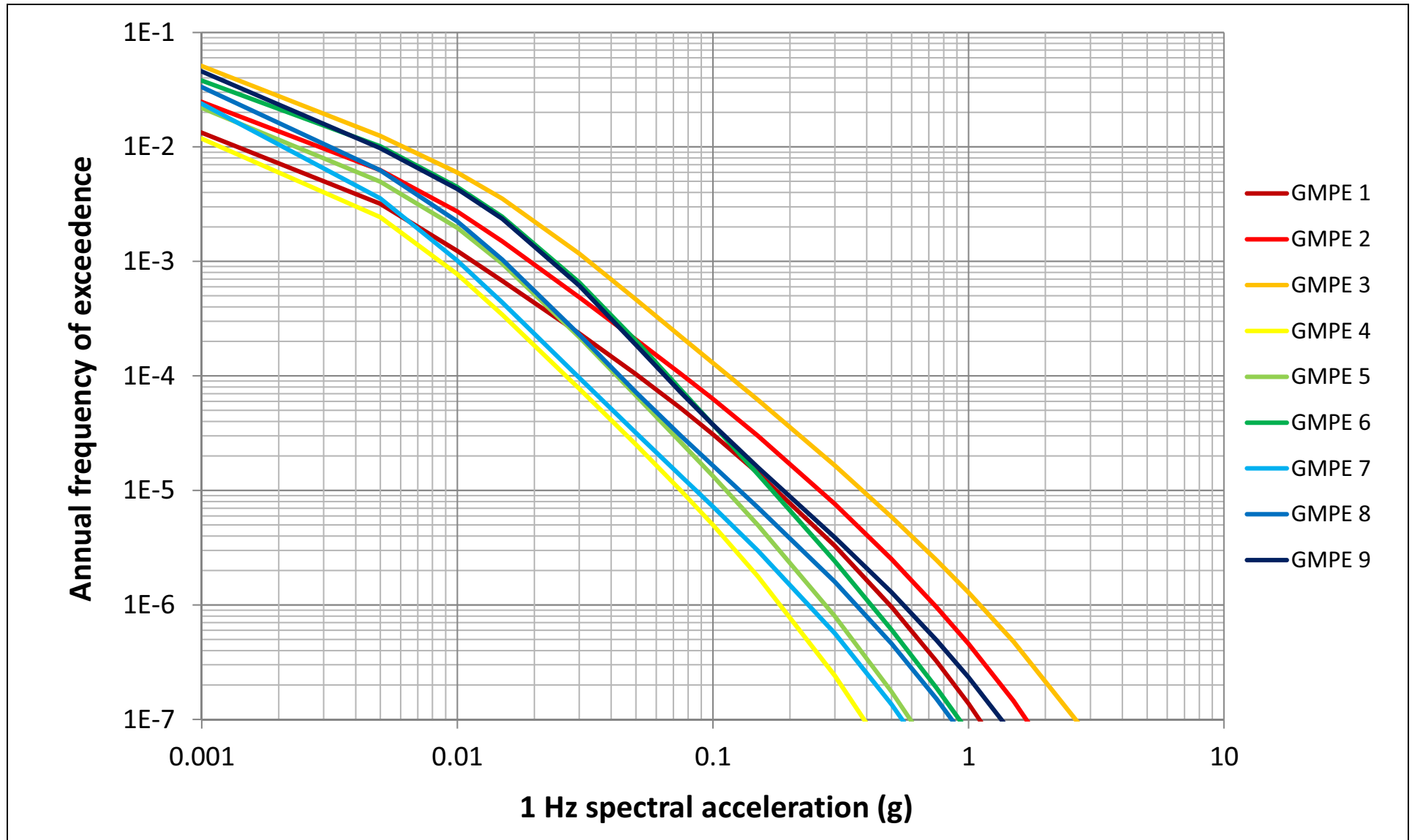


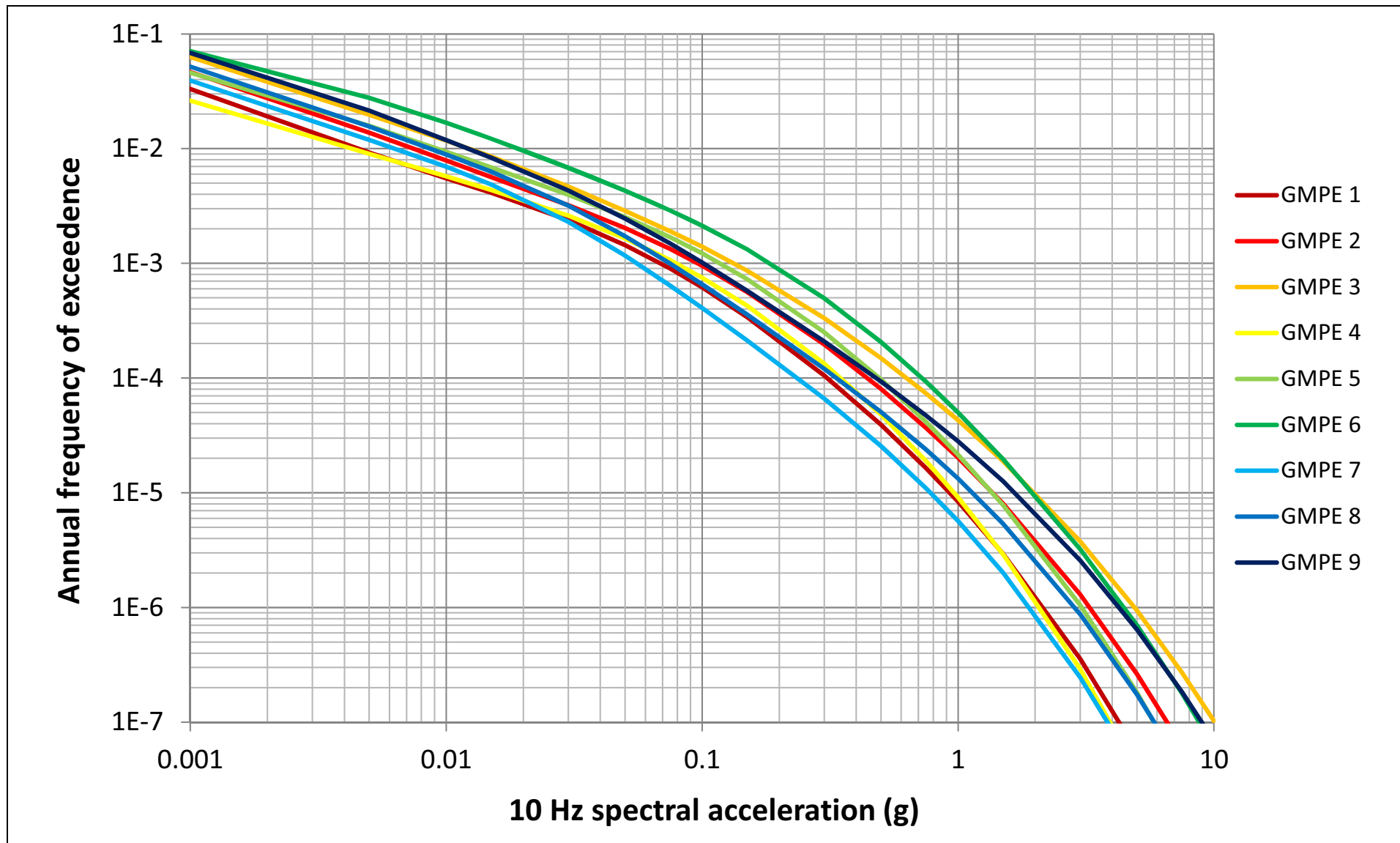
Figure 2.5.2-240 10 Hz Mean Rock Hazard from Individual Weighted Background Sources

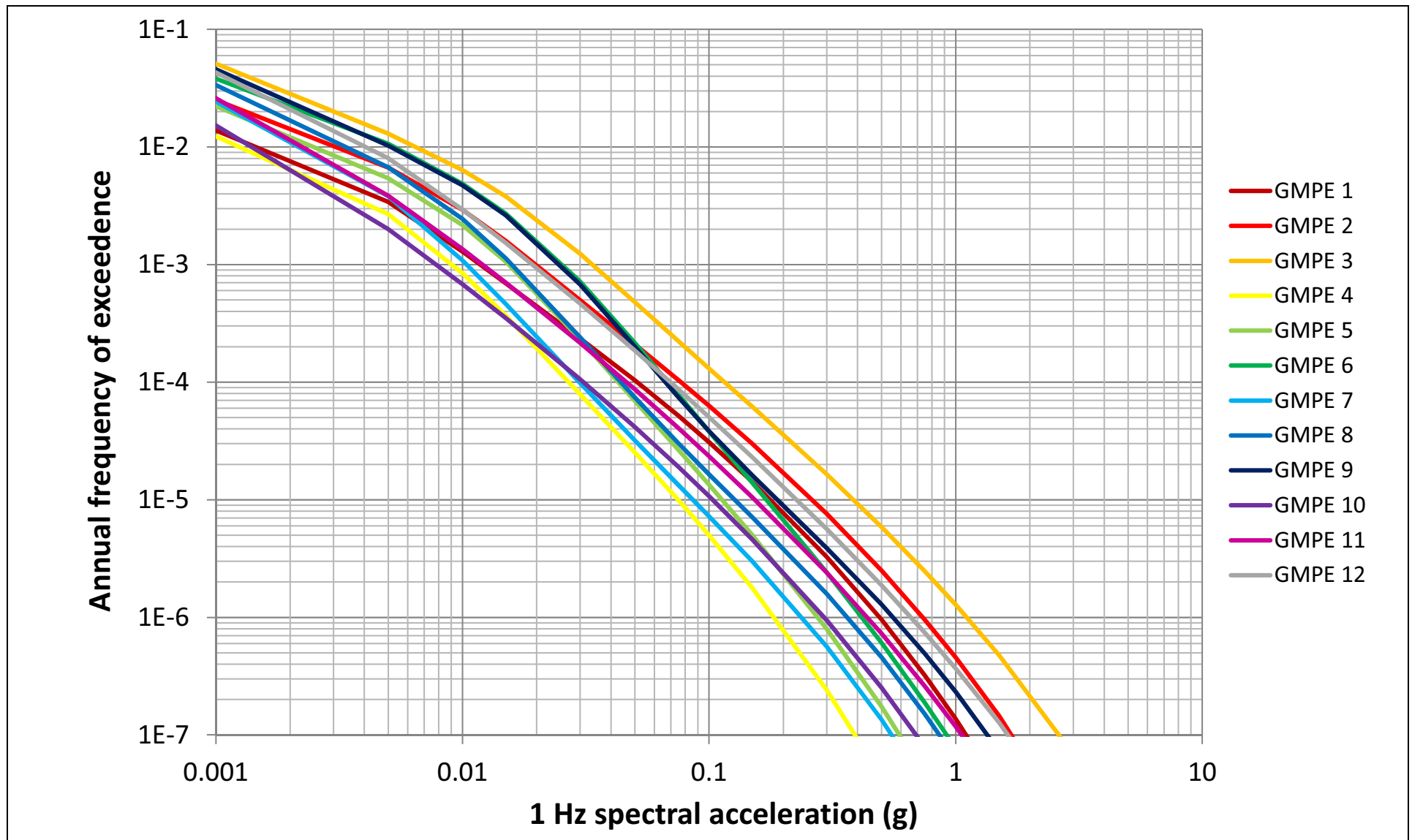


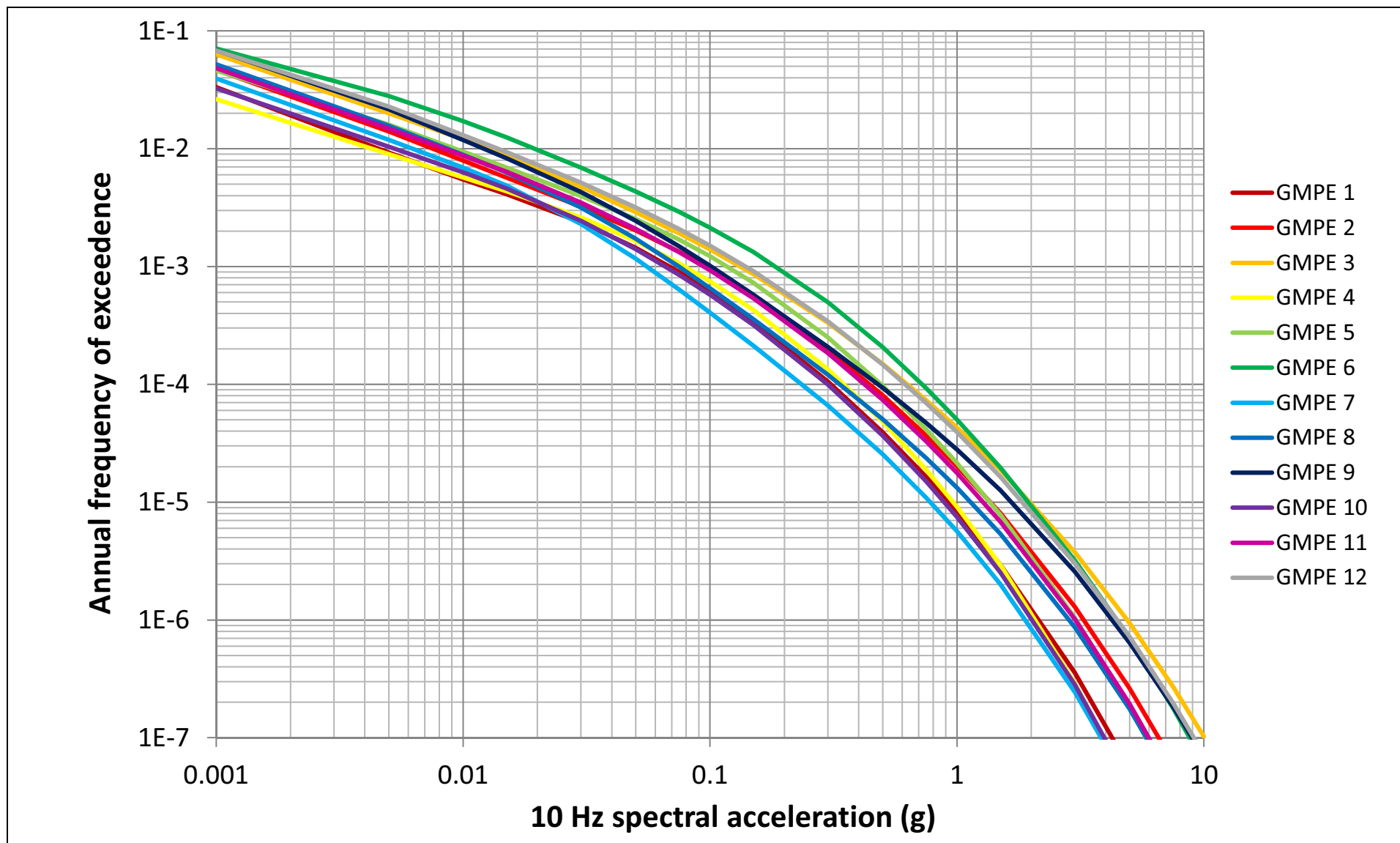




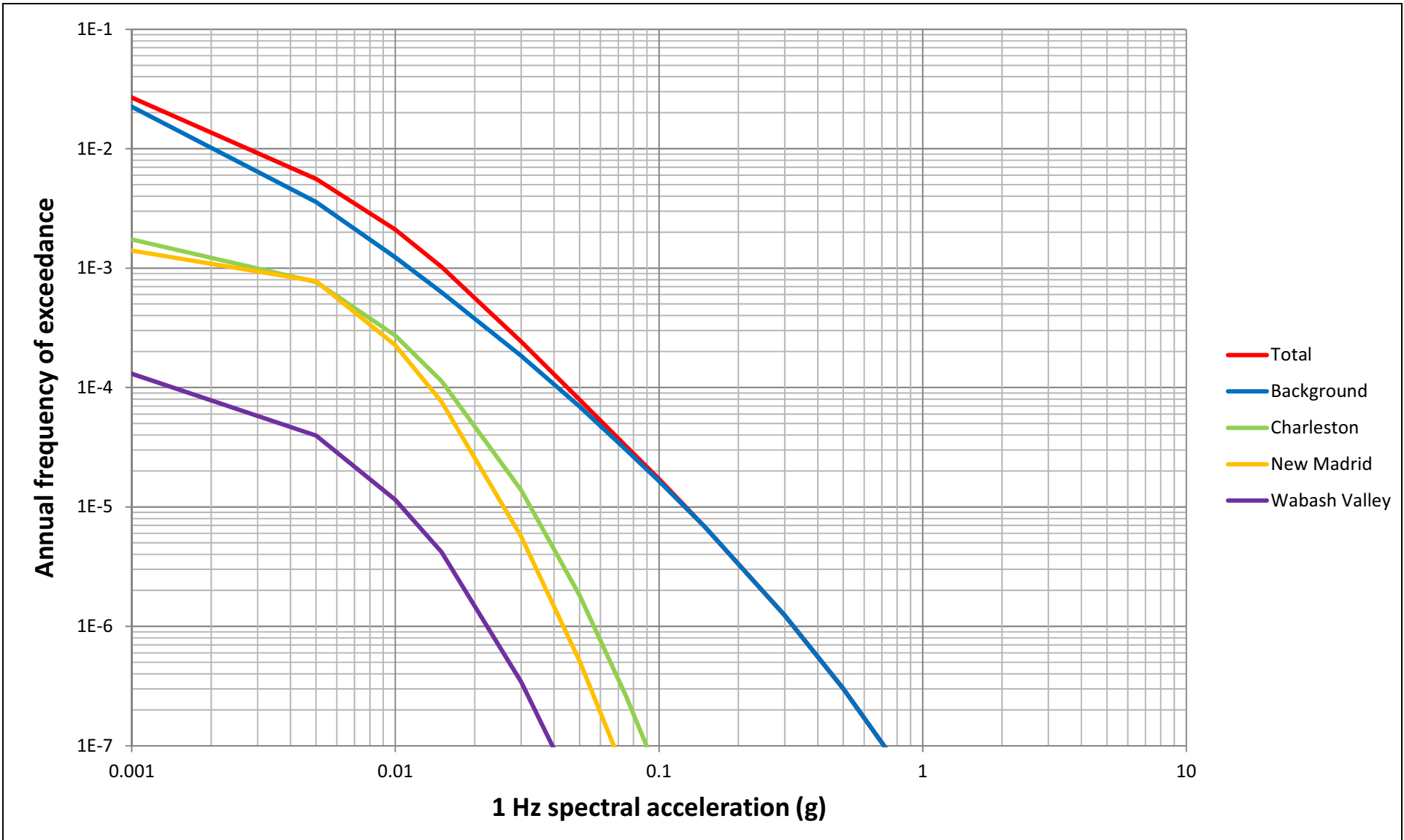








NAPS COL 2.0-27-A Figure 2.5.2-247 1 Hz Median Rock Hazard from Background, Charleston, New Madrid and Wabash Valley
NAPS ESP VAR 2.0-4



NAPS COL 2.0-27-A Figure 2.5.2-248 10 Hz Median Rock Hazard from Background, Charleston, New Madrid and Wabash Valley
NAPS ESP VAR 2.0-4

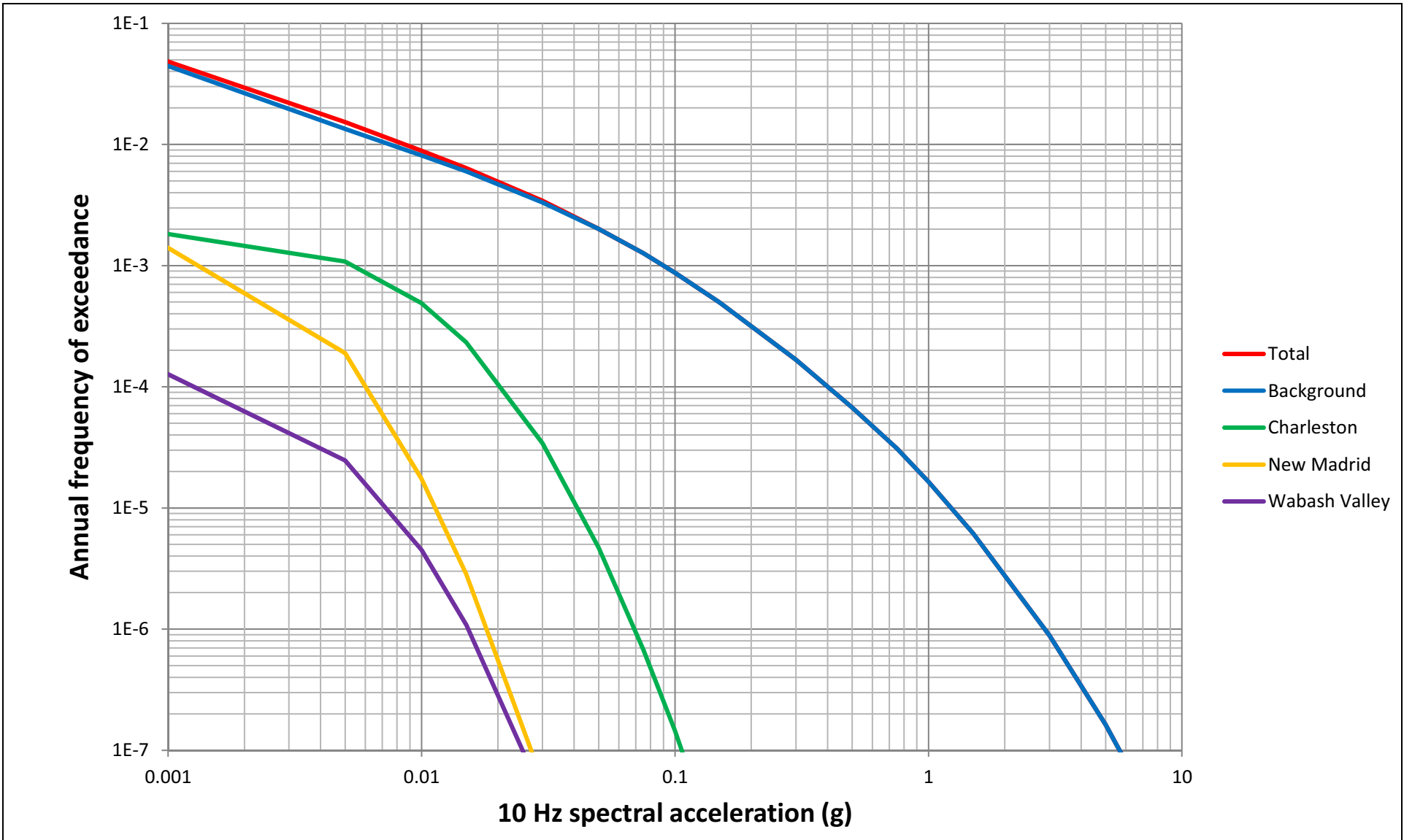
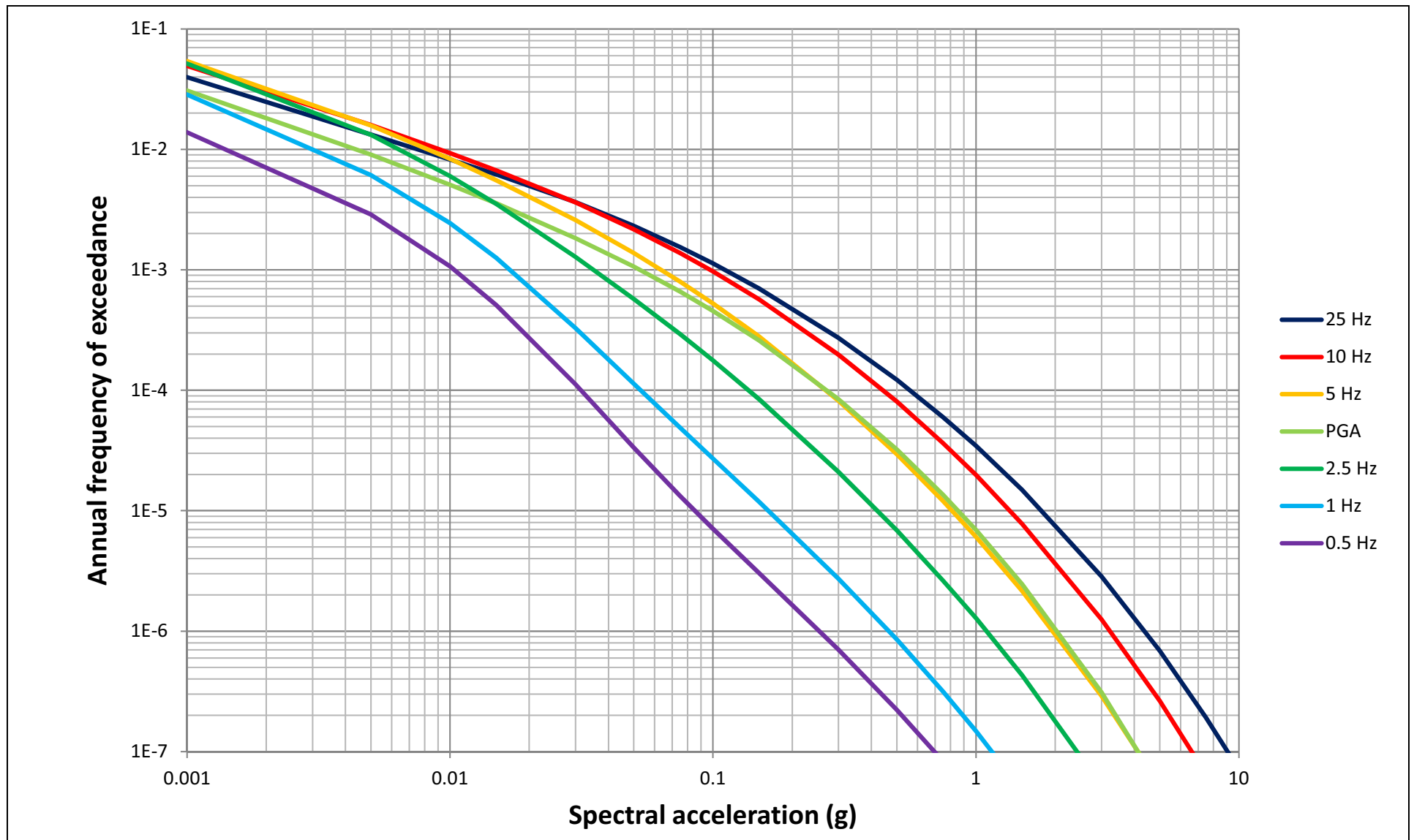
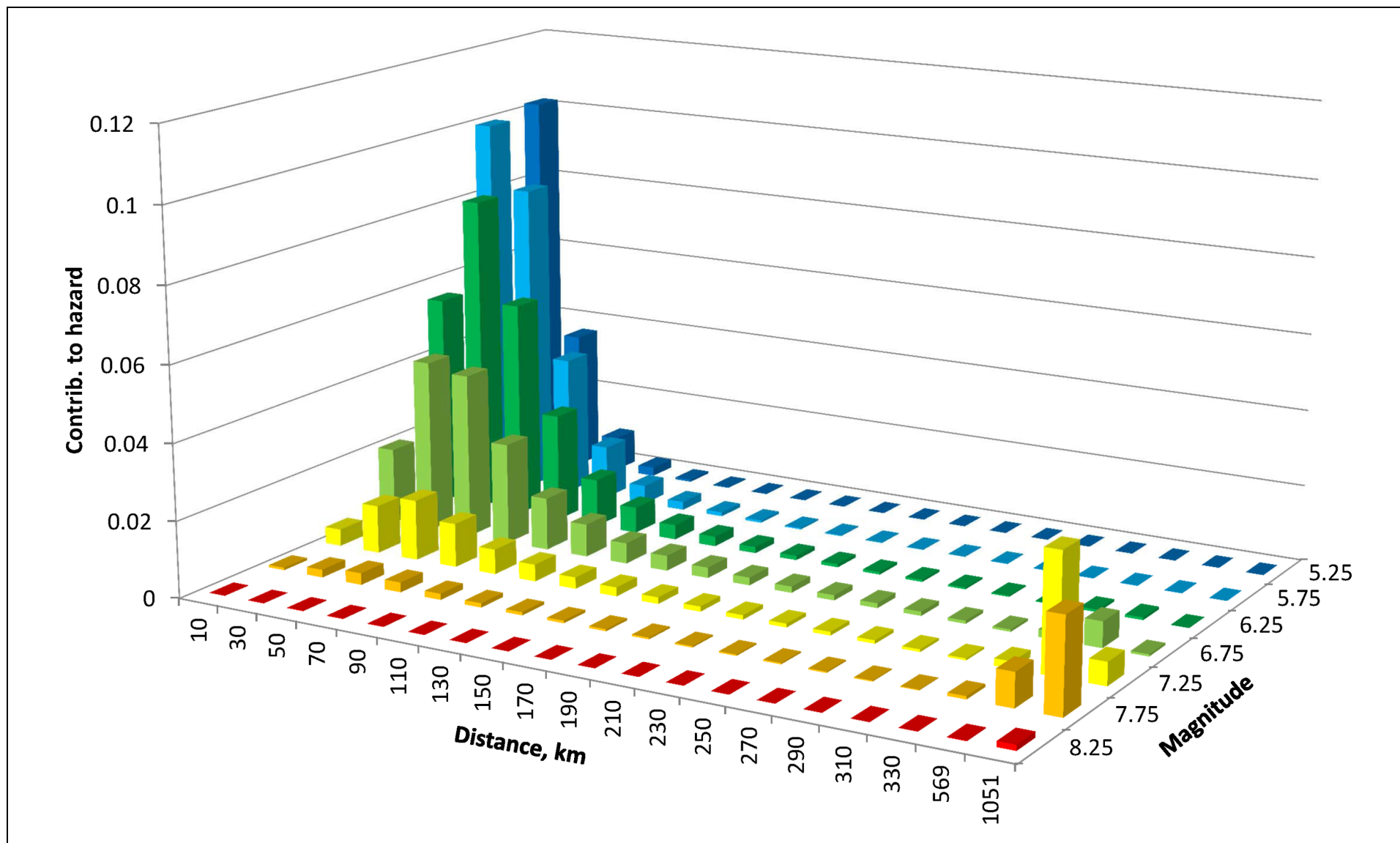


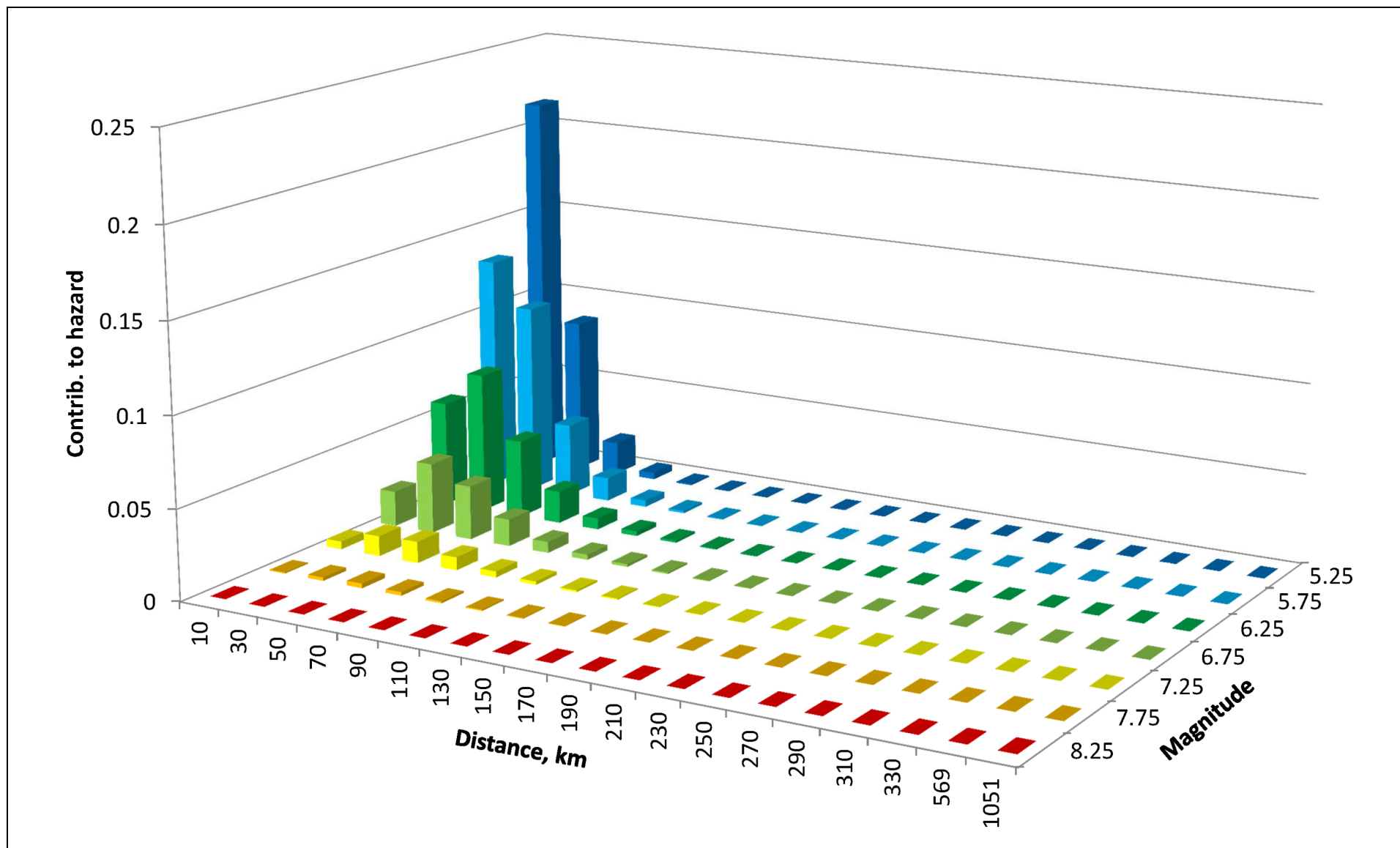
Figure 2.5.2-249 Mean Total Rock Hazard Curves for 7 Spectral Frequencies



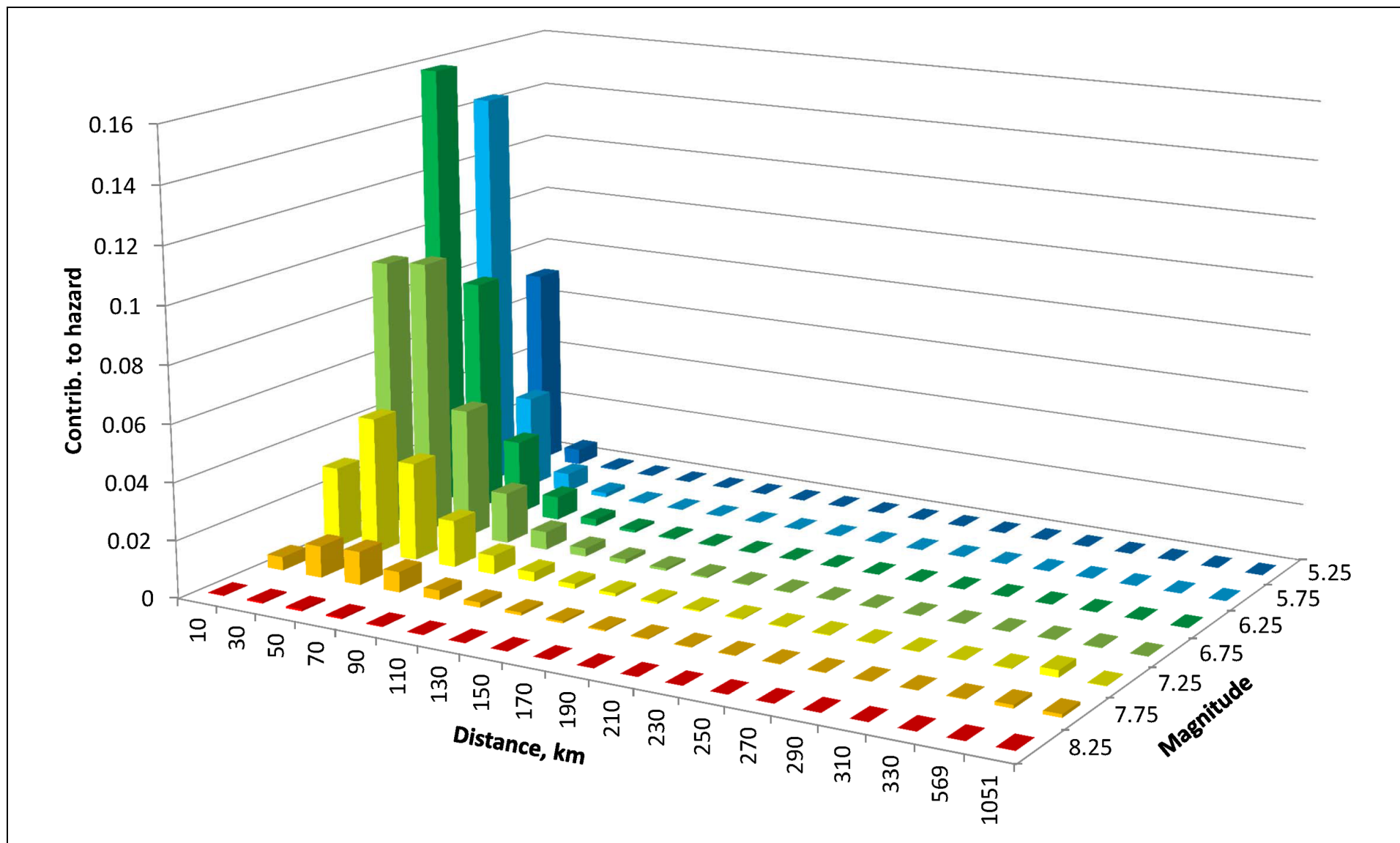
NAPS COL 2.0-27-A Figure 2.5.2-250 Mean 10^{-4} Deaggregation Plot for 1 and 2.5 Hz (LF)
 NAPS ESP VAR 2.0-4



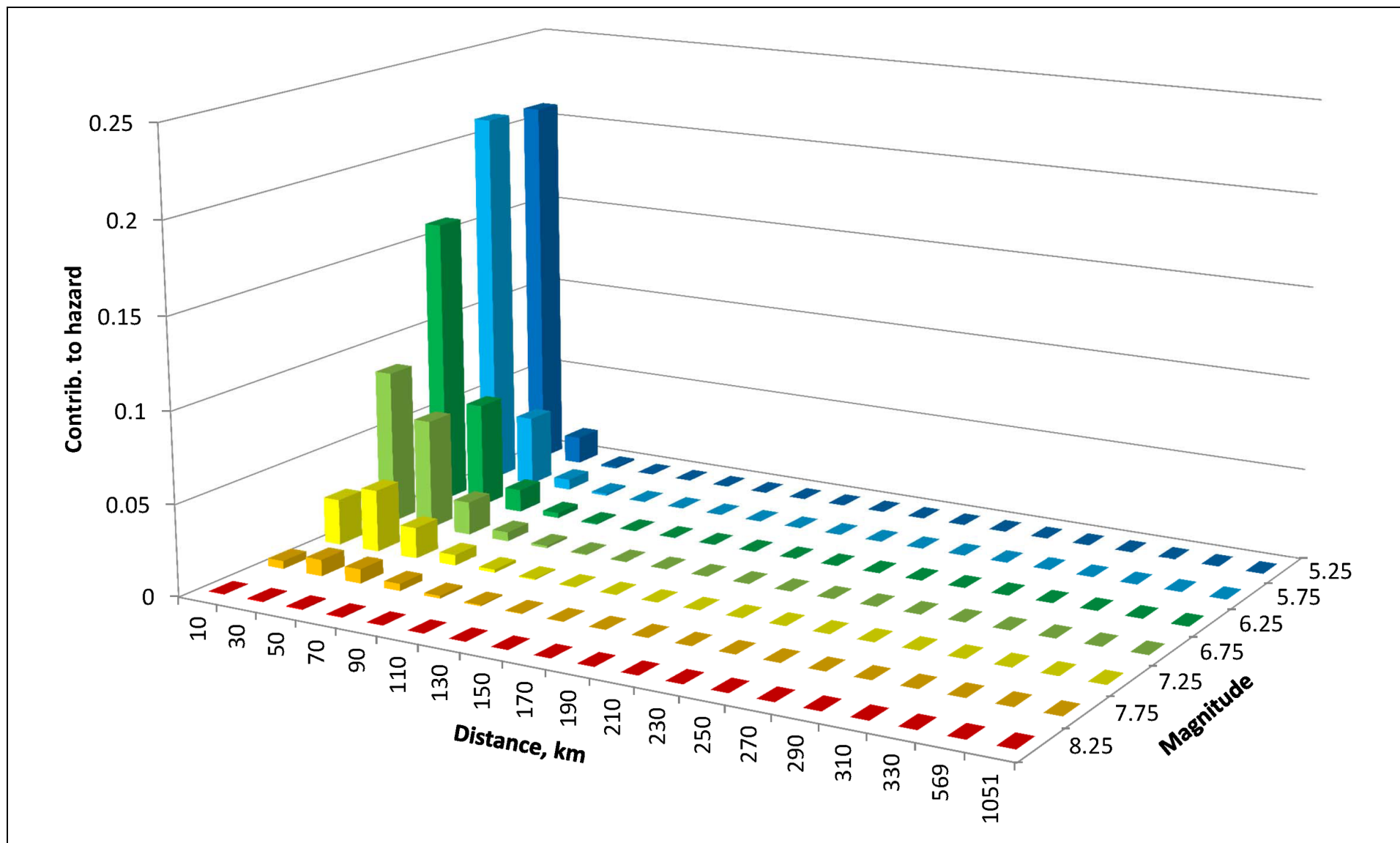
NAPS COL 2.0-27-A Figure 2.5.2-251 Mean 10^{-4} Deaggregation Plot for 5 and 10 Hz (HF)
 NAPS ESP VAR 2.0-4



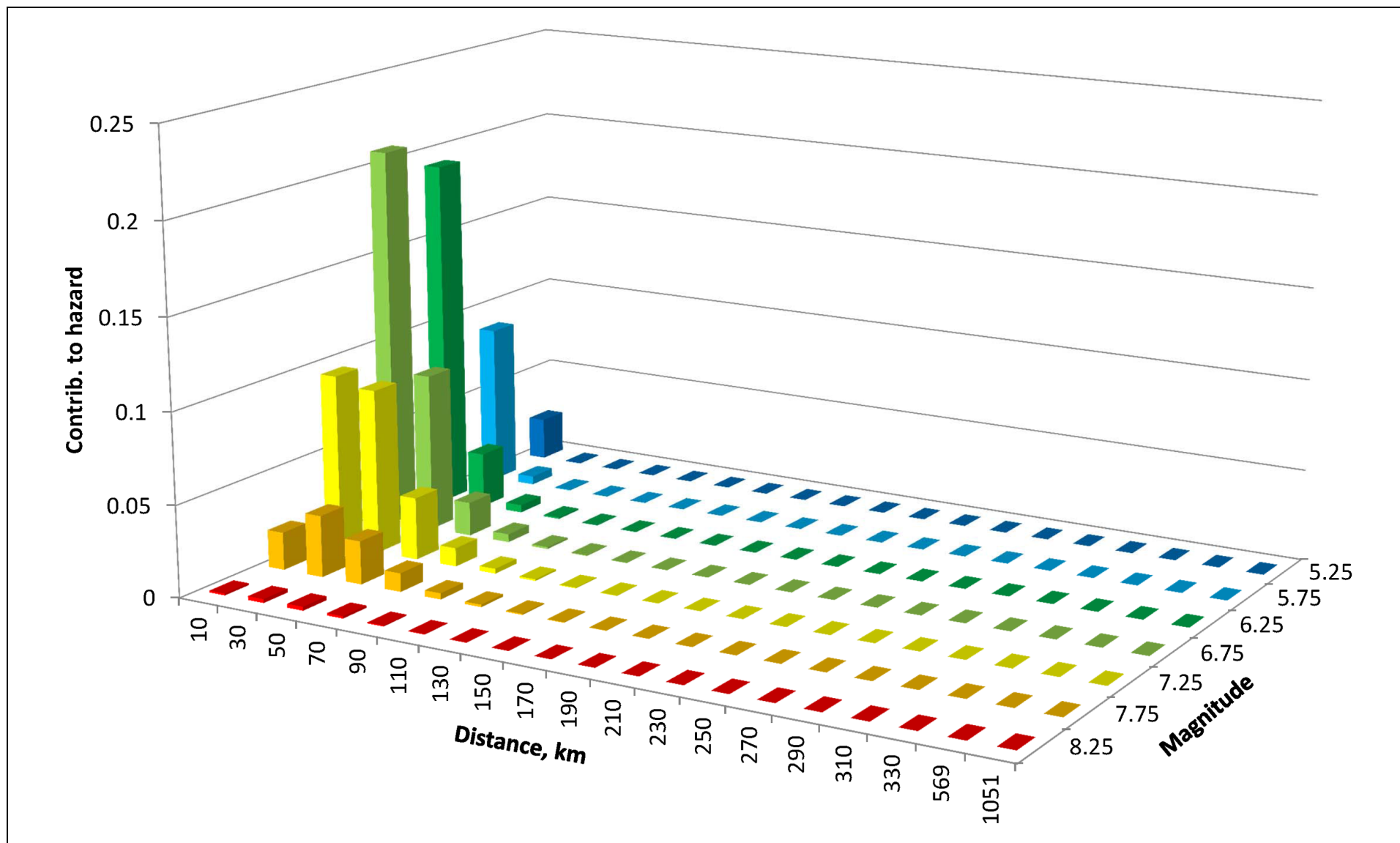
NAPS COL 2.0-27-A Figure 2.5.2-252 Mean 10^{-5} Deaggregation Plot for 1 and 2.5 Hz (LF)
 NAPS ESP VAR 2.0-4



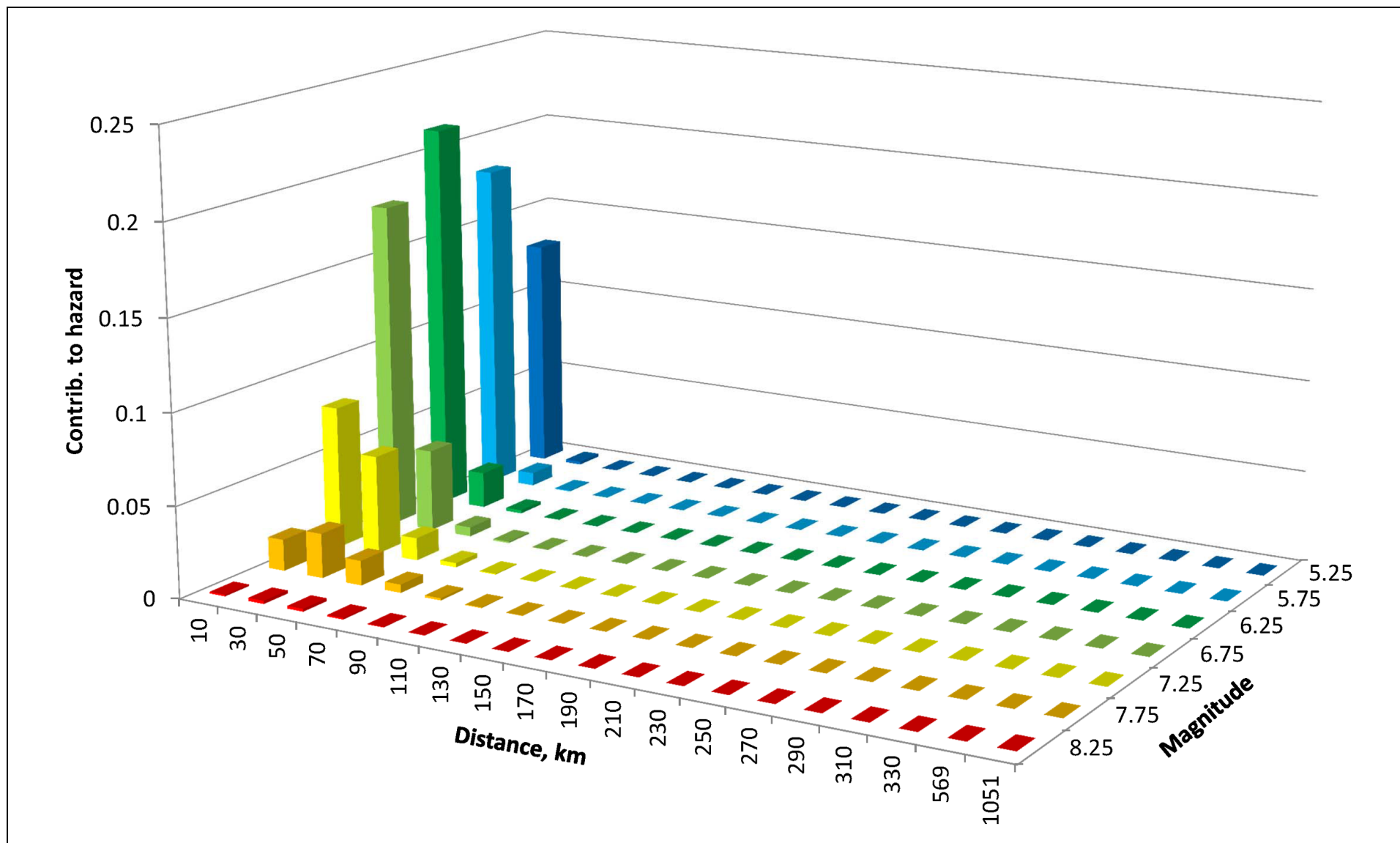
NAPS COL 2.0-27-A Figure 2.5.2-253 Mean 10^{-5} Deaggregation Plot for 5 and 10 Hz (HF)
 NAPS ESP VAR 2.0-4

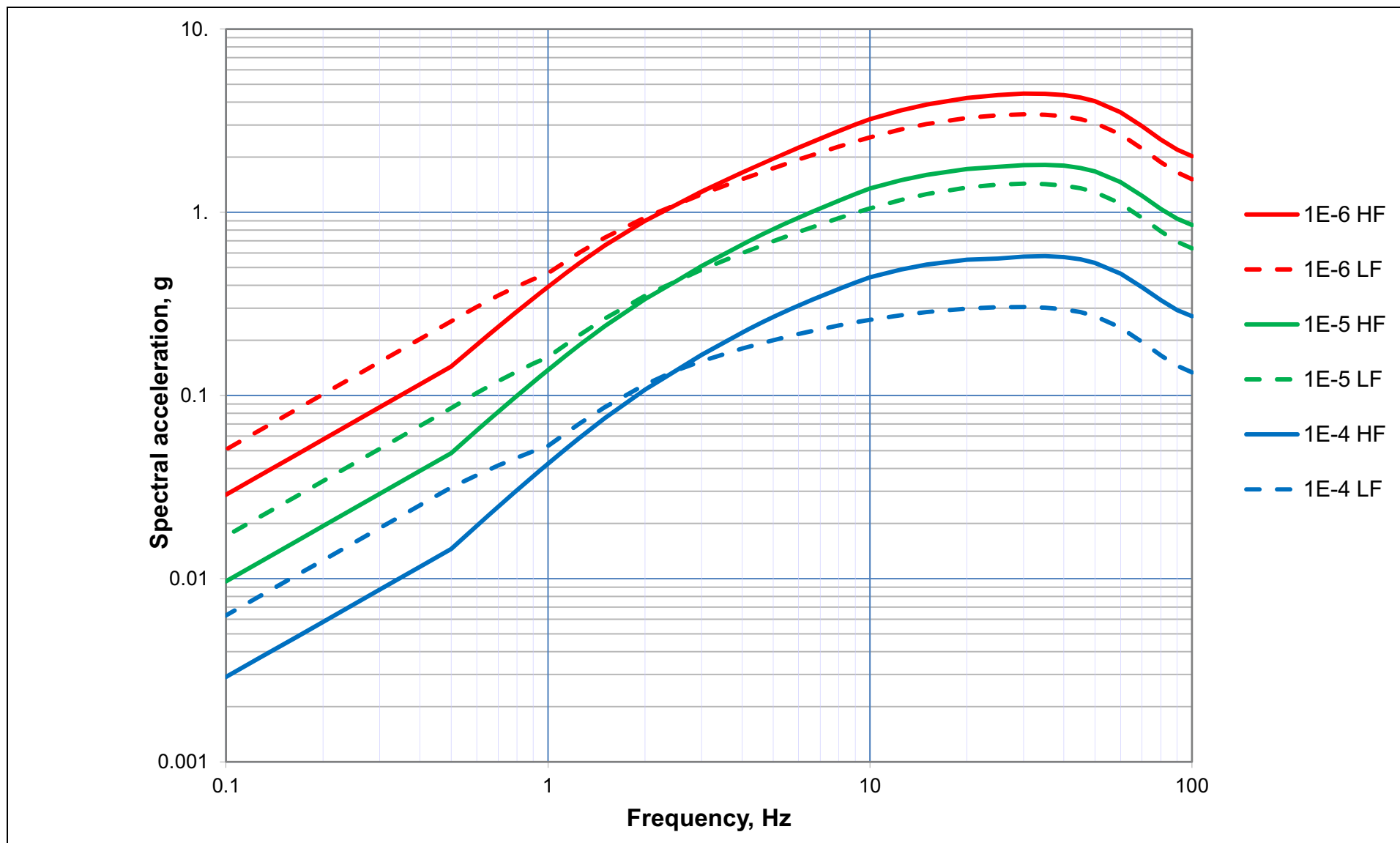


NAPS COL 2.0-27-A Figure 2.5.2-254 Mean 10^{-6} Deaggregation Plot for 1 and 2.5 Hz (LF)
 NAPS ESP VAR 2.0-4



NAPS COL 2.0-27-A Figure 2.5.2-255 Mean 10^{-6} Deaggregation Plot for 5 and 10 Hz (HF)
 NAPS ESP VAR 2.0-4





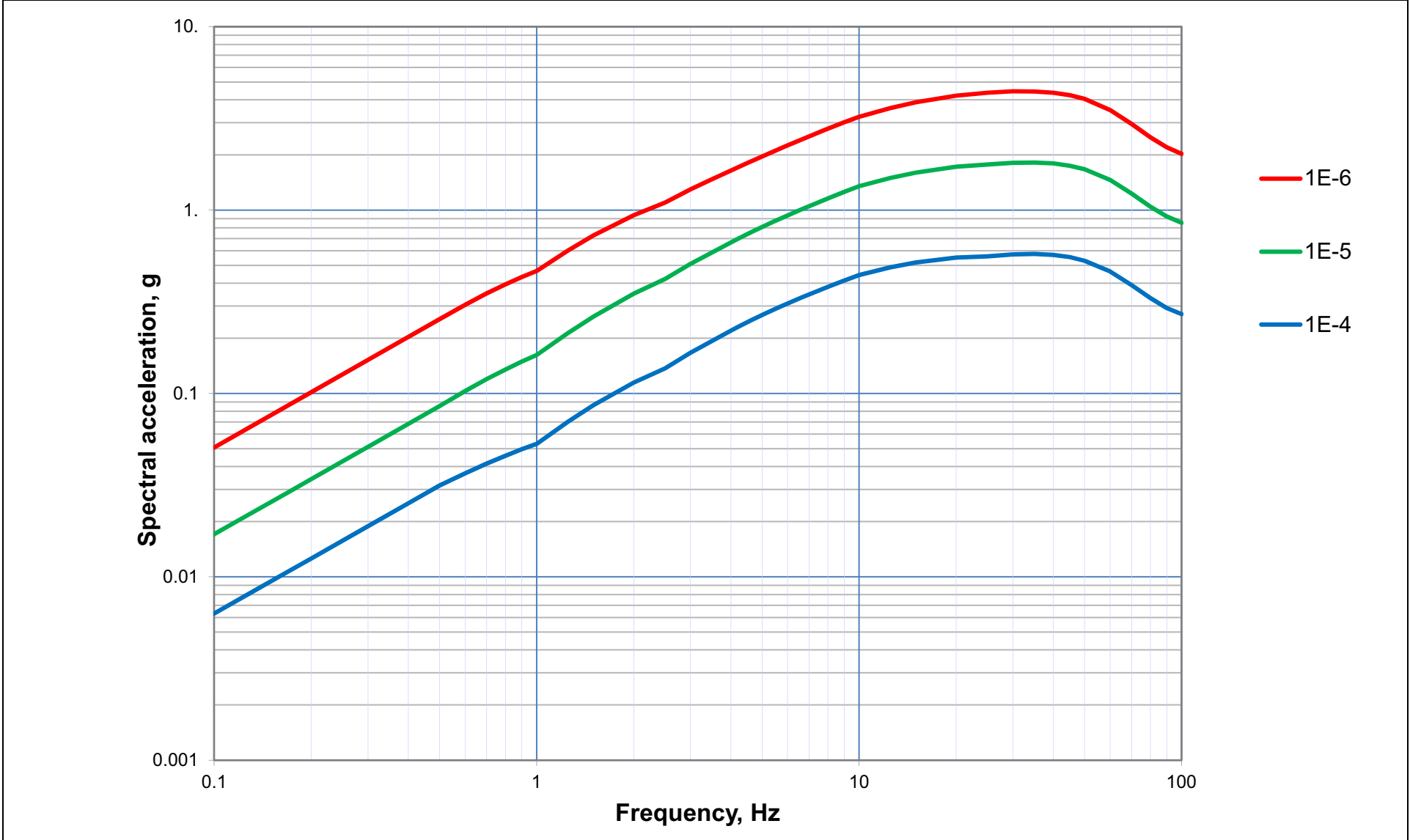
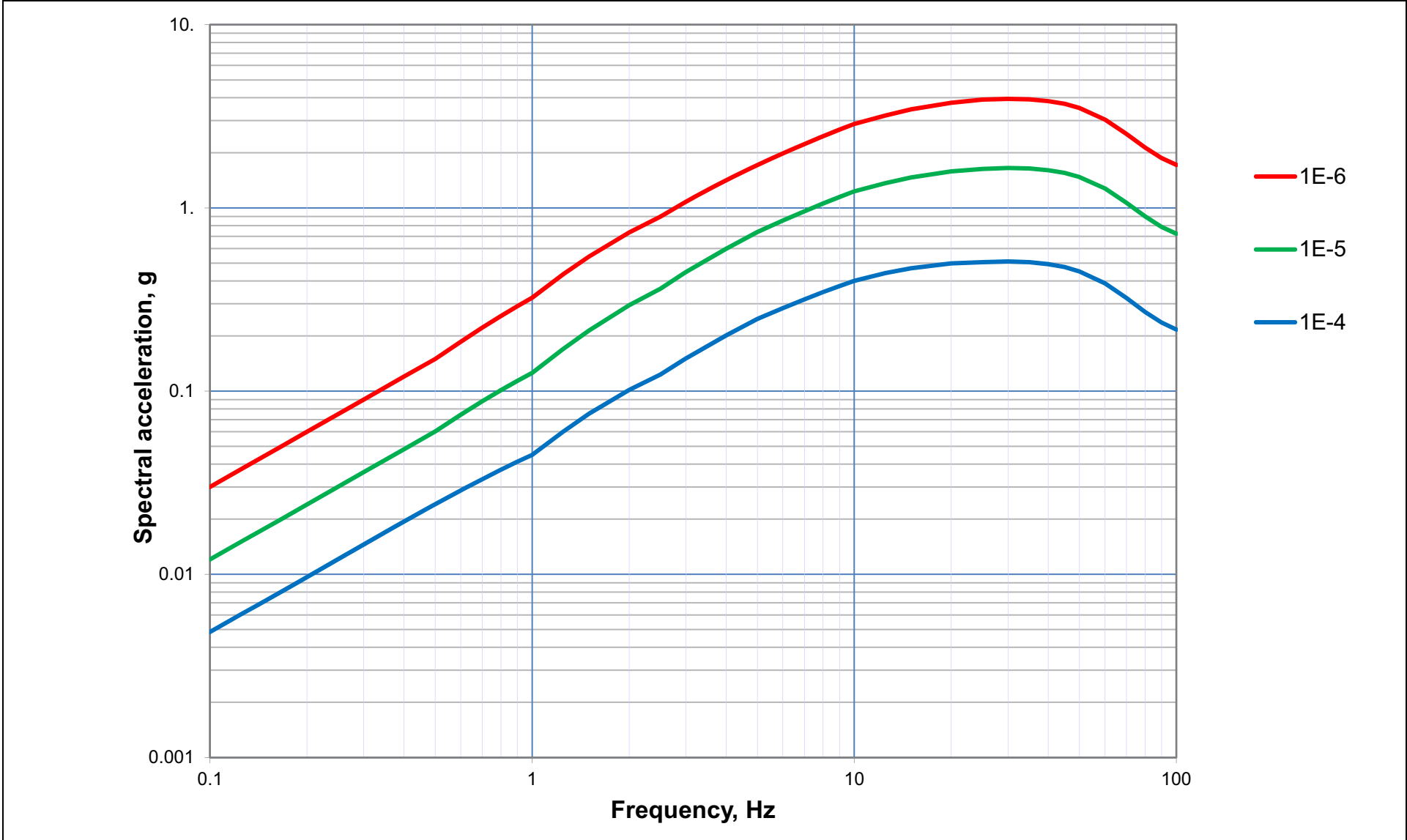
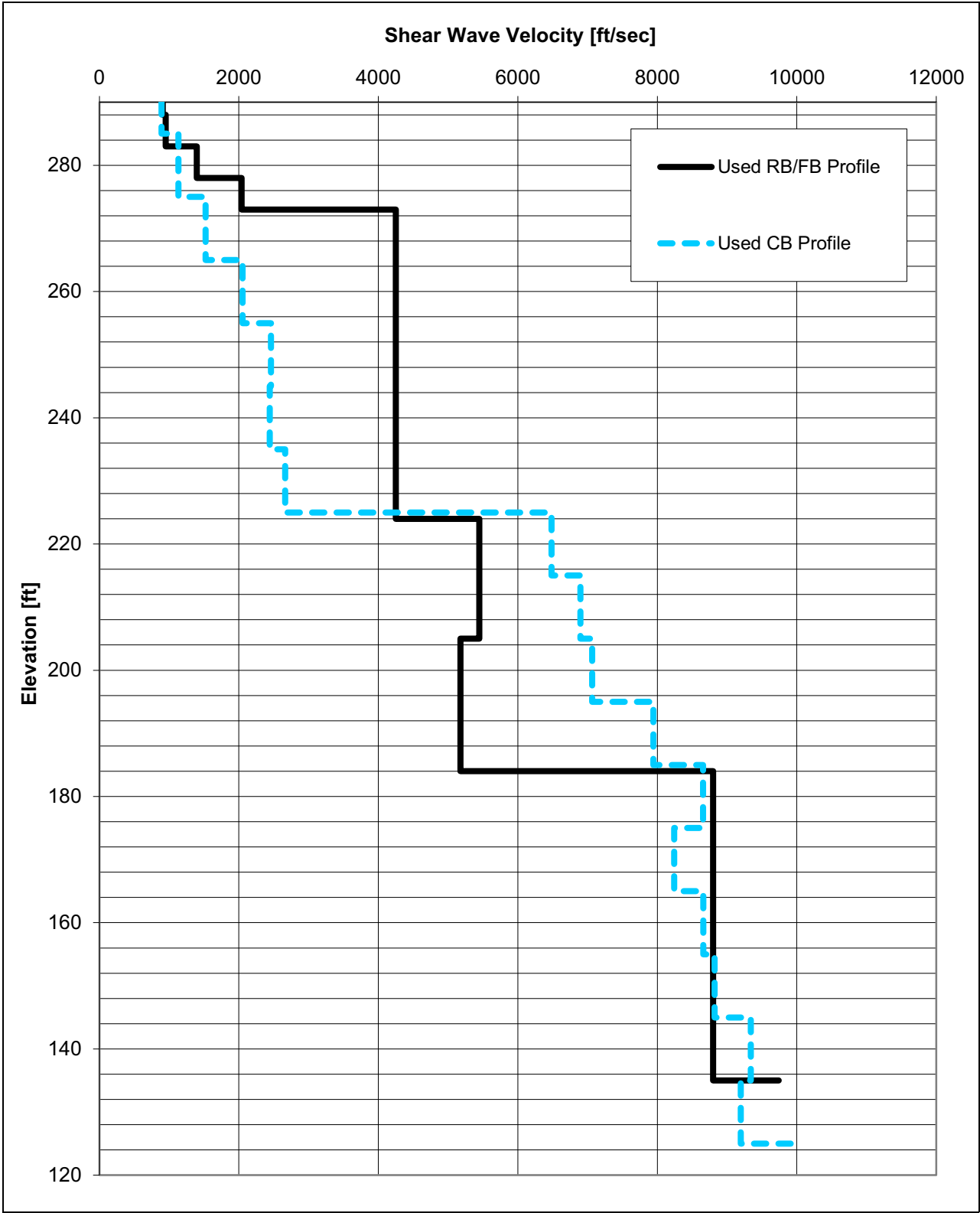


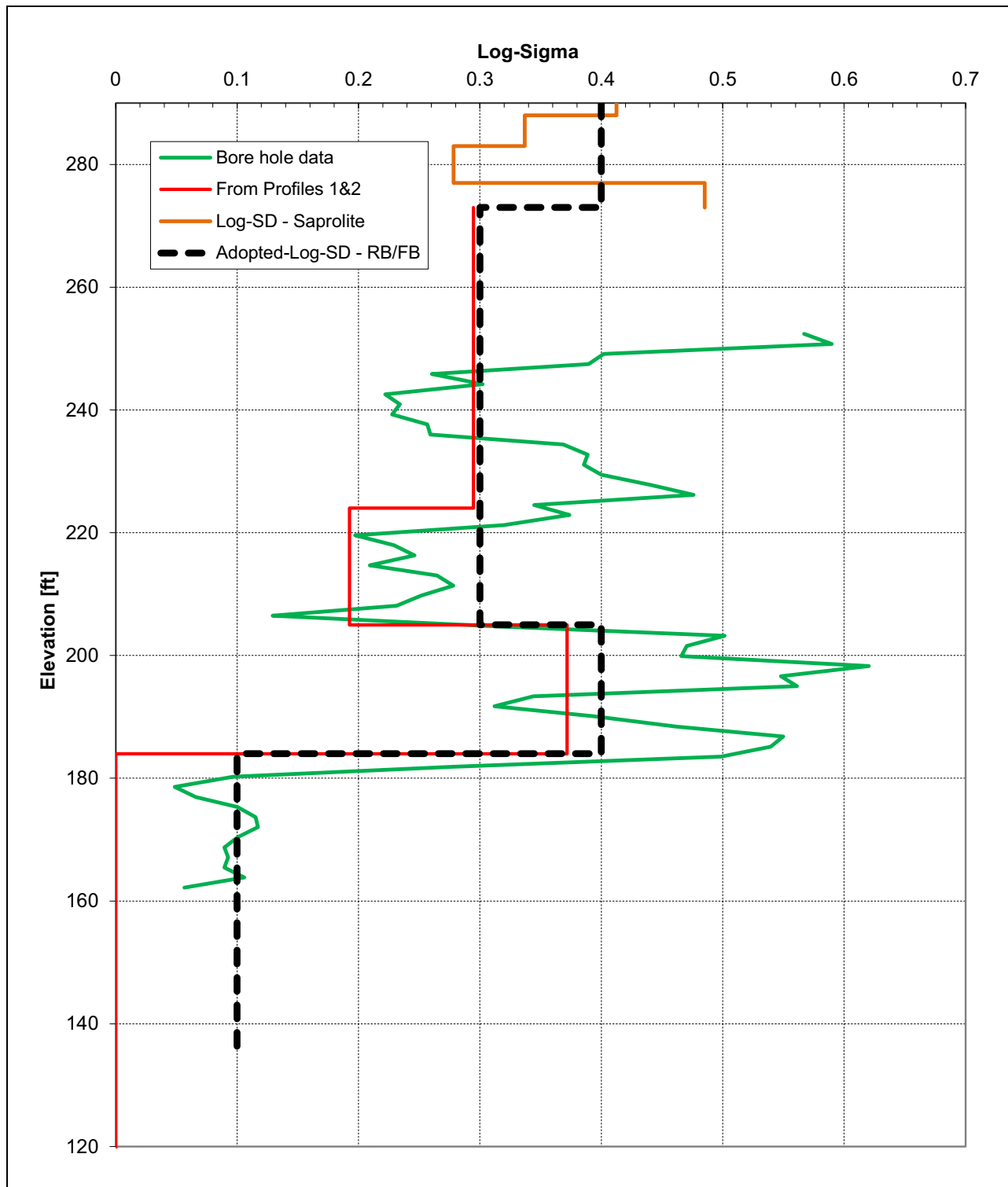
Figure 2.5.2-258 Median Rock UHRS for MAFEs of 10^{-4} , 10^{-5} and 10^{-6}



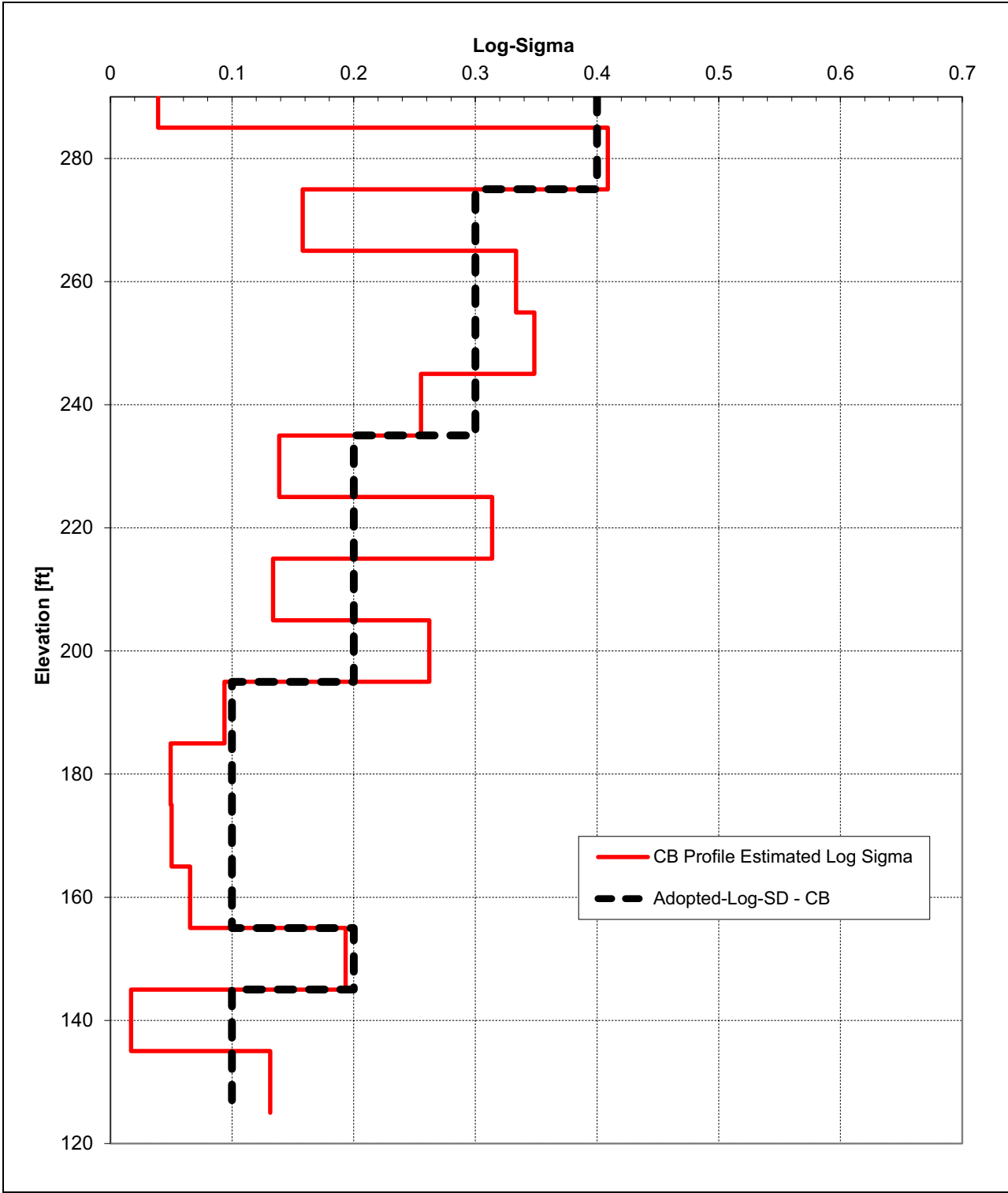
NAPS COL 2.0-27-A Figure 2.5.2-259 **Best Estimate Shear-Wave Velocity Profile for RB/FB and CB Soil Columns**



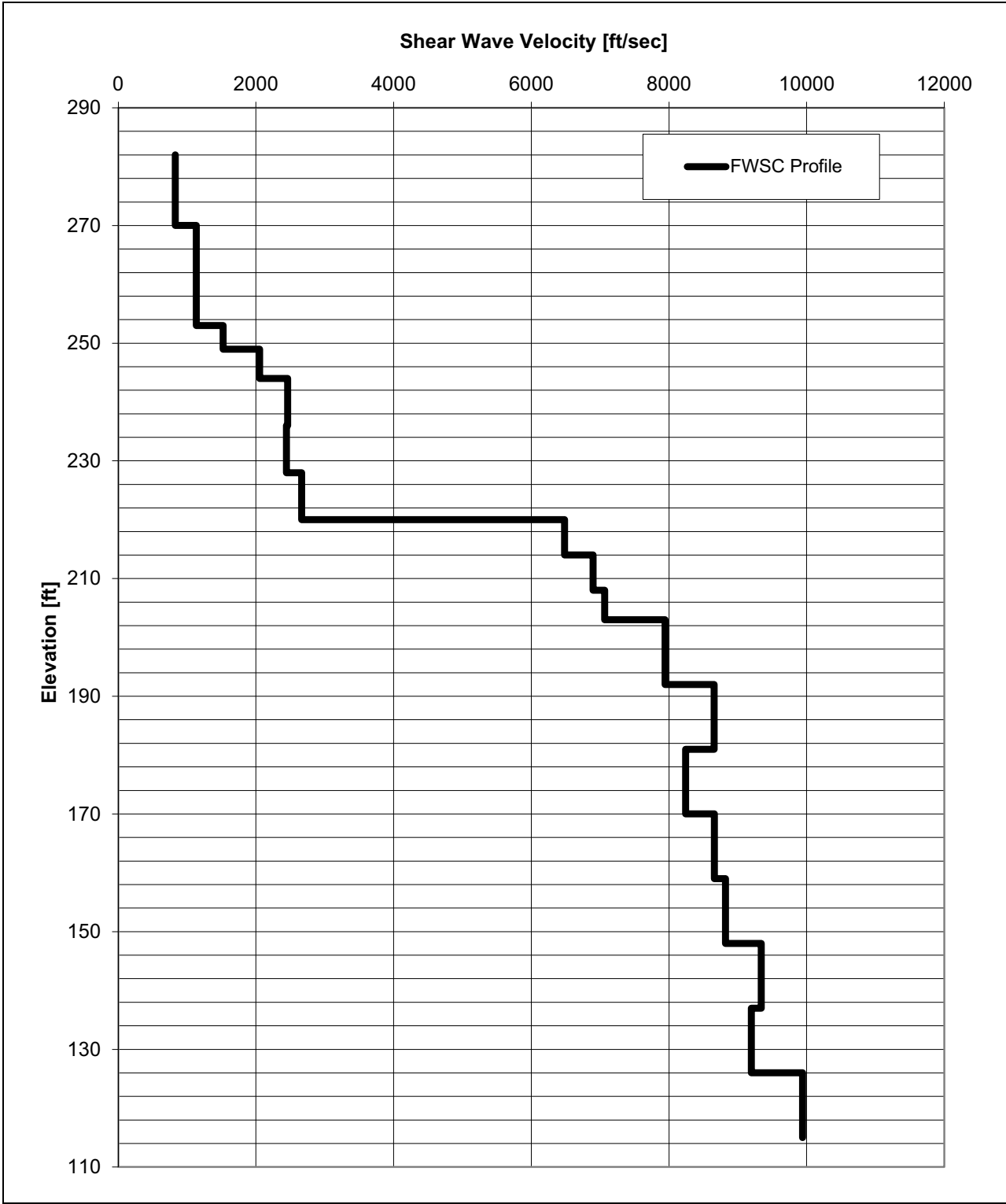
NAPS COL 2.0-27-A Figure 2.5.2-260 **Logarithmic Standard Deviation for the RB/FB
Shear-Wave Velocity Profile**



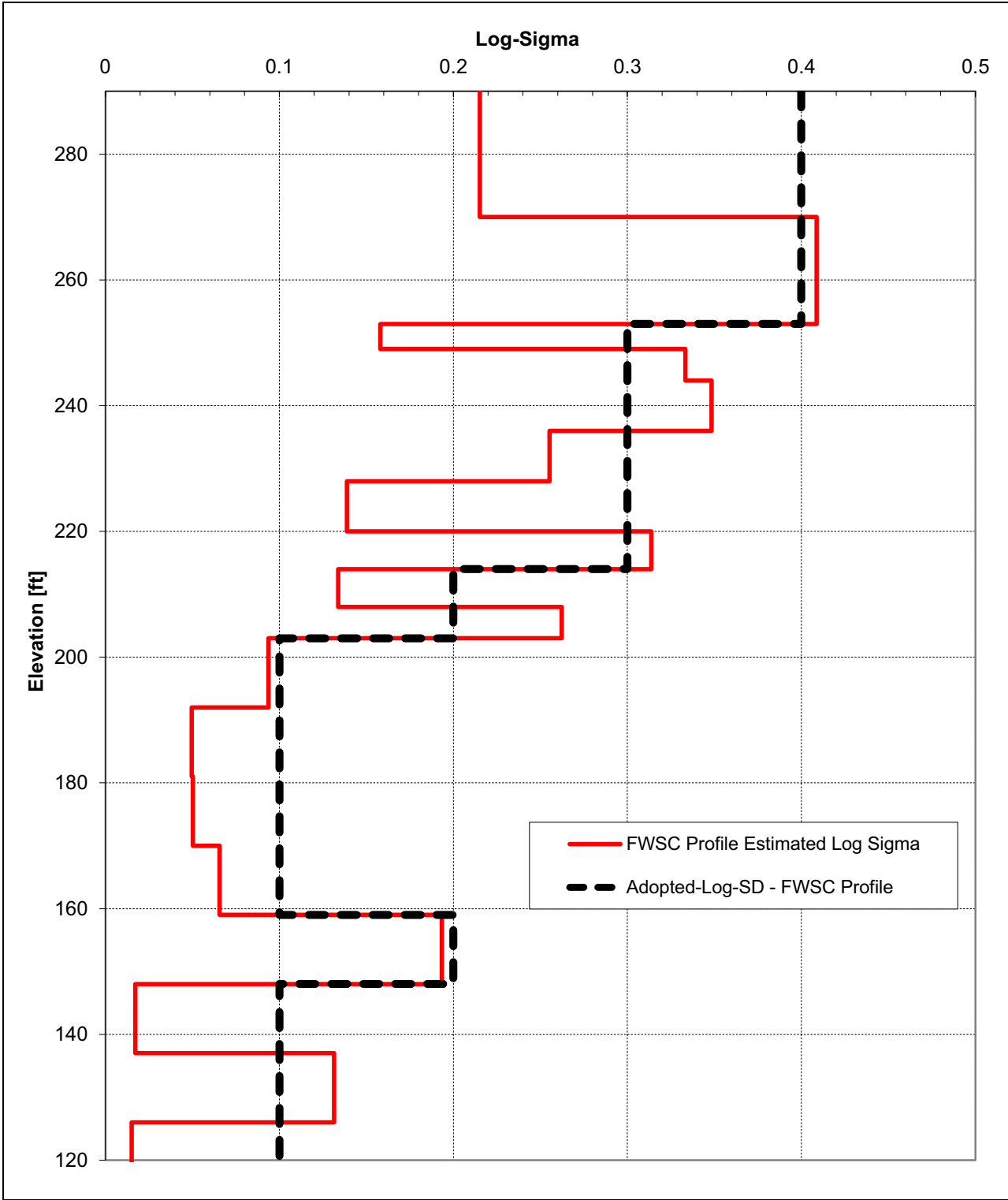
NAPS COL 2.0-27-A Figure 2.5.2-261 **Logarithmic Standard Deviation for the CB
Shear-Wave Velocity Profile**



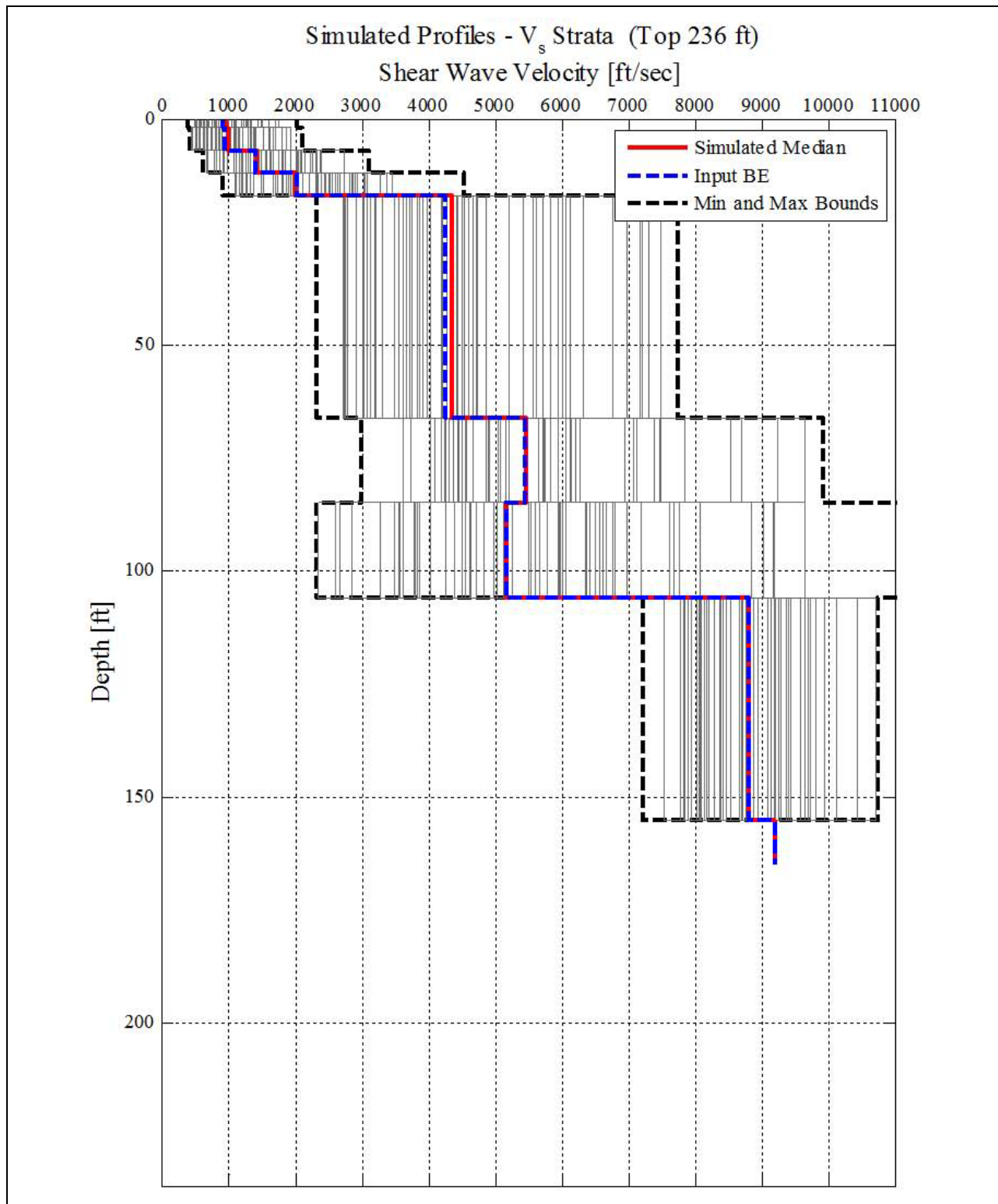
NAPS COL 2.0-27-A Figure 2.5.2-262 **Best Estimate Shear-Wave Velocity Profile for FWSC Soil Column**



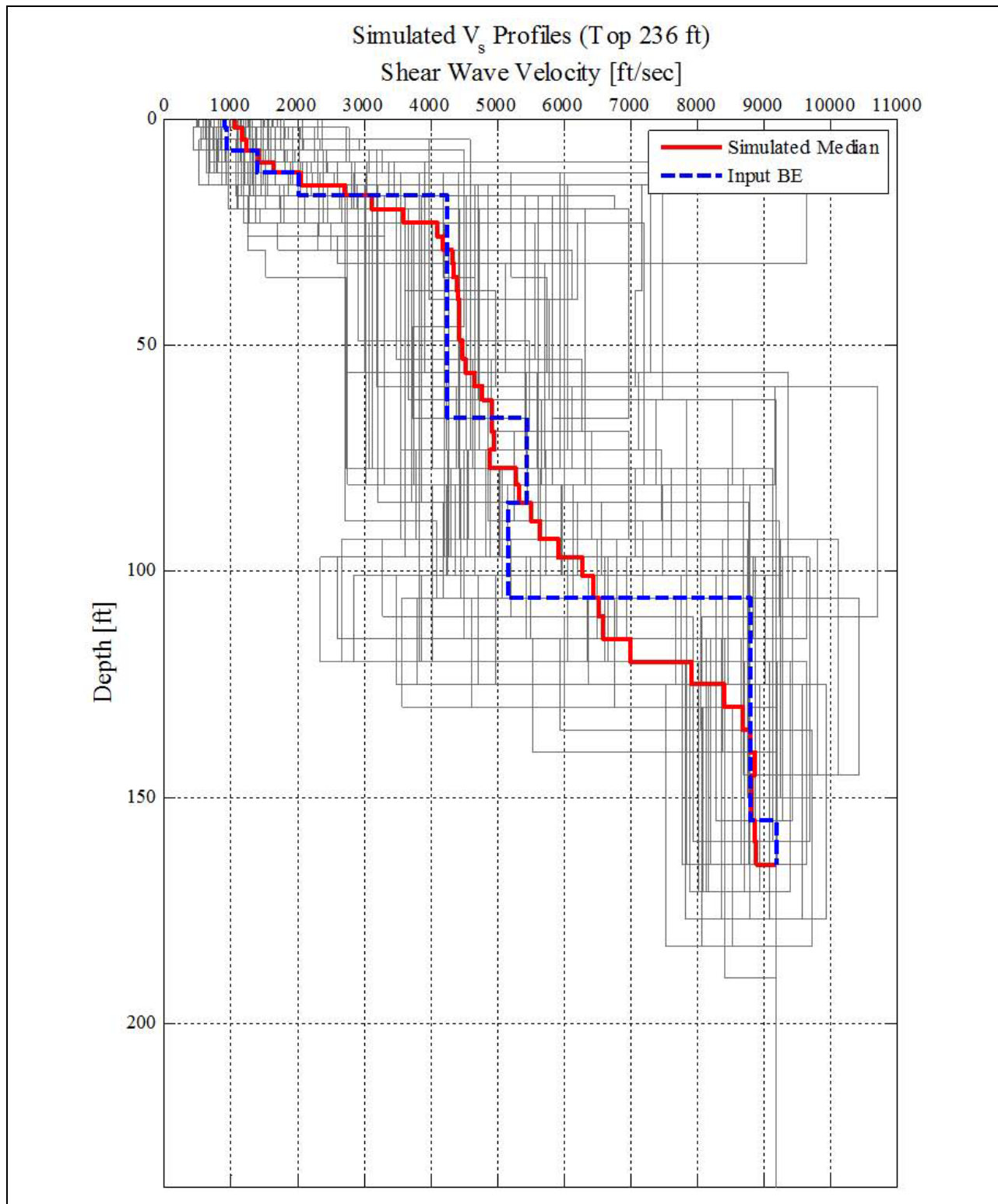
NAPS COL 2.0-27-A Figure 2.5.2-263 **Logarithmic Standard Deviation for the FWSC
Shear-Wave Velocity Profile**



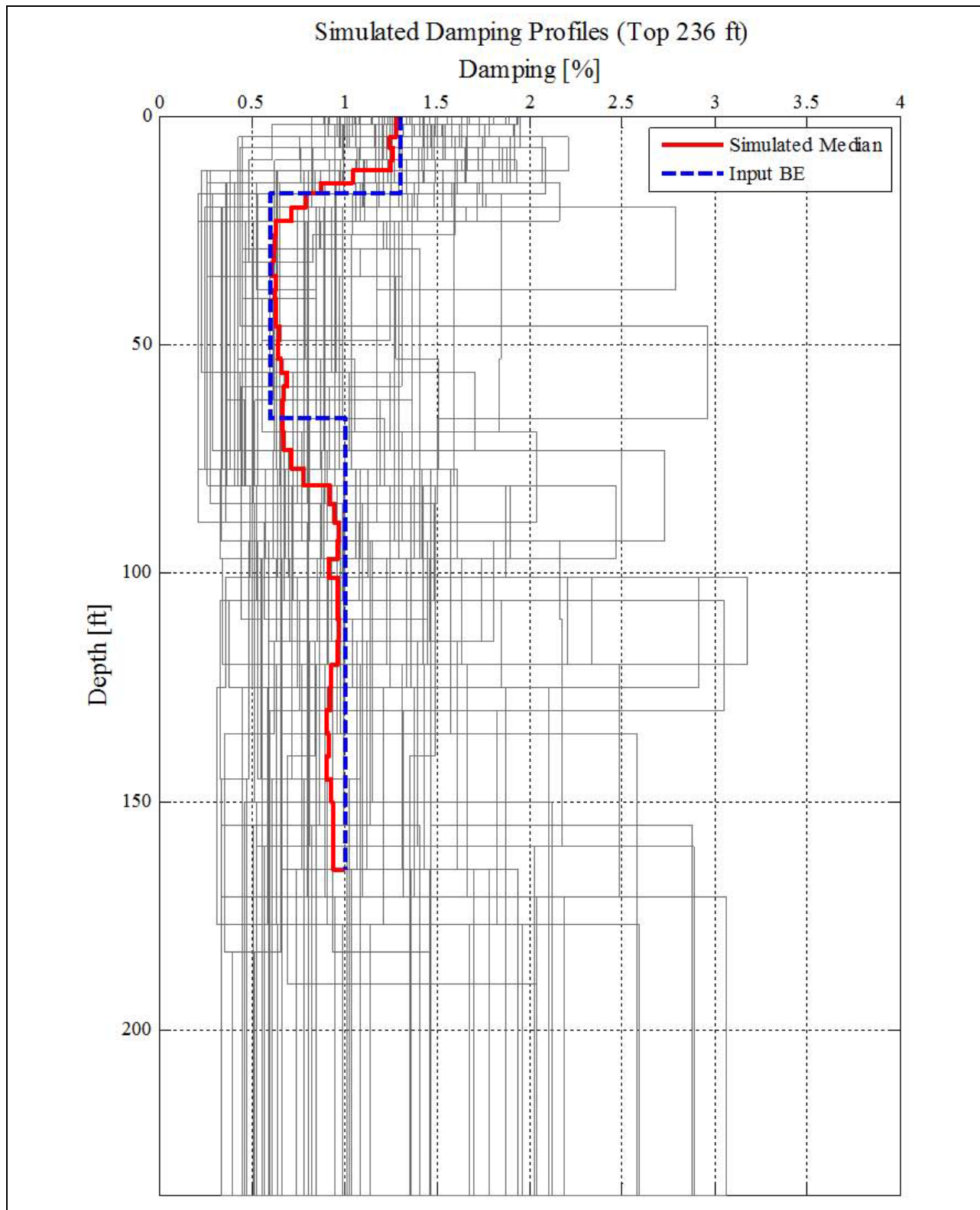
NAPS COL 2.0-27-A Figure 2.5.2-264 **Low-Strain Shear-Wave Velocity for 60 Simulated Profiles for RB/FB Soil Column Not Including Thickness Variation (Half-Space at $V_s = 9,200$ ft/s)**



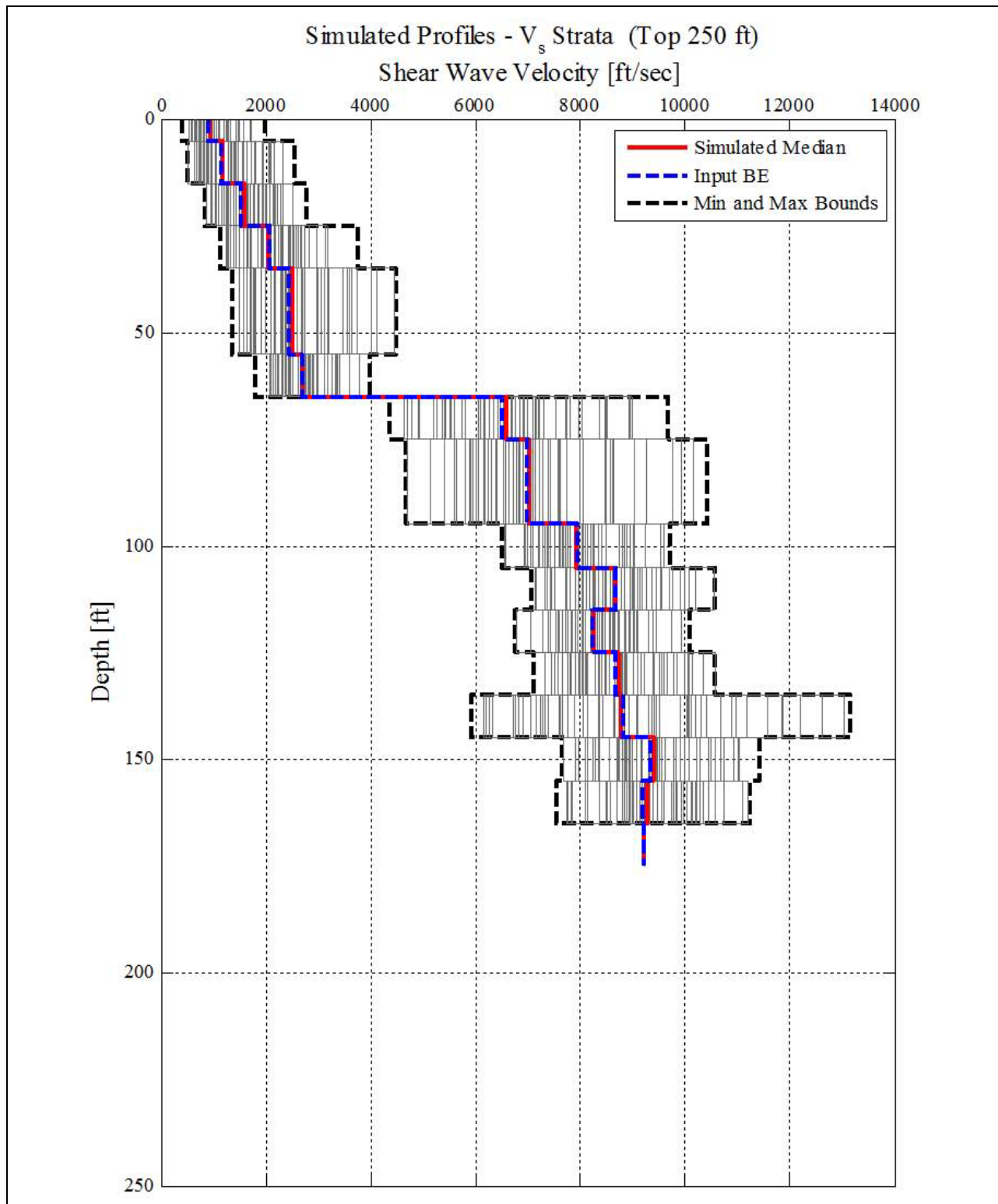
NAPS COL 2.0-27-A Figure 2.5.2-265 **Low-Strain Shear-Wave Velocity for 60 Simulated Profiles for RB/FB Soil Column Including Thickness Variation (Half-Space at $V_S = 9,200$ ft/s)**



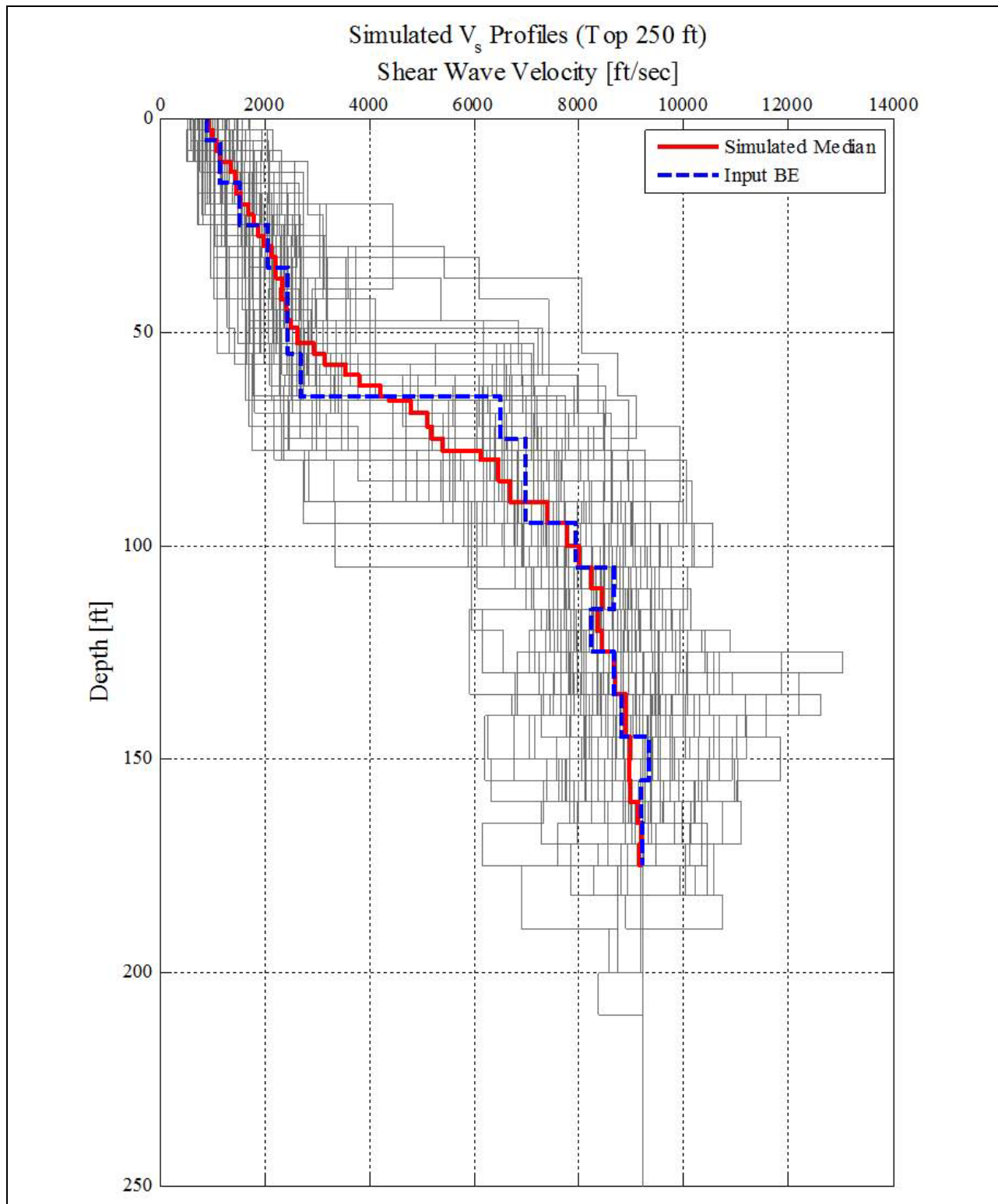
NAPS COL 2.0-27-A Figure 2.5.2-266 **Low-Strain Damping Ratio for 60 Simulated Profiles
for RB/FB Soil Column**



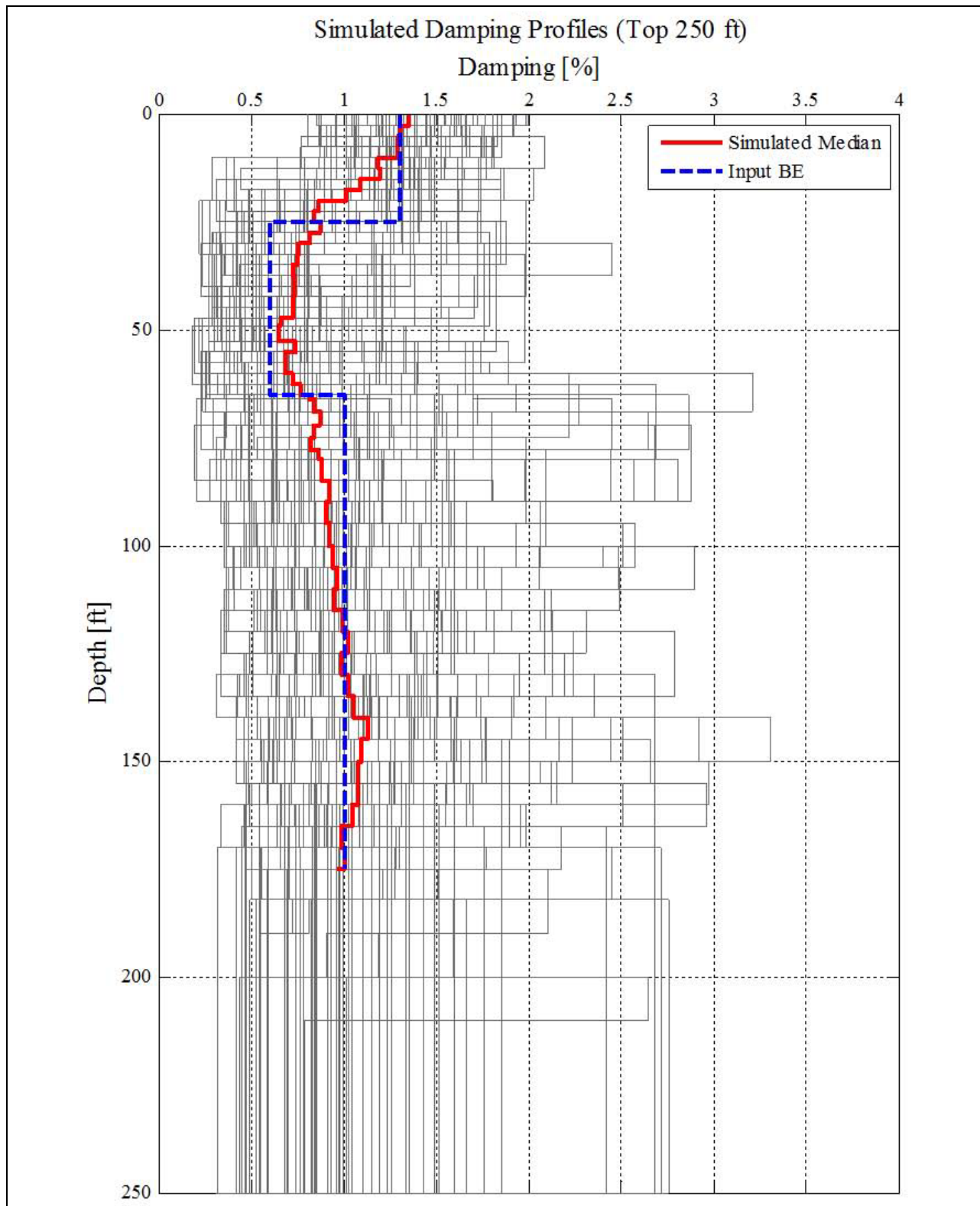
NAPS COL 2.0-27-A Figure 2.5.2-267 **Low-Strain Shear-Wave Velocity for 60 Simulated Profiles for CB Soil Column Not Including Thickness Variation (Half-Space at $V_s = 9,200$ ft/s)**



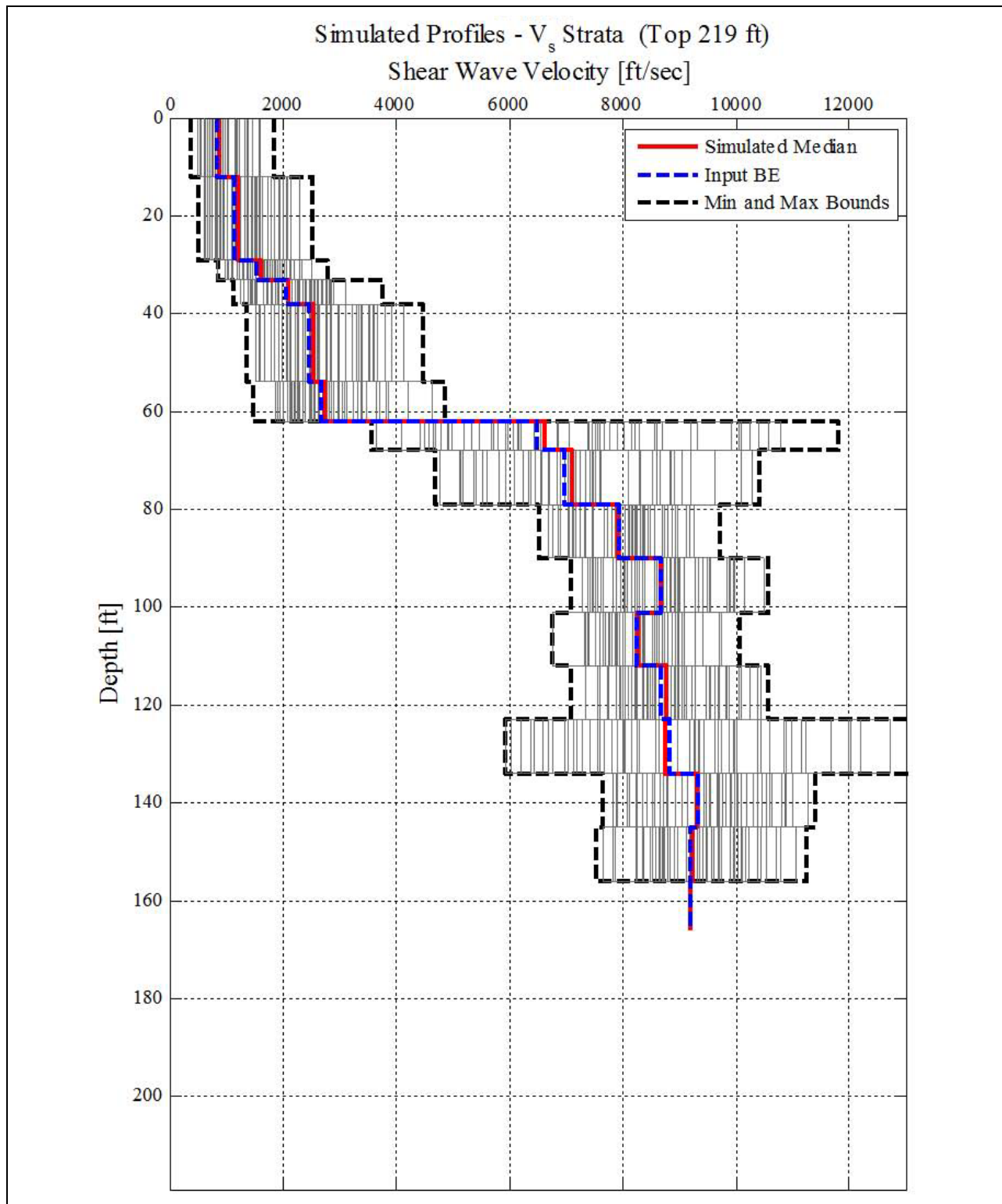
NAPS COL 2.0-27-A Figure 2.5.2-268 **Low-Strain Shear-Wave Velocity for 60 Simulated Profiles for CB Soil Column Including Thickness Variation (Half-Space at $V_s = 9,200$ ft/s)**



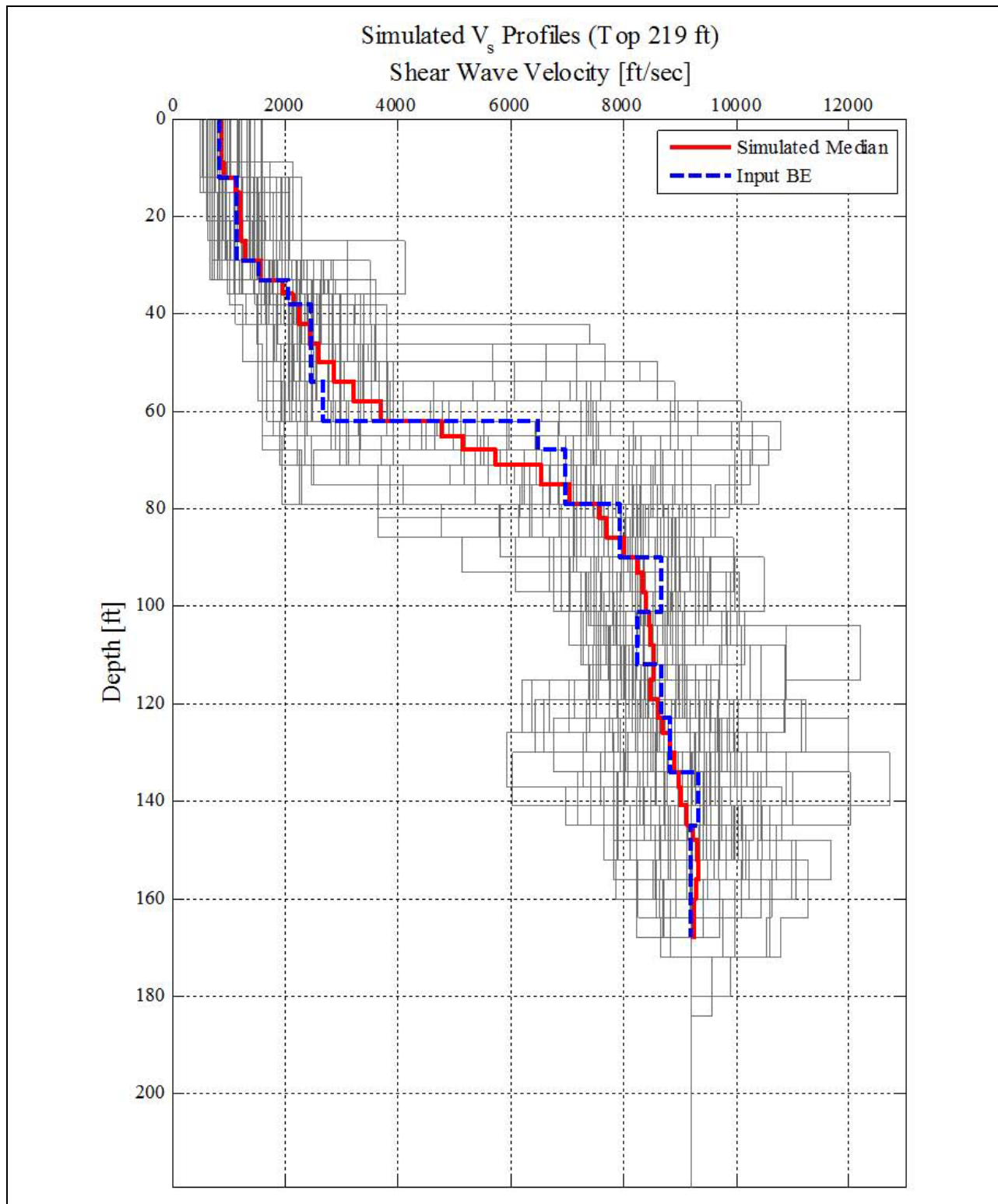
NAPS COL 2.0-27-A Figure 2.5.2-269 **Low-Strain Damping Ratio for 60 Simulated Profiles
for CB Soil Column**



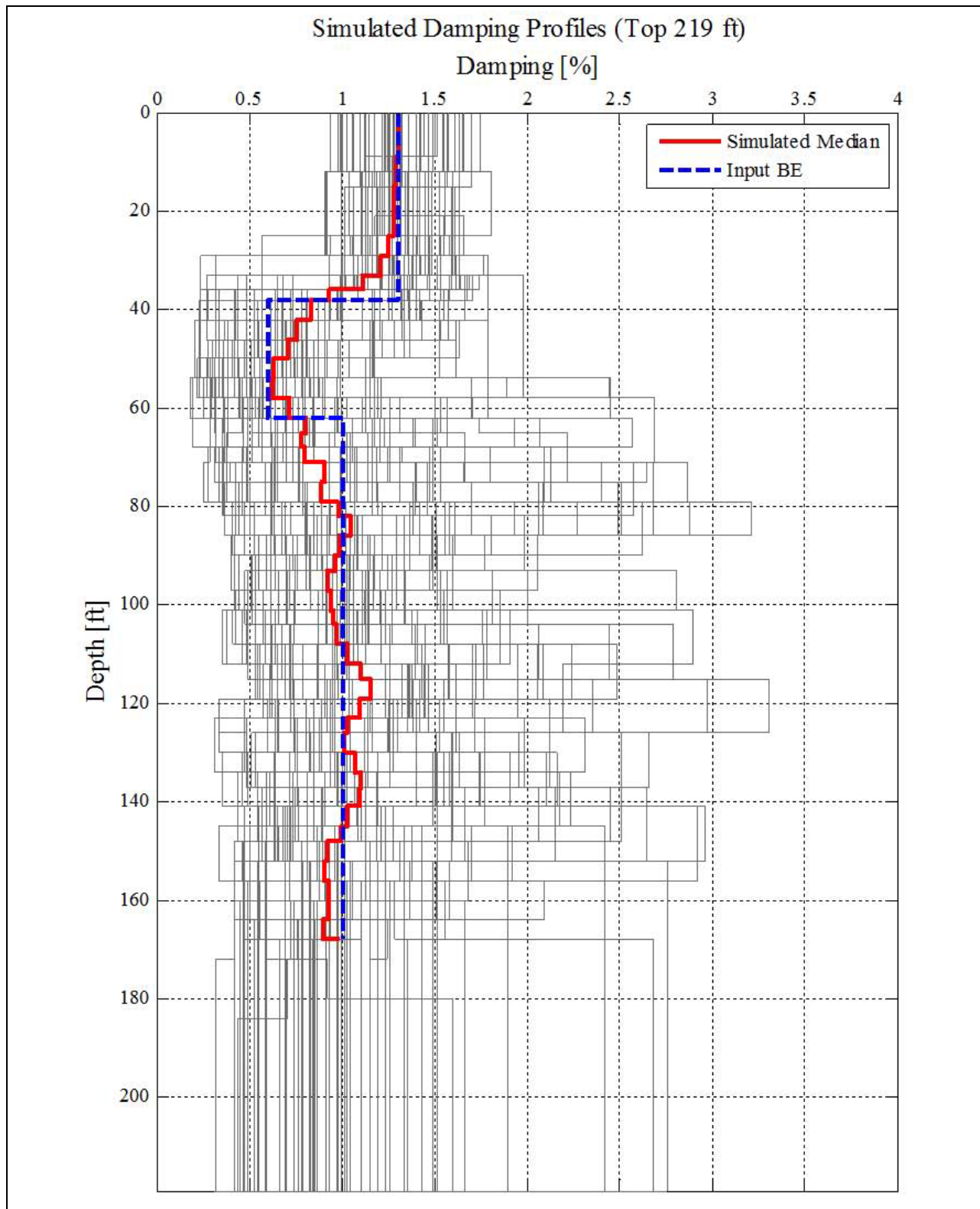
NAPS COL 2.0-27-A Figure 2.5.2-270 **Low-Strain Shear-Wave Velocity for 60 Simulated Profiles for FWSC Soil Column Not Including Thickness Variation (Half-Space at $V_S = 9,200$ ft/s)**



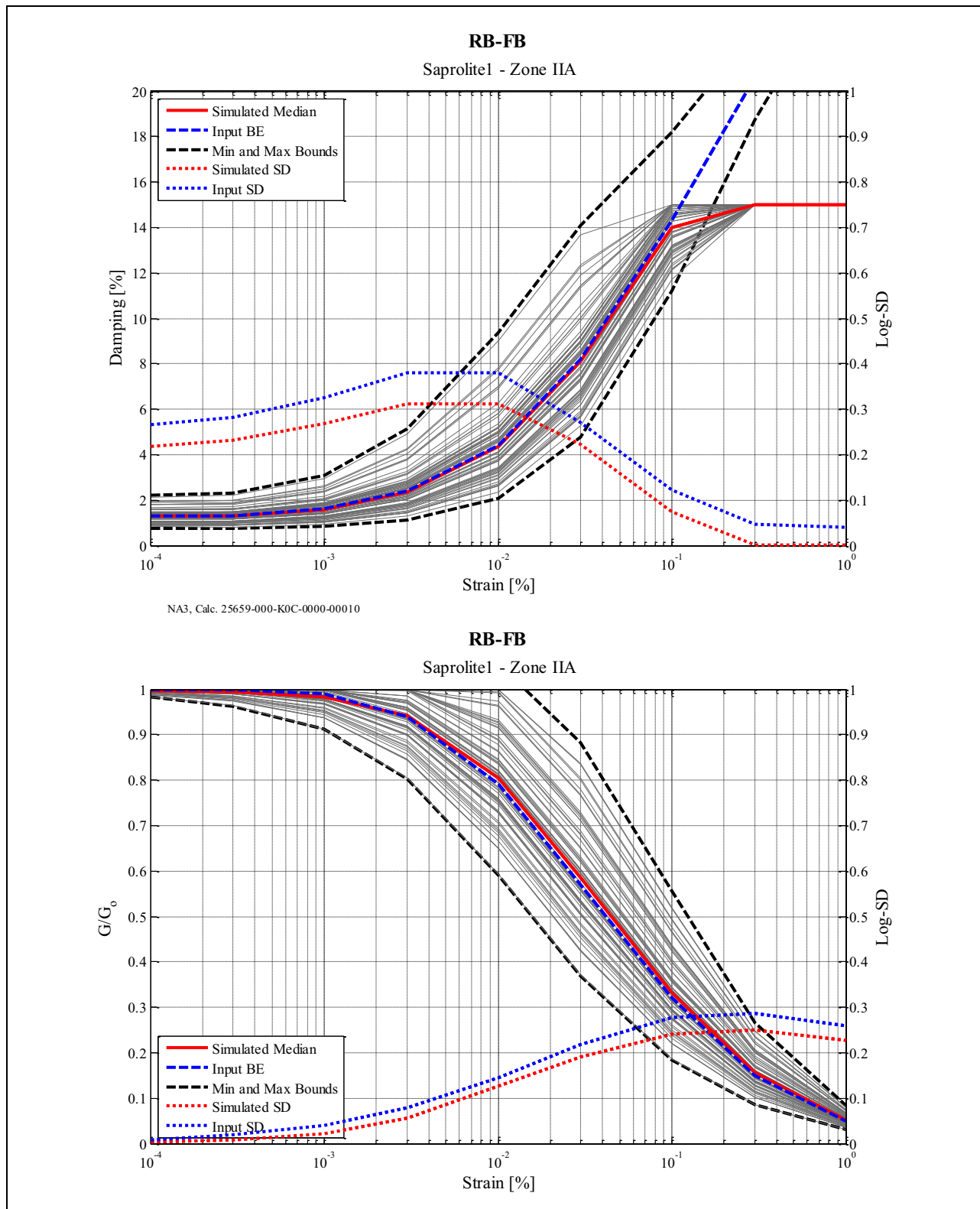
NAPS COL 2.0-27-A Figure 2.5.2-271 **Low-Strain Shear-Wave Velocity for 60 Simulated Profiles for FWSC Soil Column Including Thickness Variation (Half-Space at $V_S = 9,200$ ft/s)**



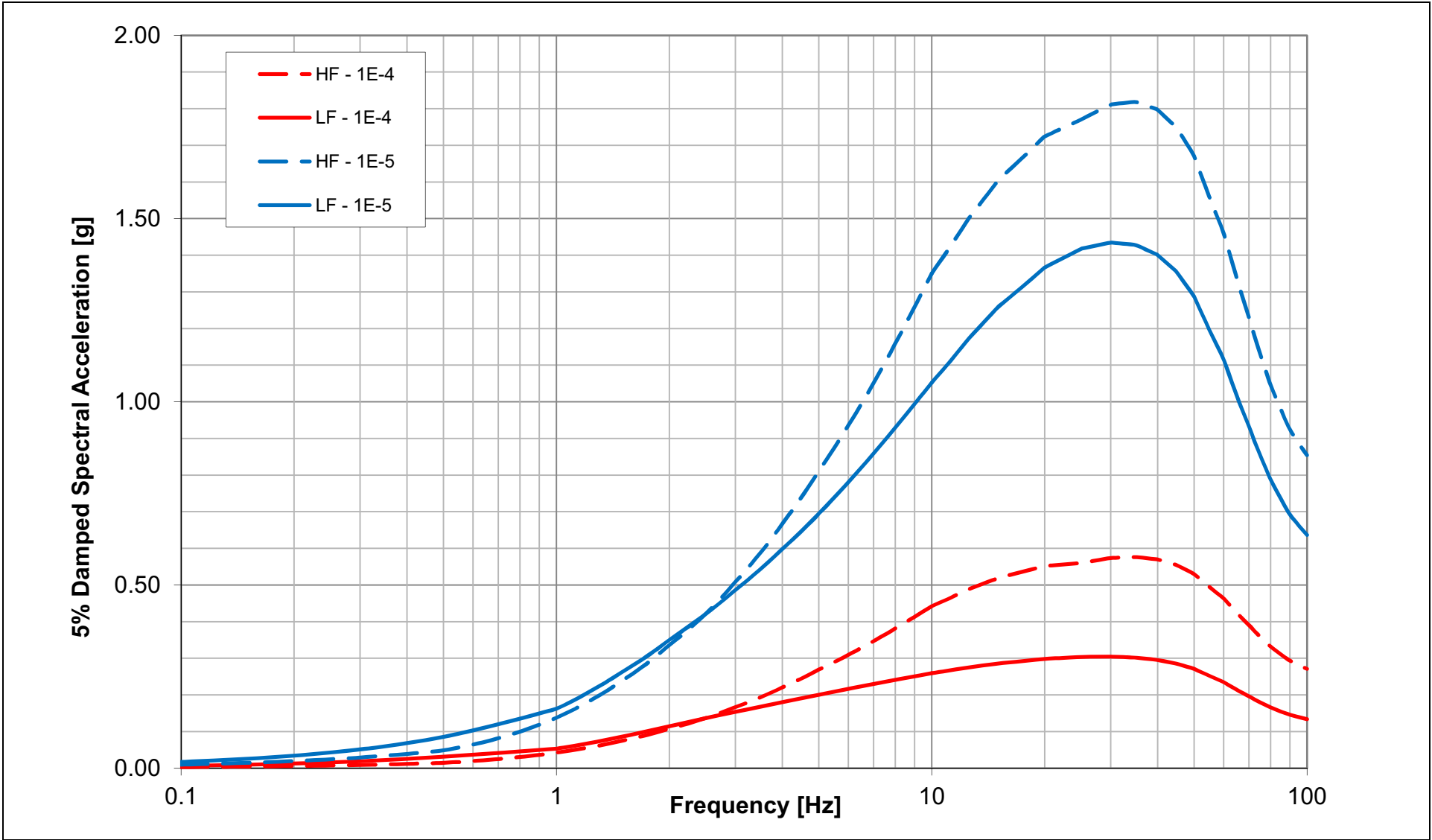
NAPS COL 2.0-27-A Figure 2.5.2-272 **Low-Strain Damping Ratio for 60 Simulated Profiles
for FWSC Soil Column**



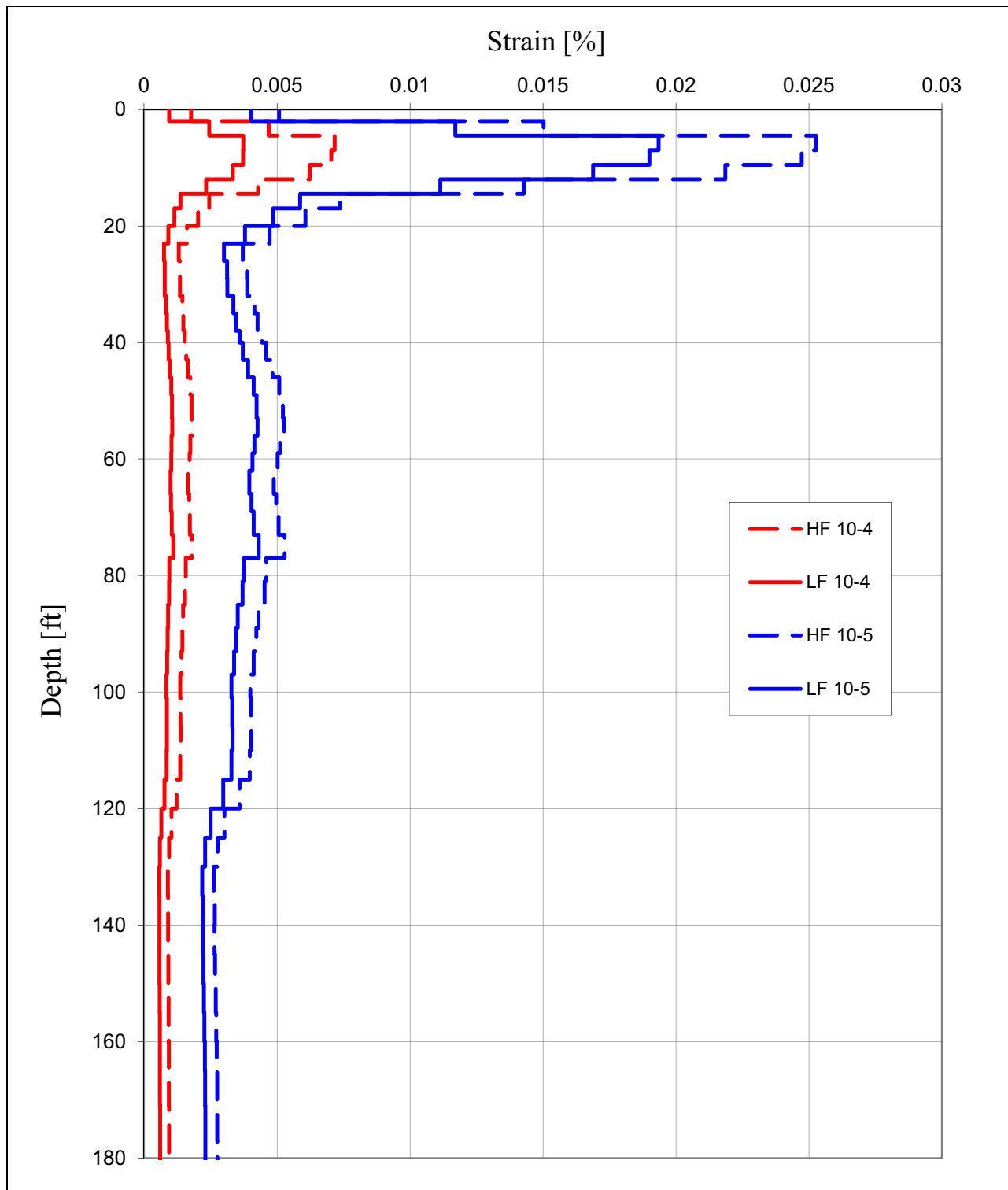
NAPS COL 2.0-27-A Figure 2.5.2-273 Strain-Dependent Property Curves for 60 Simulated Profiles for Saprolite1 Stratum of RB/FB Soil Column



NAPS COL 2.0-27-A Figure 2.5.2-274 High Frequency (HF) and Low Frequency (LF) Hard Rock Input Ground Motion Spectra
NAPS ESP VAR 2.0-4

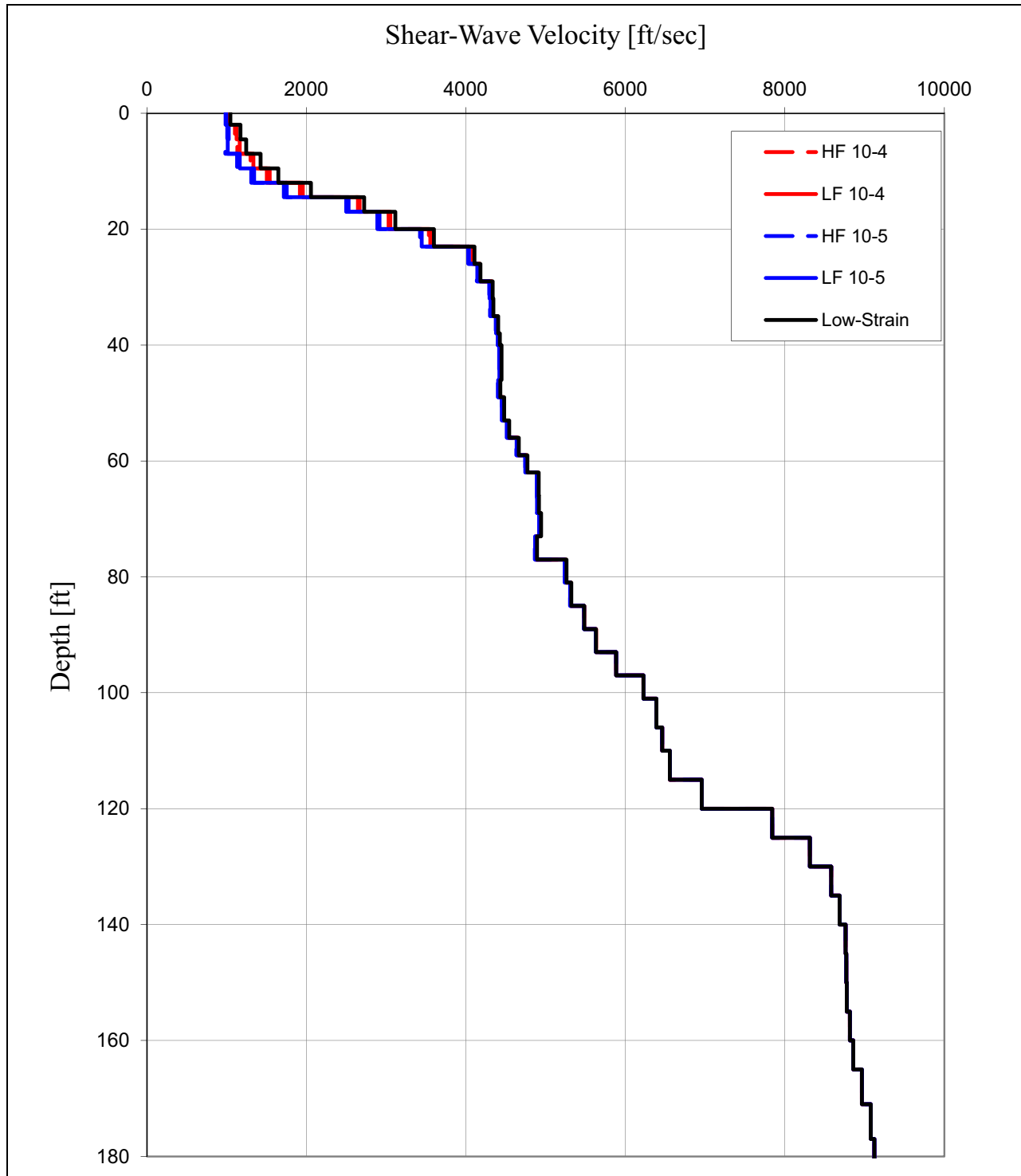


NAPS COL 2.0-27-A Figure 2.5.2-275 **Log-Mean Strain Profiles in RB/FB Soil Column
Subject to 10^{-4} and 10^{-5} HF and LF Input Hard Rock
Ground Motions**



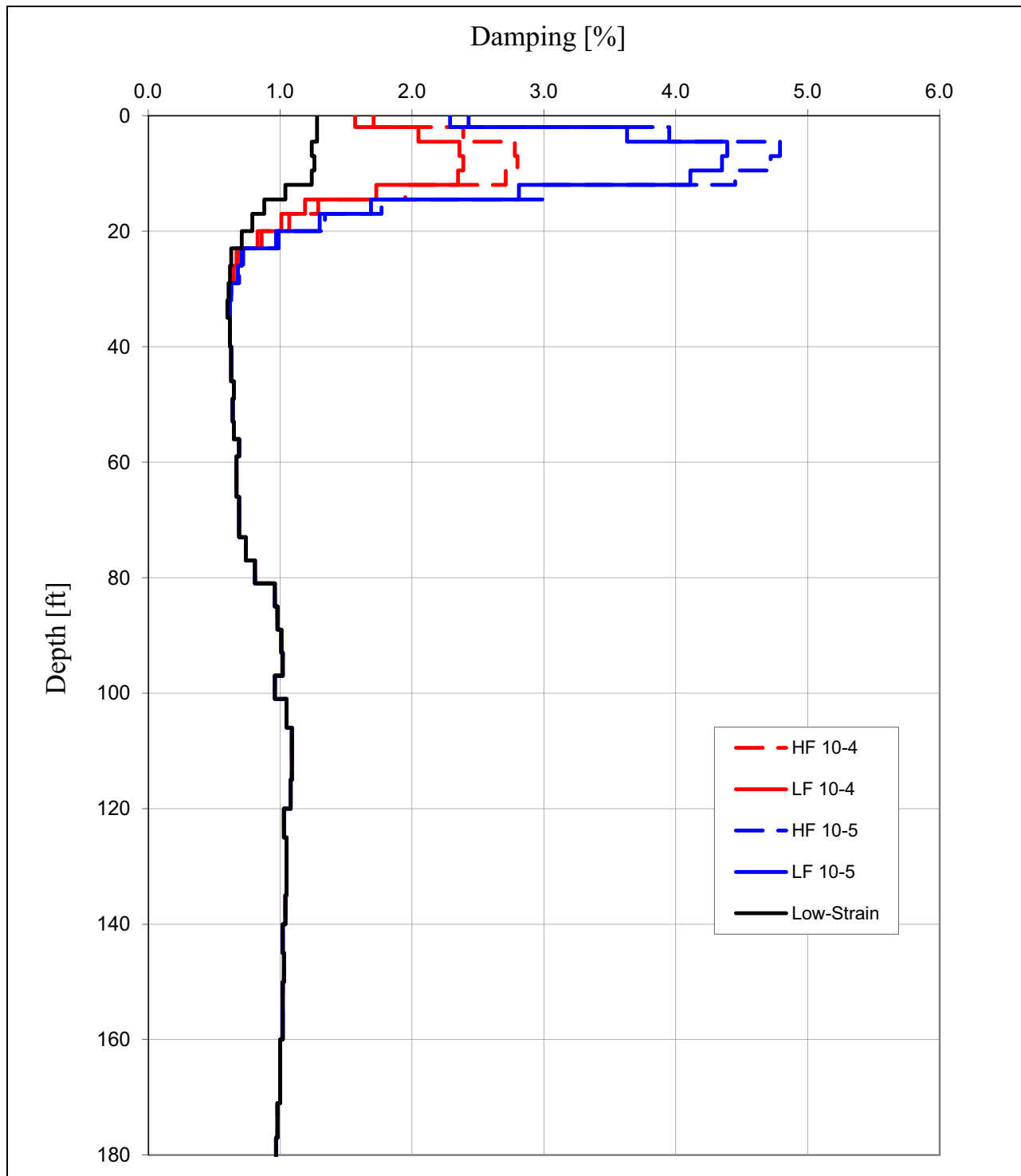
NOTE: Depth of zero corresponds to the finished grade at Elevation 290 ft.

NAPS COL 2.0-27-A Figure 2.5.2-276 **Log-Mean Low Strain and Strain-Compatible Shear Wave Velocity Profiles for RB/FB Soil Column Subject to 10^{-4} and 10^{-5} HF and LF Input Hard Rock Ground Motions**



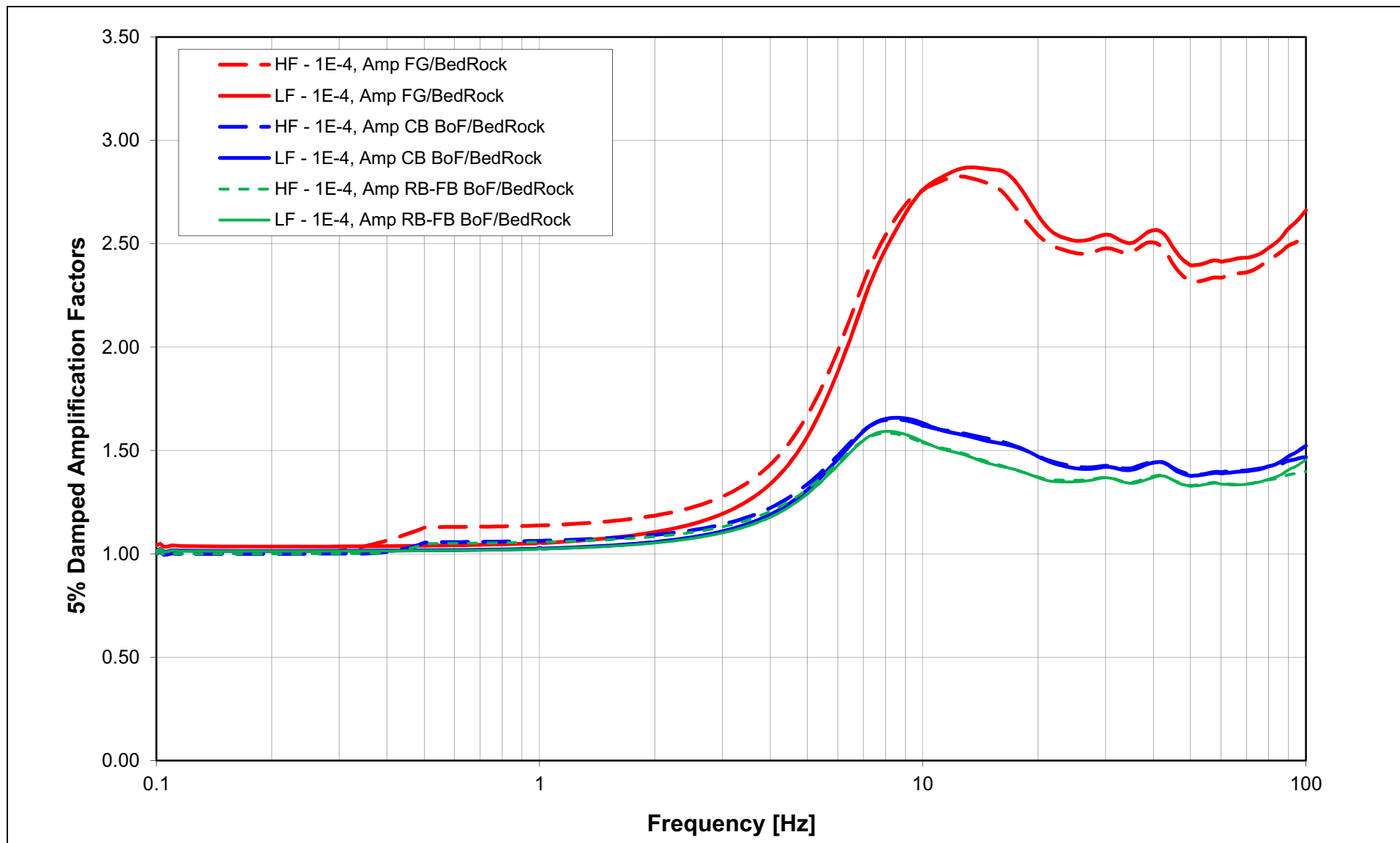
NOTE: Depth of zero corresponds to the finished grade at Elevation 290 ft.

NAPS COL 2.0-27-A Figure 2.5.2-277 Log-Mean Low Strain and Strain-Compatible Damping Profiles for RB/FB Soil Column Subject to 10^{-4} and 10^{-5} HF and LF Input Hard Rock Ground Motions

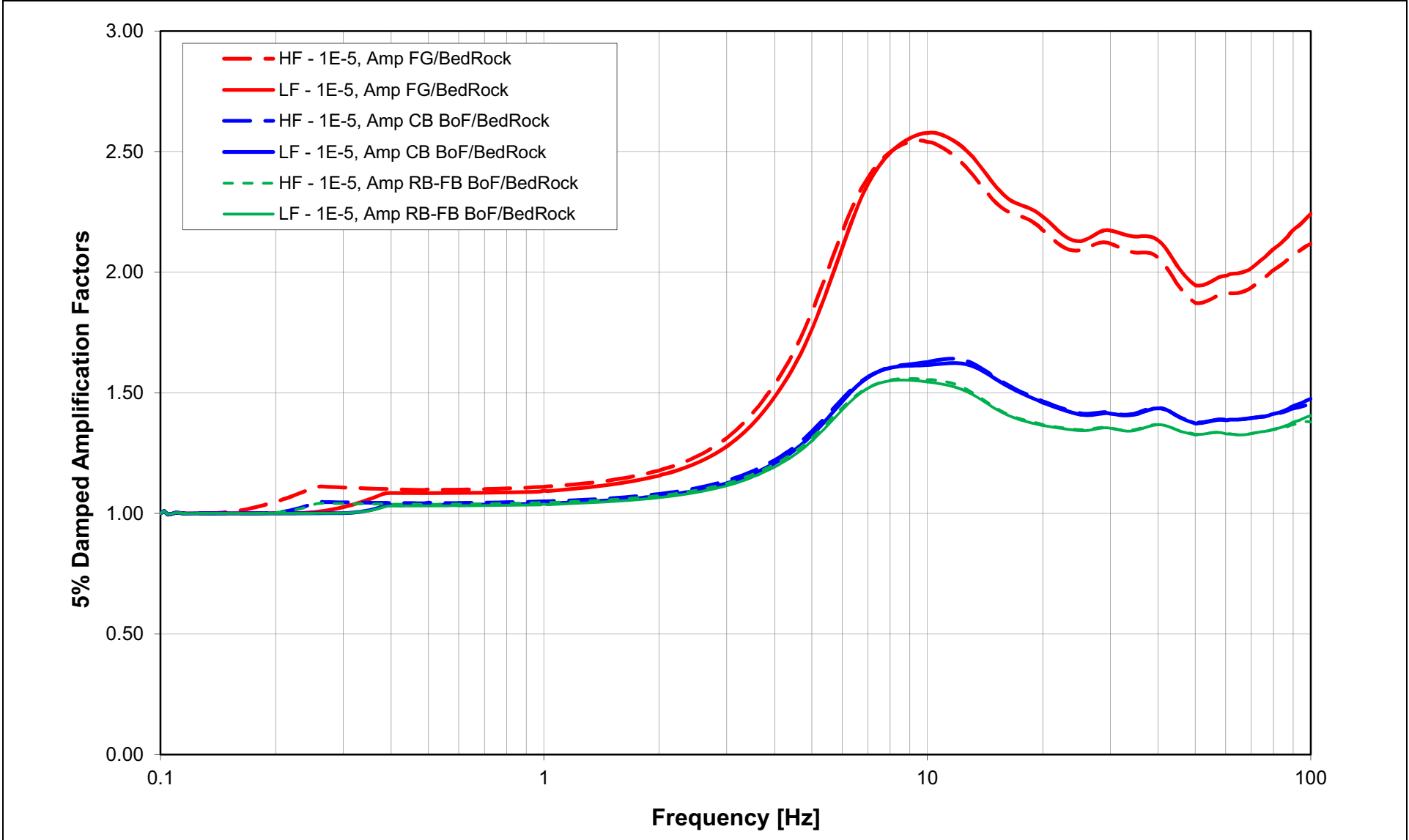


NOTE: Depth of zero corresponds to the finished grade at Elevation 290 ft.

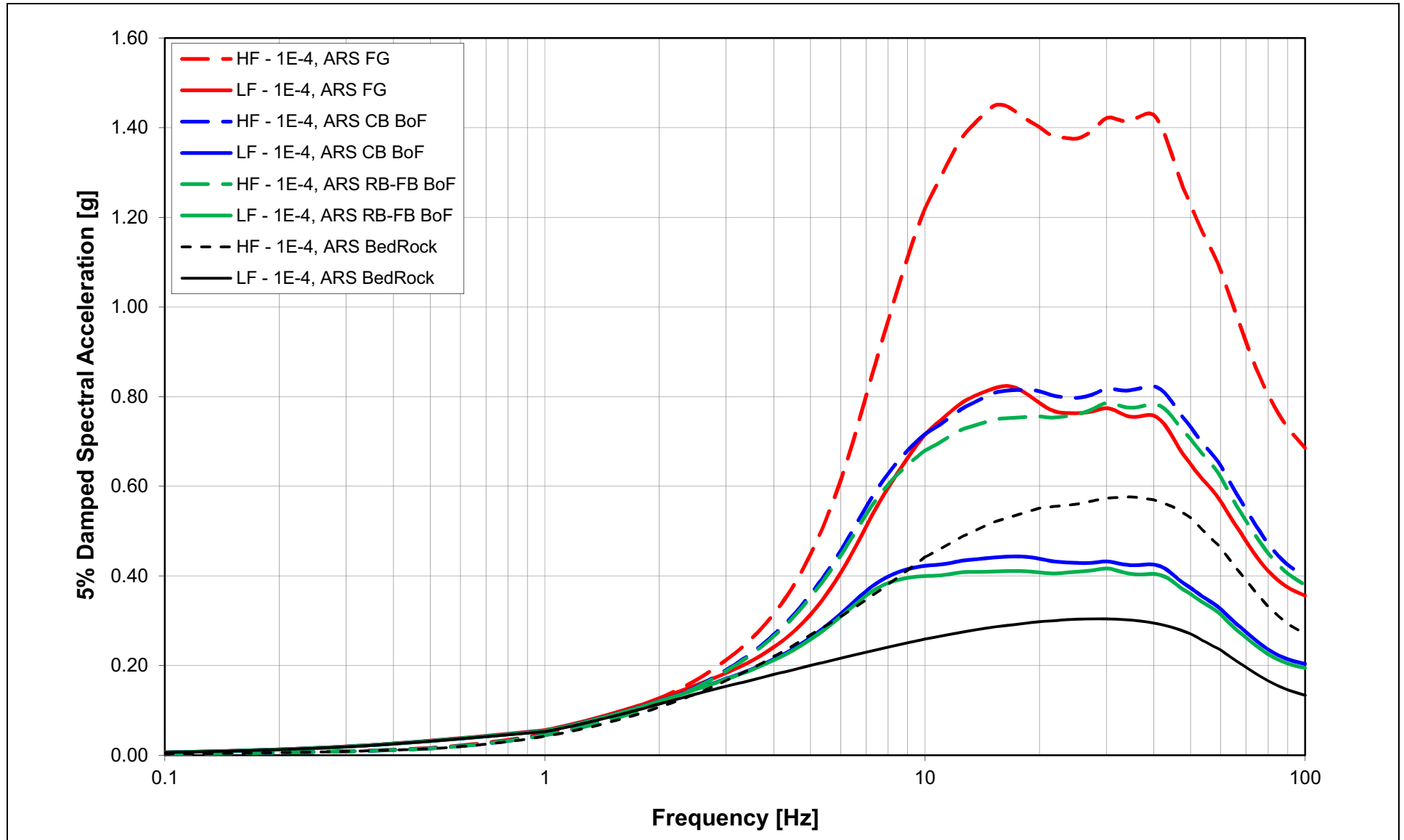
NAPS COL 2.0-27-A Figure 2.5.2-278 **Mean Full Column Outcrop ARS Amplification Factors for RB/FB Soil Column at 10^{-4} Hazard Level Input Ground Motion**



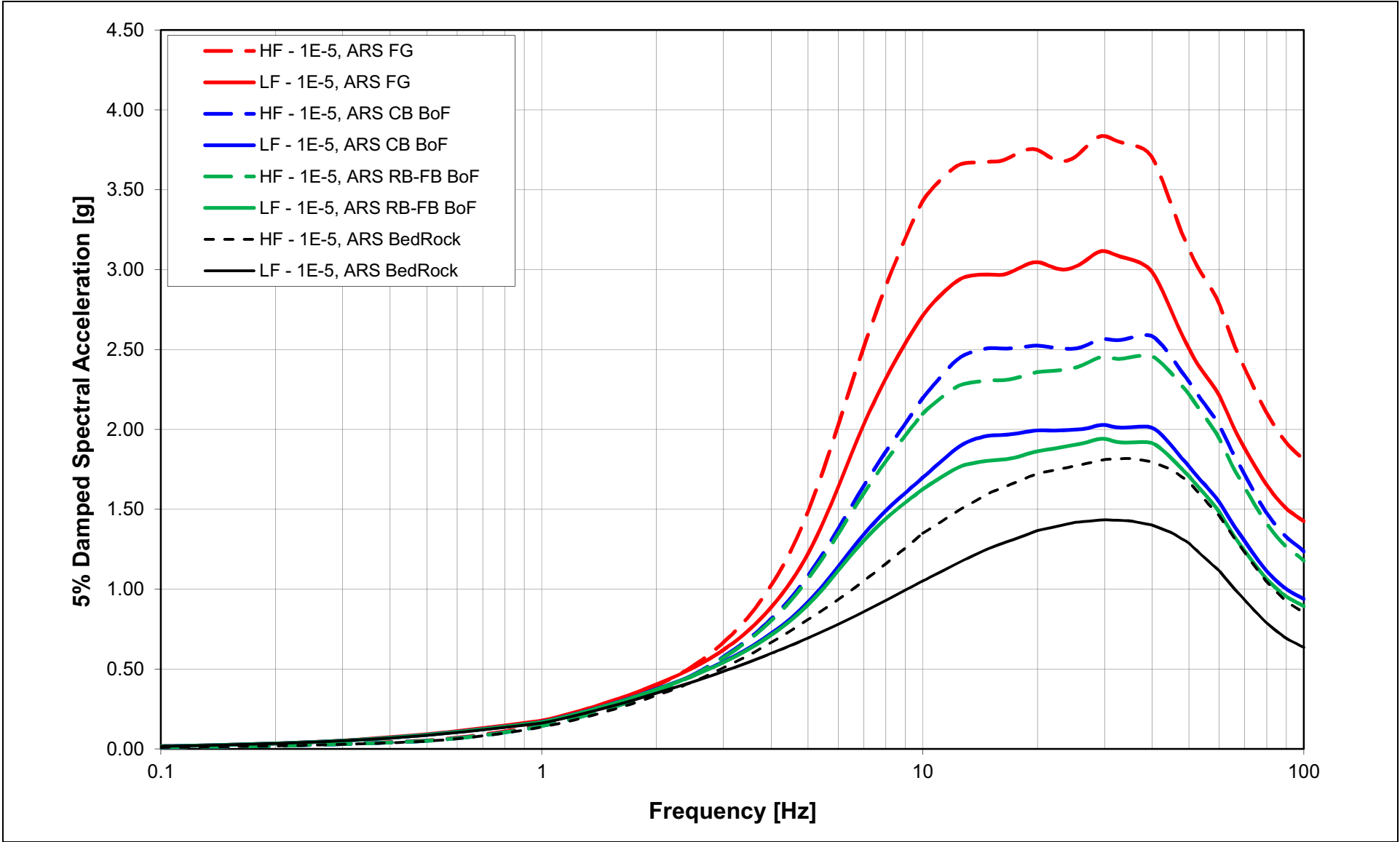
NAPS COL 2.0-27-A Figure 2.5.2-279 **Mean Full Column Outcrop ARS Amplification Factors for RB/FB Soil Column at 10⁻⁵ Hazard Level Input Ground Motion**



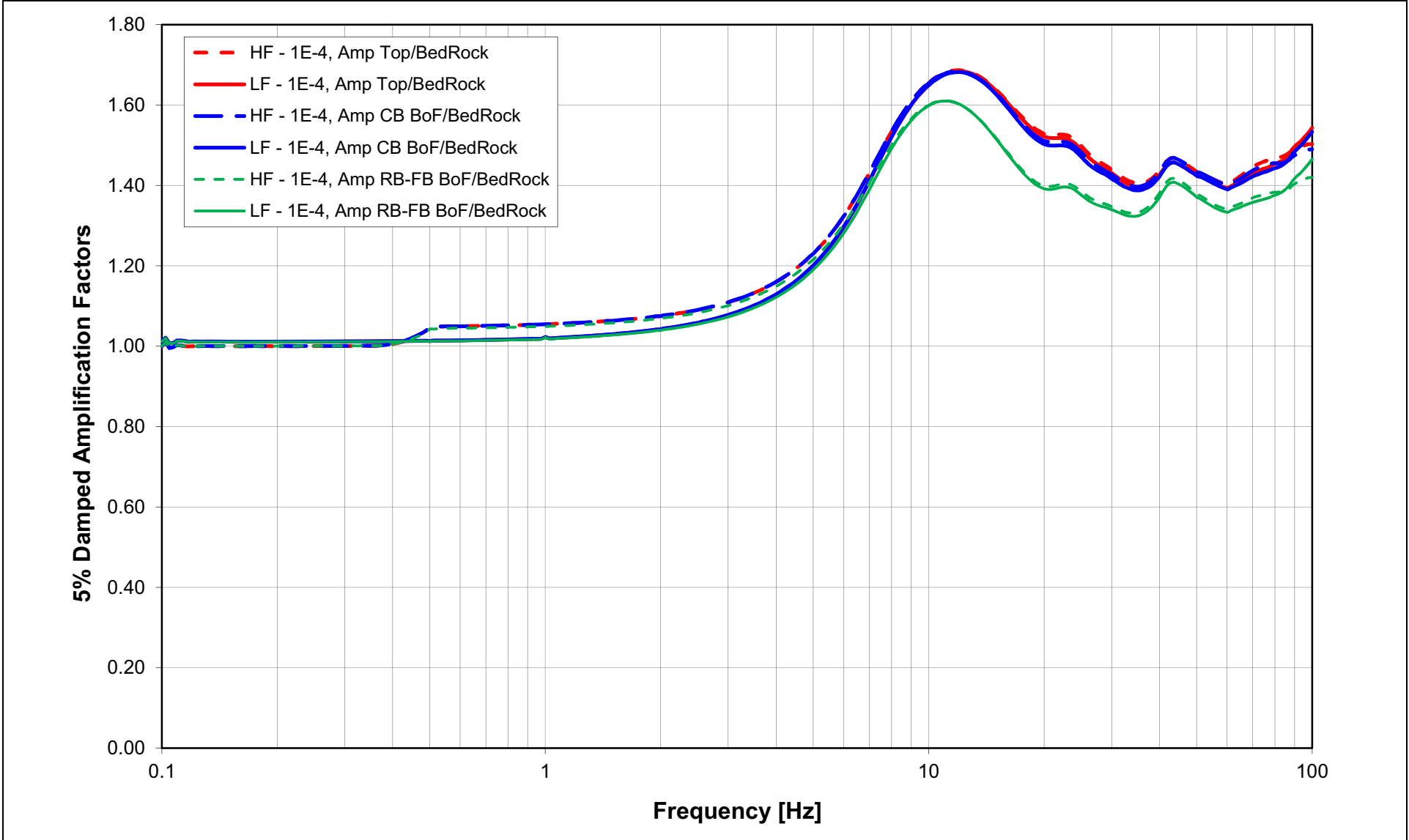
NAPS COL 2.0-27-A Figure 2.5.2-280 Mean Full Column Outcrop ARS for RB/FB Soil Column at 10^{-4} Hazard Level Input Ground Motion



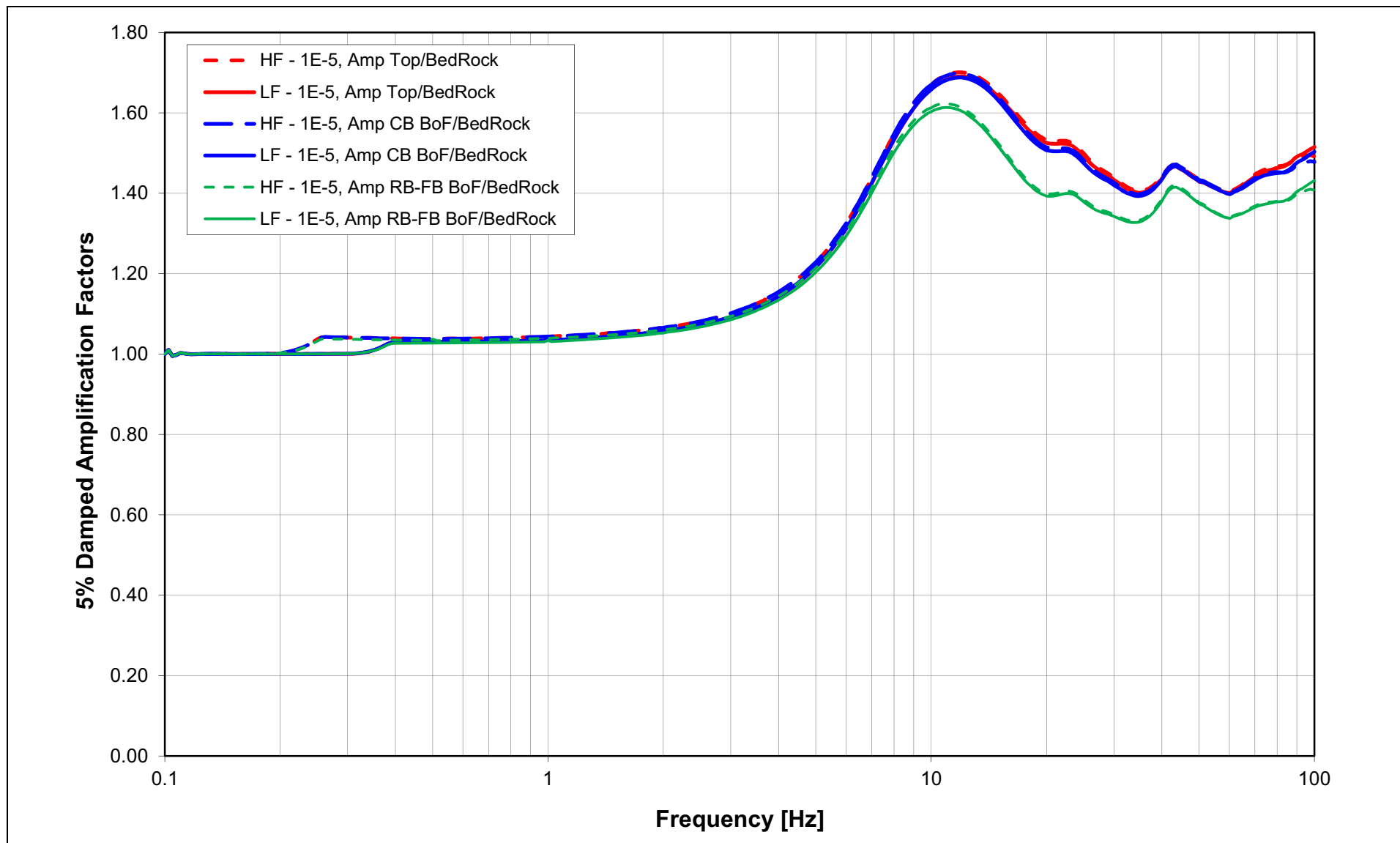
NAPS COL 2.0-27-A Figure 2.5.2-281 Mean Full Column Outcrop ARS for RB/FB Soil Column at 10⁻⁵ Hazard Level Input Ground Motion



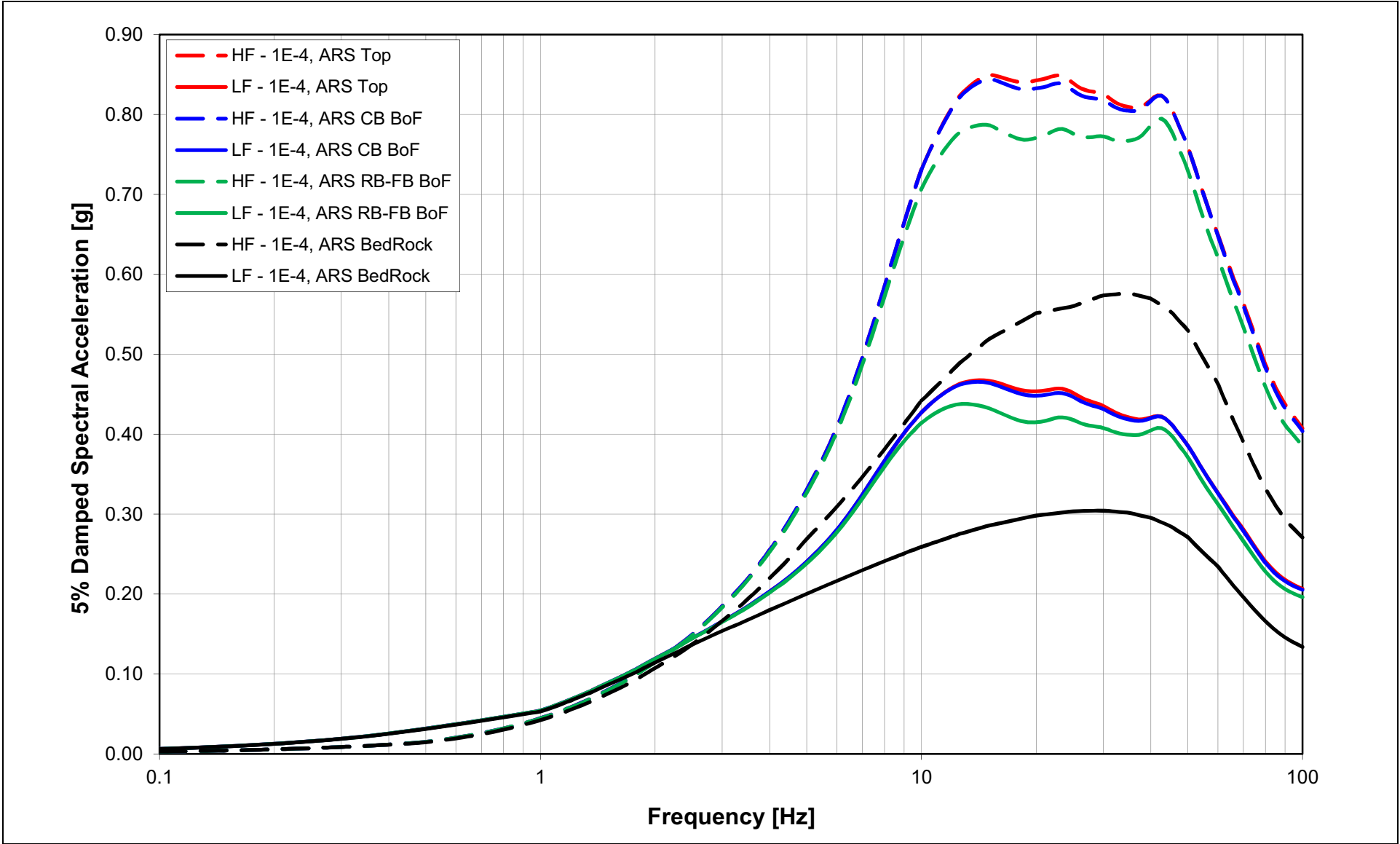
NAPS COL 2.0-27-A Figure 2.5.2-282 **Mean Partial Column Outcrop ARS Amplification Factors for RB/FB Soil Column at 10⁻⁴ Hazard Level Input Ground Motion**



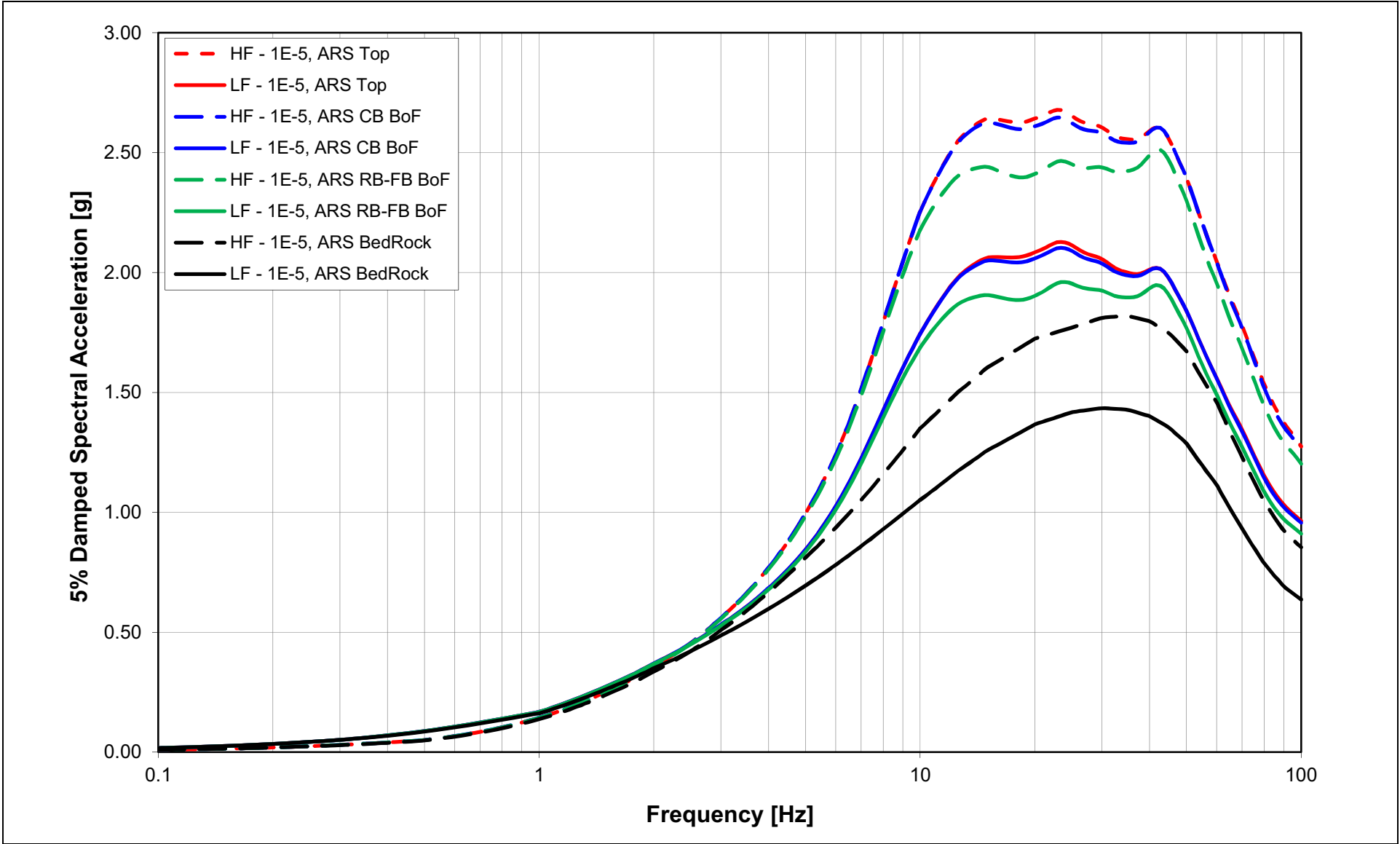
NAPS COL 2.0-27-A Figure 2.5.2-283 **Mean Partial Column Outcrop ARS Amplification Factors for RB/FB Soil Column at 10^{-5} Hazard Level Input Ground Motion**



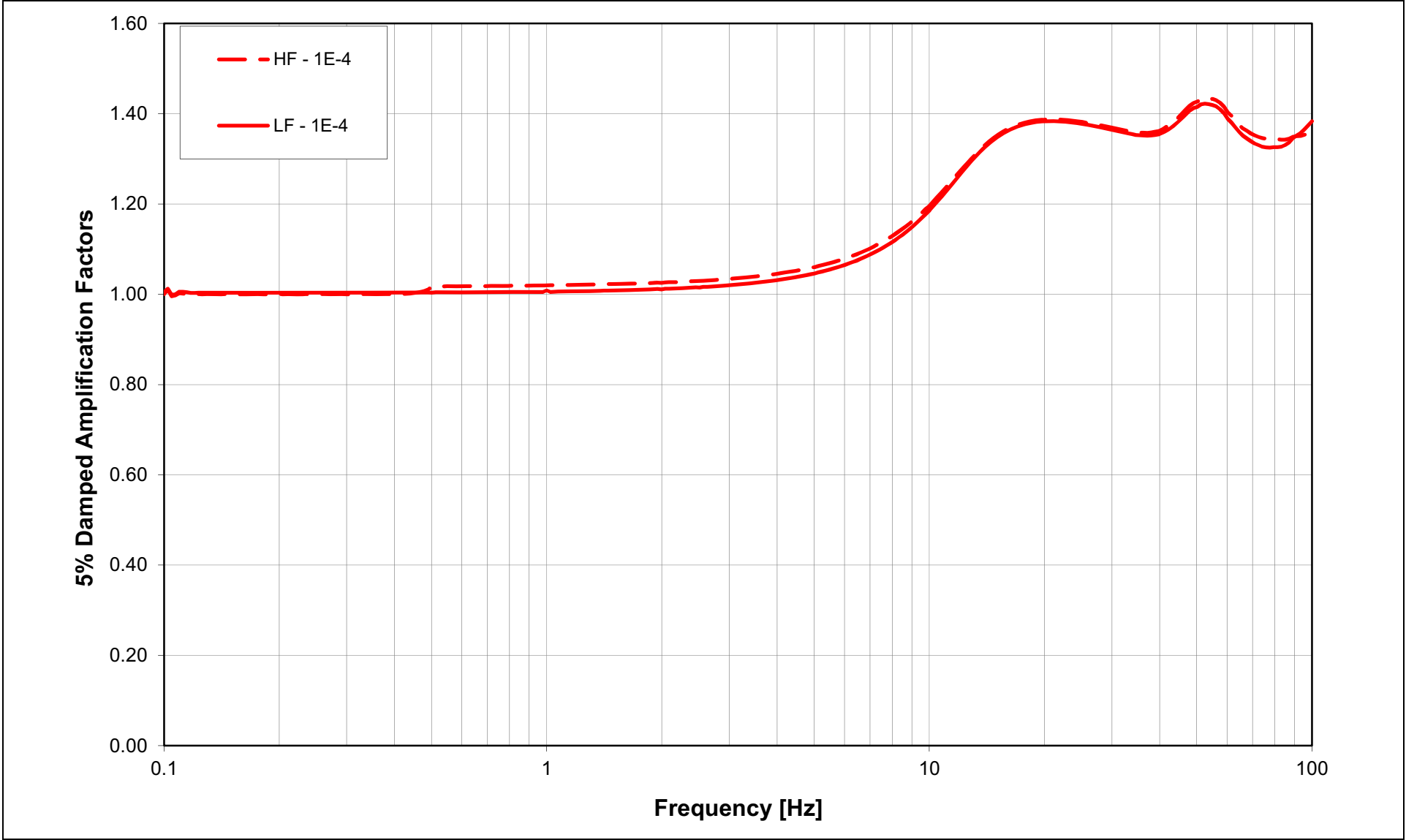
NAPS COL 2.0-27-A Figure 2.5.2-284 Mean Partial Column Outcrop ARS for RB/FB Soil Column at 10⁻⁴ Hazard Level Input Ground Motion



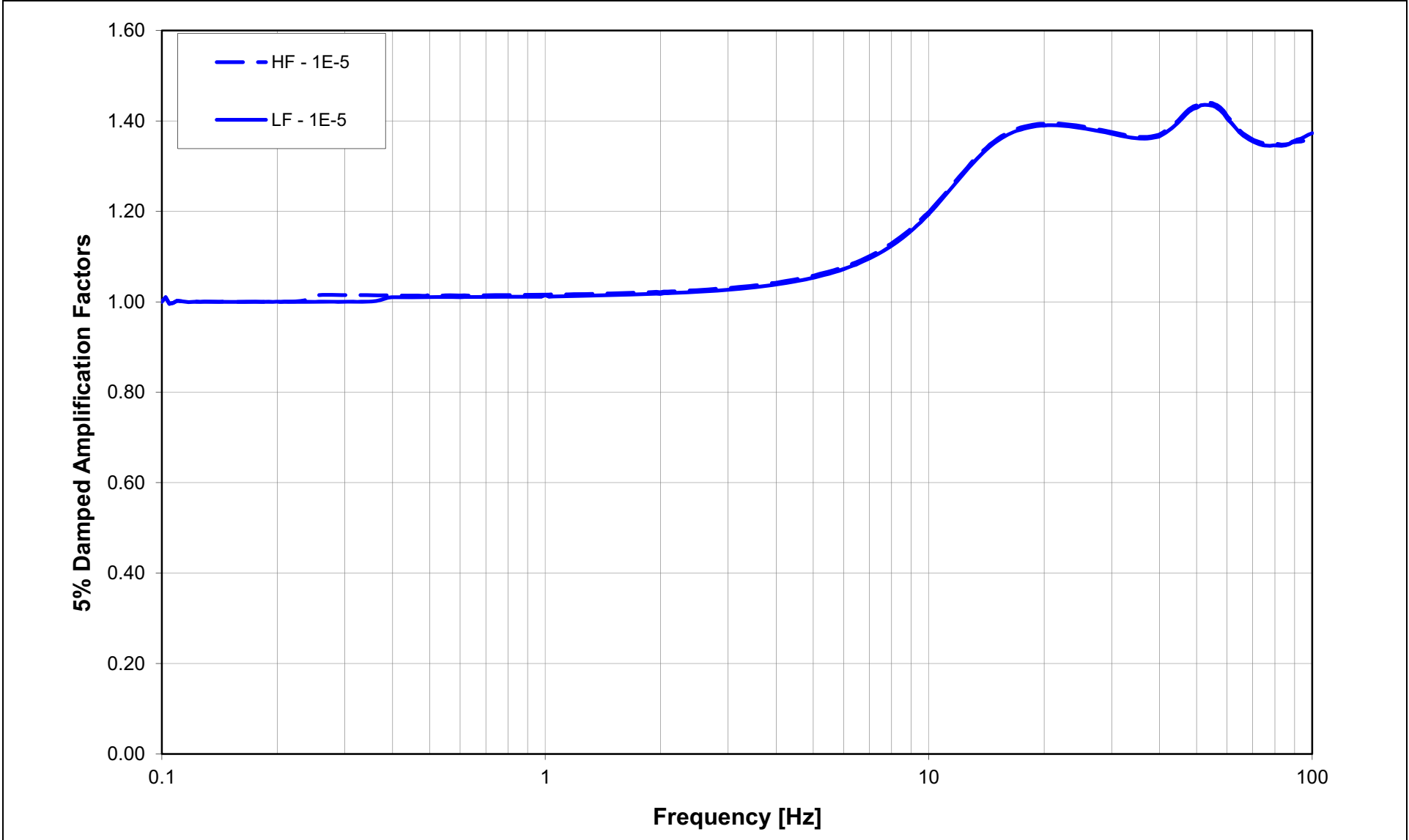
NAPS COL 2.0-27-A Figure 2.5.2-285 Mean Partial Column Outcrop ARS for RB/FB Soil Column at 10⁻⁵ Hazard Level Input Ground Motion



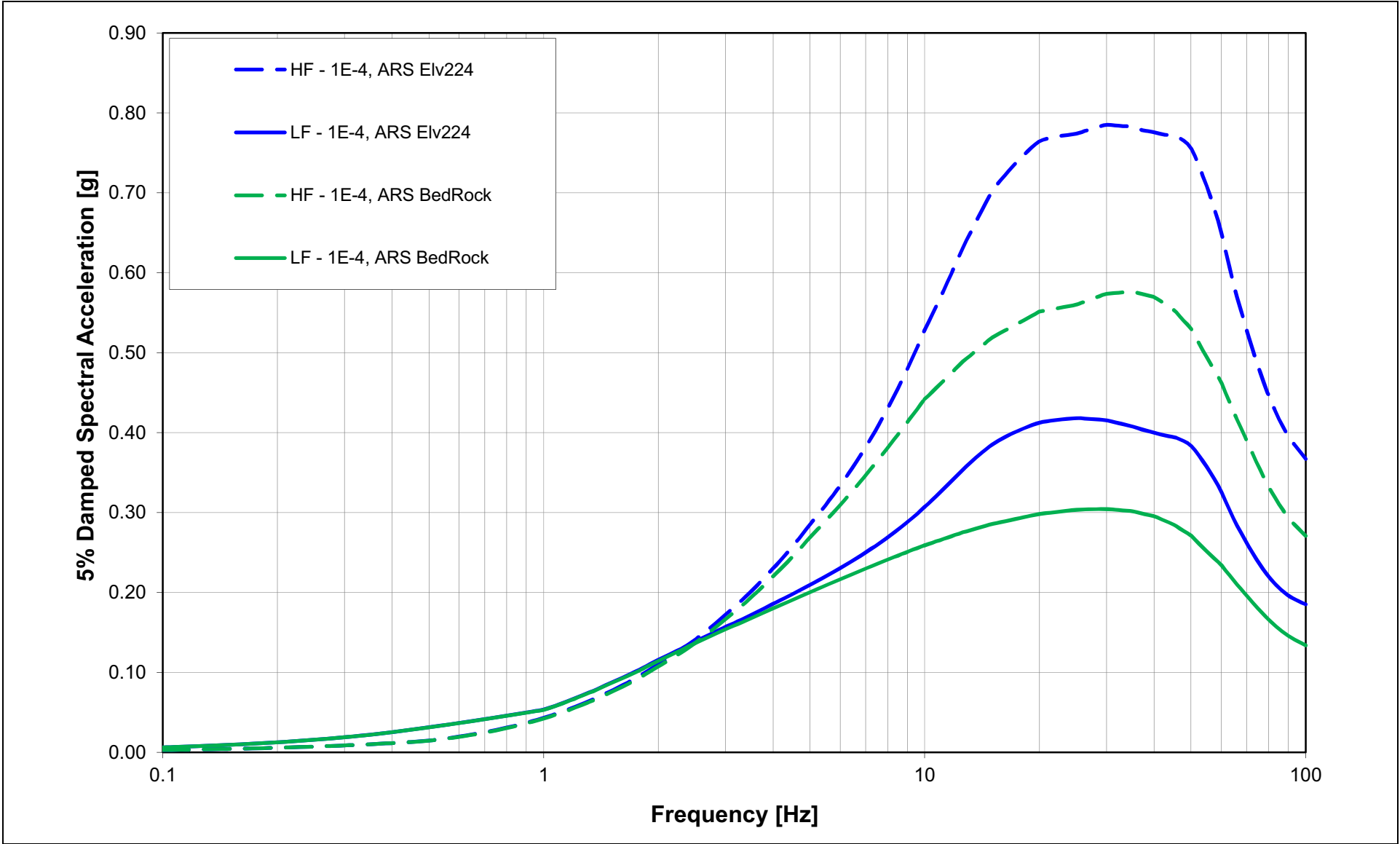
NAPS COL 2.0-27-A Figure 2.5.2-286 **Mean Geologic Outcrop ARS Amplification Factors for RB/FB Soil Column at 10⁻⁴ Hazard Level Input Ground Motion**



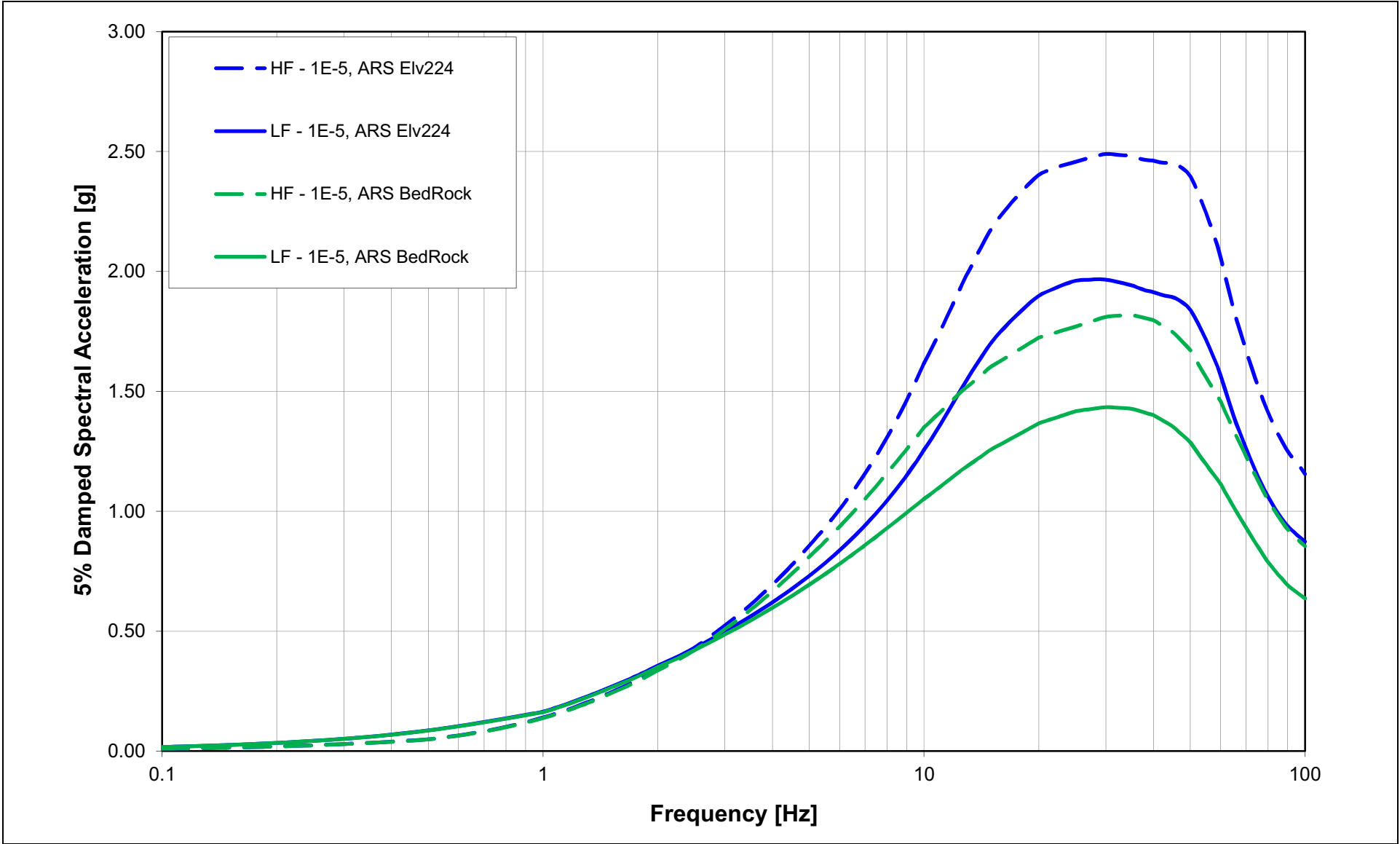
NAPS COL 2.0-27-A Figure 2.5.2-287 **Mean Geologic Outcrop ARS Amplification Factors for RB/FB Soil Column at 10⁻⁵ Hazard Level Input Ground Motion**



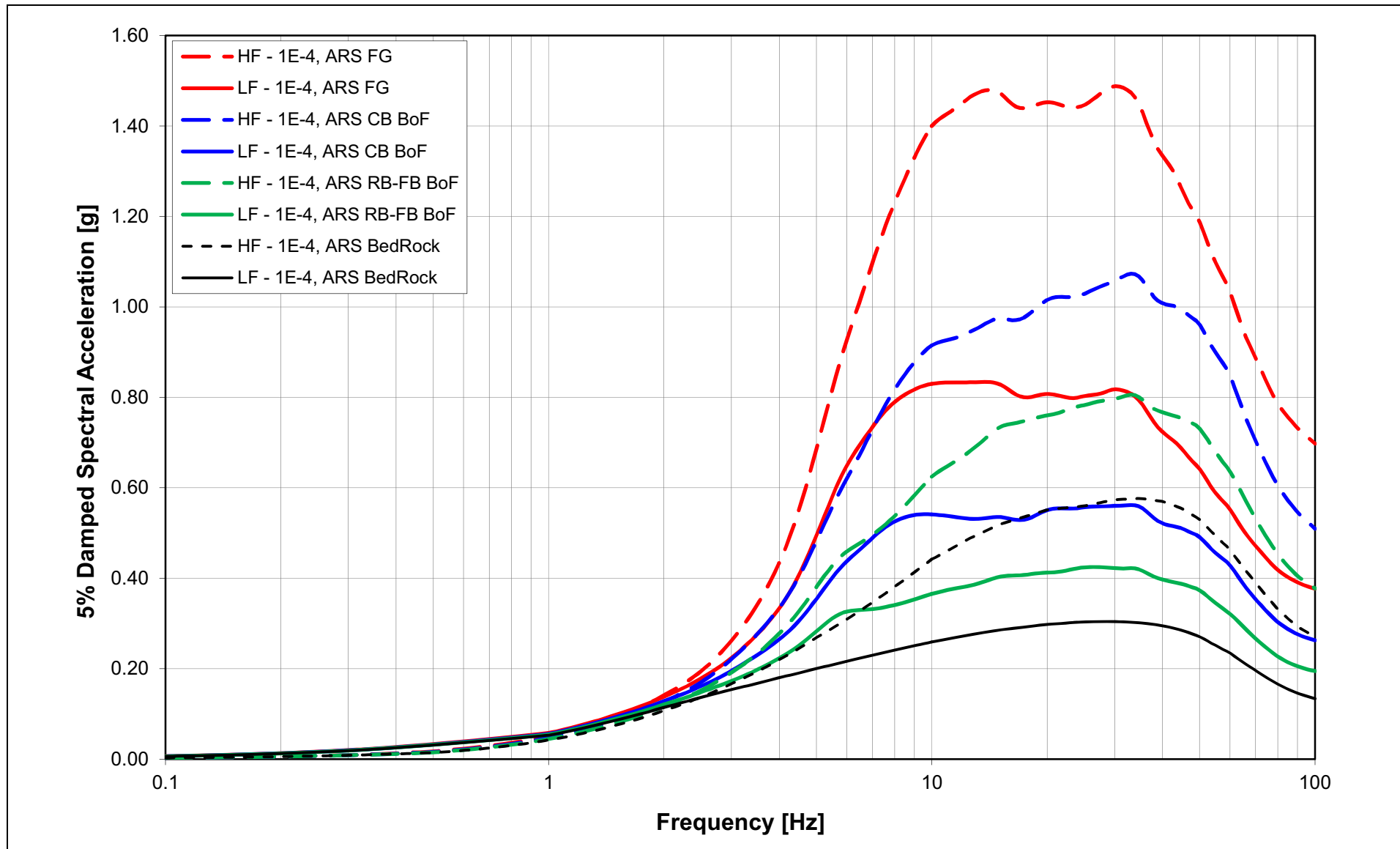
NAPS COL 2.0-27-A Figure 2.5.2-288 **Mean Geologic Outcrop ARS for RB/FB Soil Column at 10⁻⁴ Hazard Level Input Ground Motion**



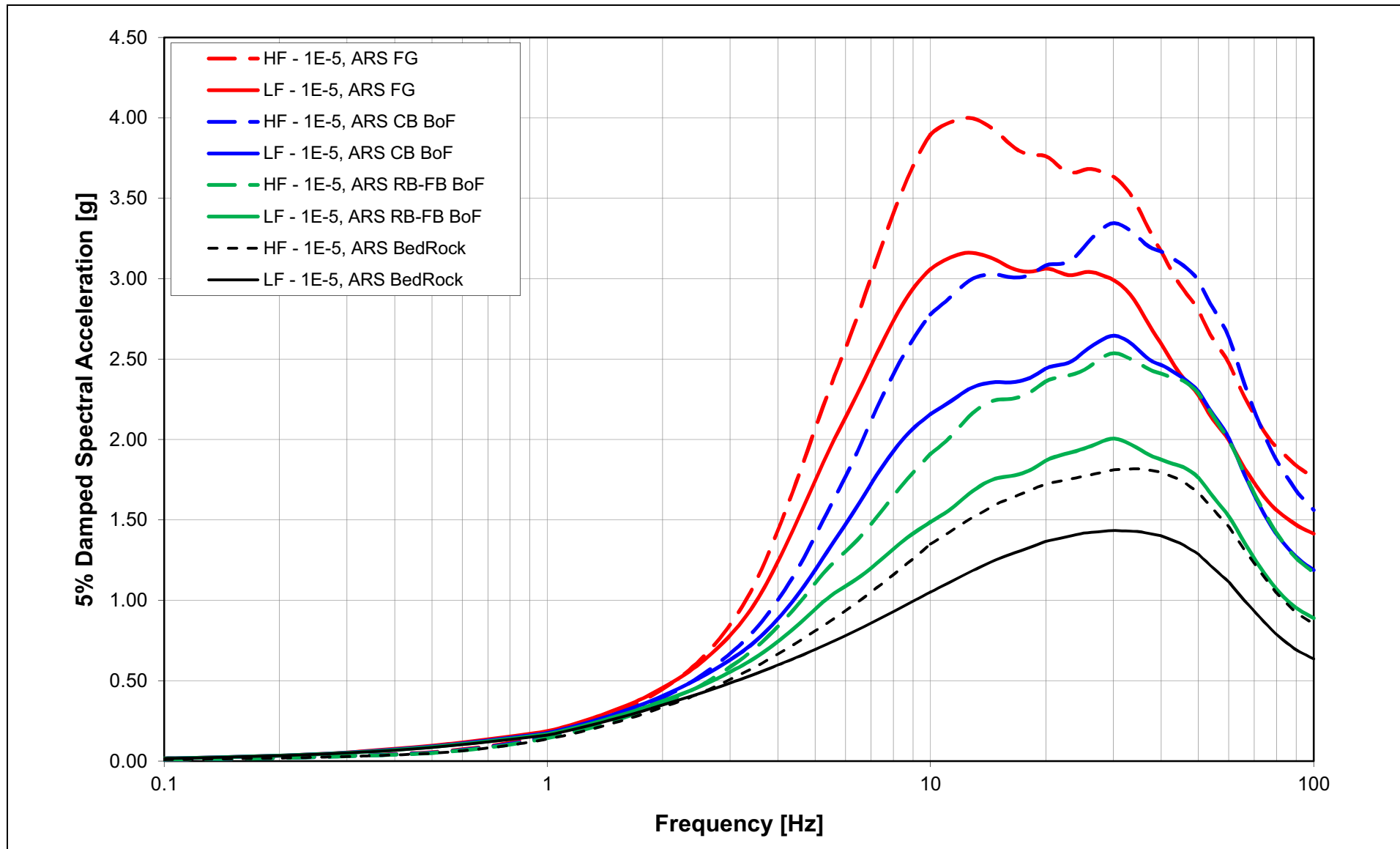
NAPS COL 2.0-27-A Figure 2.5.2-289 Mean Geologic Outcrop ARS for RB/FB Soil Column at 10⁻⁵ Hazard Level Input Ground Motion



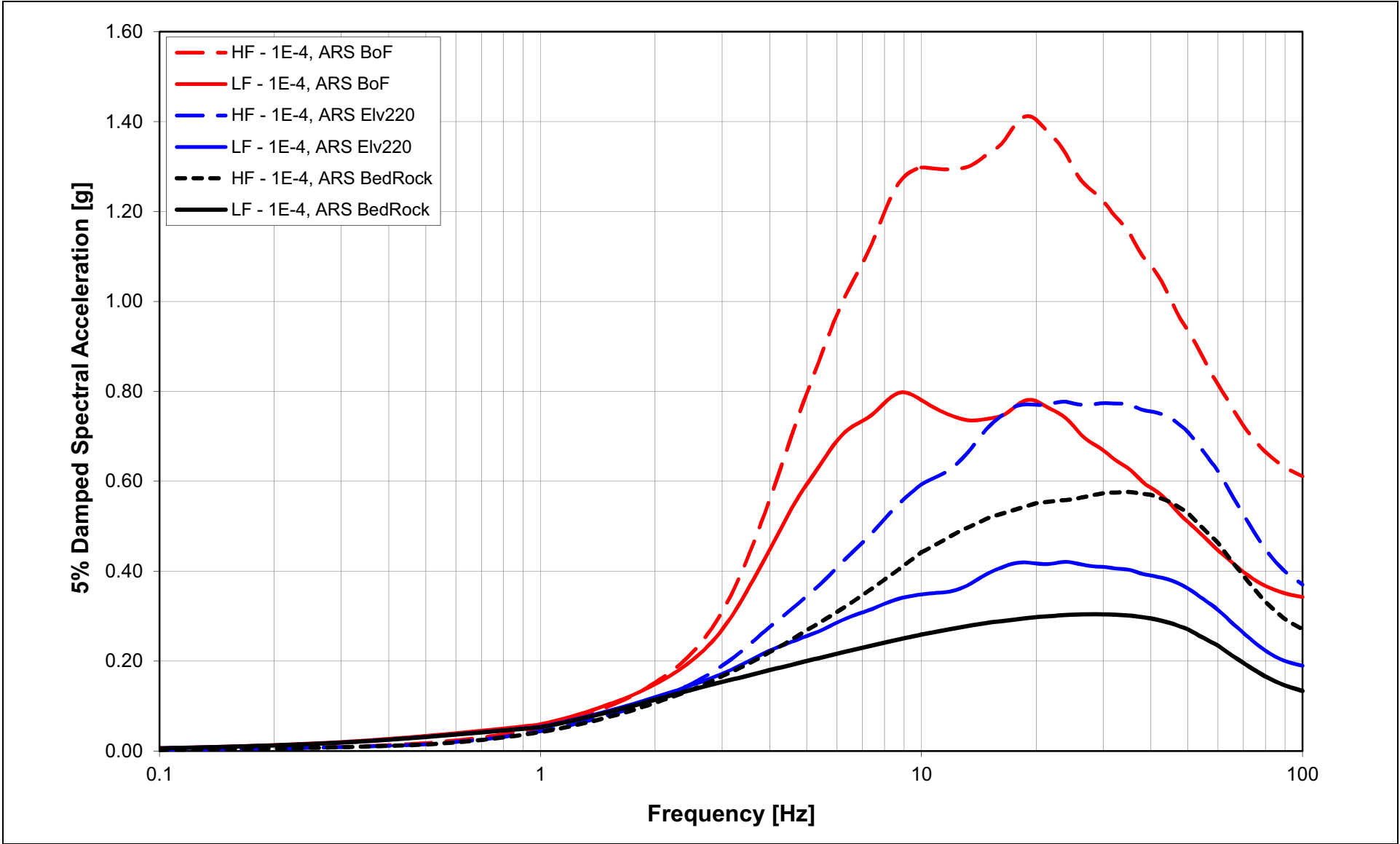
NAPS COL 2.0-27-A Figure 2.5.2-290 Mean Full Column Outcrop ARS for CB Soil Column at 10^{-4} Hazard Level Input Ground Motion



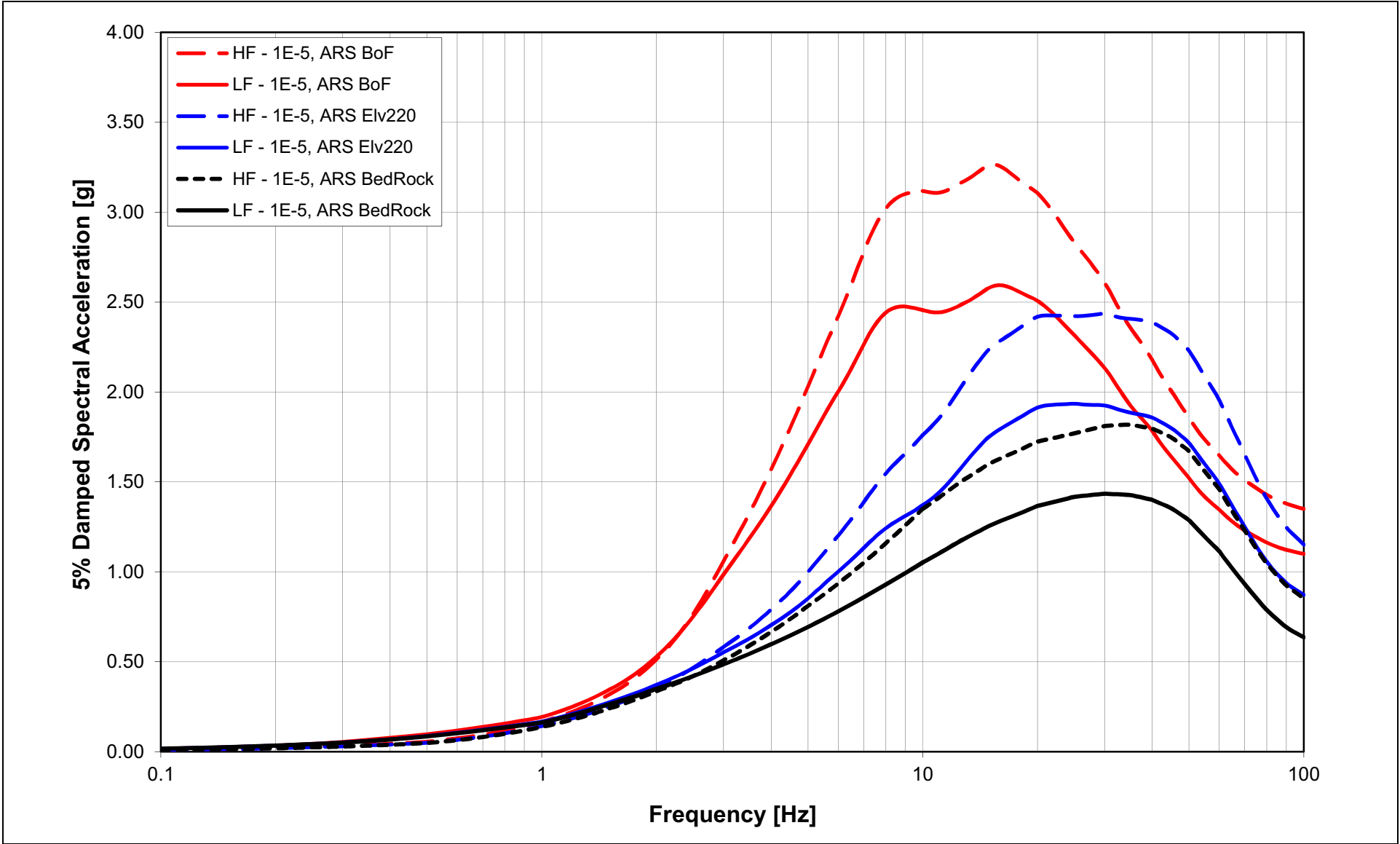
NAPS COL 2.0-27-A Figure 2.5.2-291 Mean Full Column Outcrop ARS for CB Soil Column at 10^{-5} Hazard Level Input Ground Motion



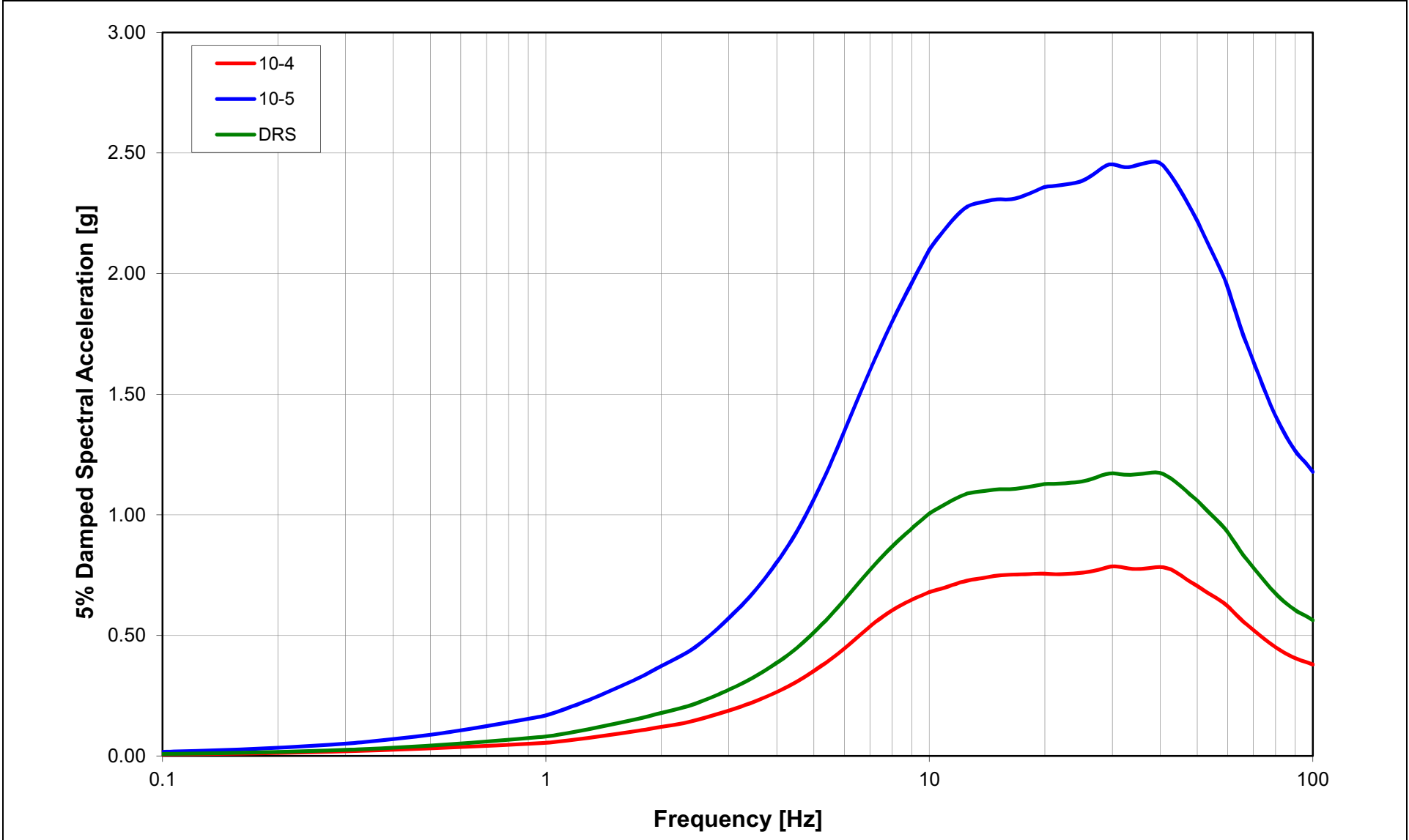
NAPS COL 2.0-27-A Figure 2.5.2-292 **Mean Full Column Outcrop ARS for FWSC Soil Column at 10⁻⁴ Hazard Level Input Ground Motion**



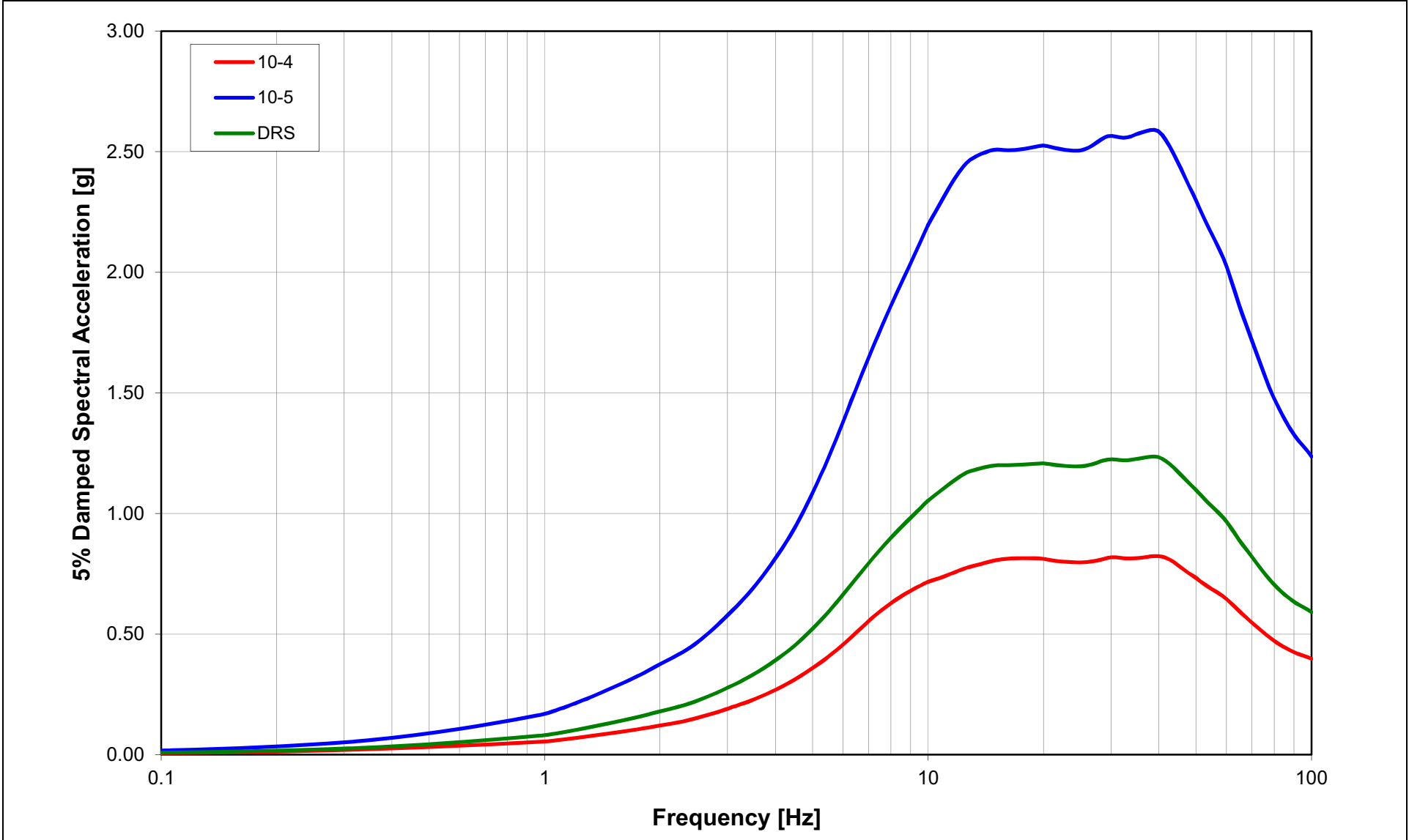
NAPS COL 2.0-27-A Figure 2.5.2-293 Mean Full Column Outcrop ARS for FWSC Soil Column at 10⁻⁵ Hazard Level Input Ground Motion



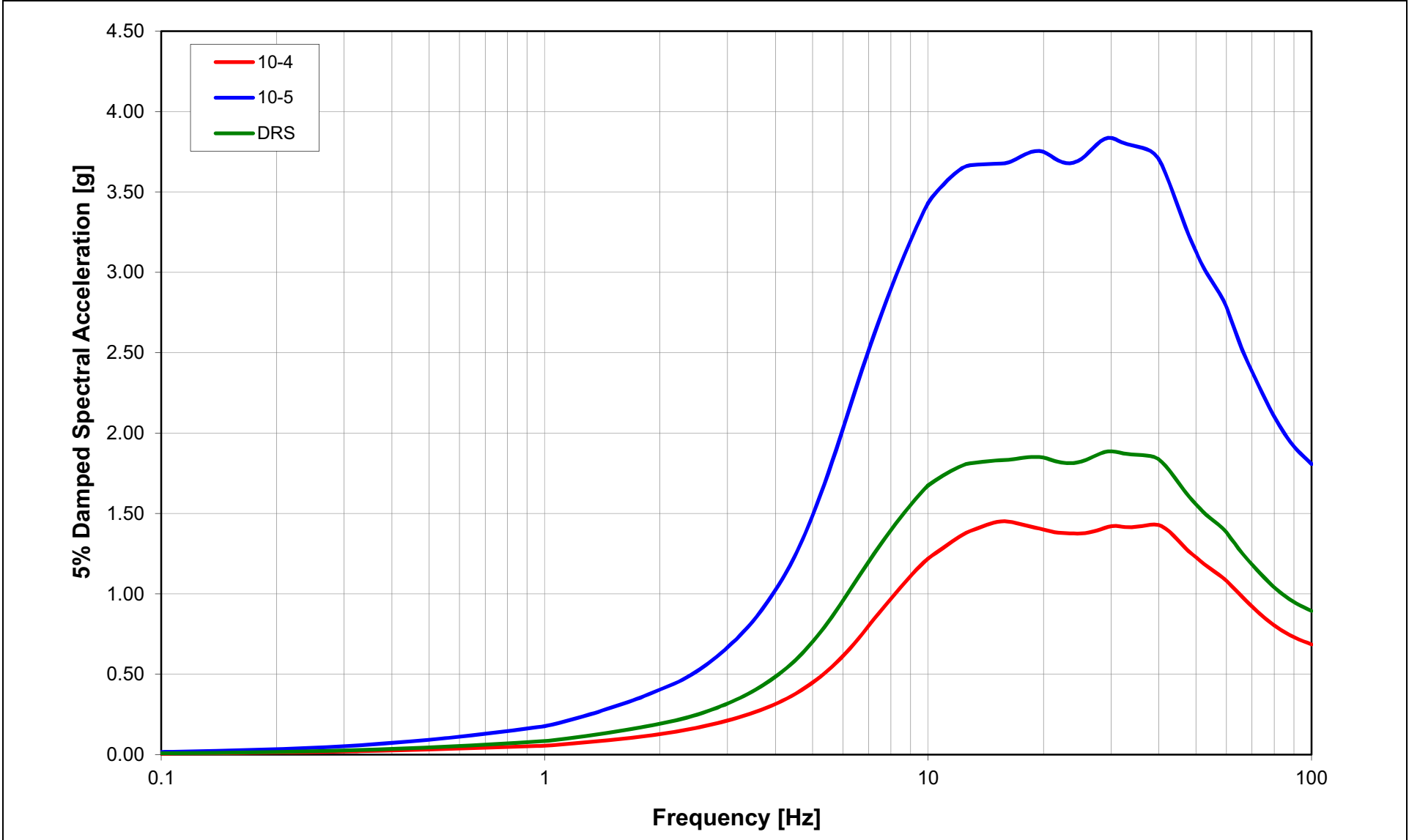
NAPS COL 2.0-27-A Figure 2.5.2-294 **Mean Horizontal Full Column Outcrop UHRS at 10^{-4} and 10^{-5} Hazard Levels and Full Column Outcrop DRS for RB/FB Soil Column at Elevation 224 ft (BoF for RB/FB)**



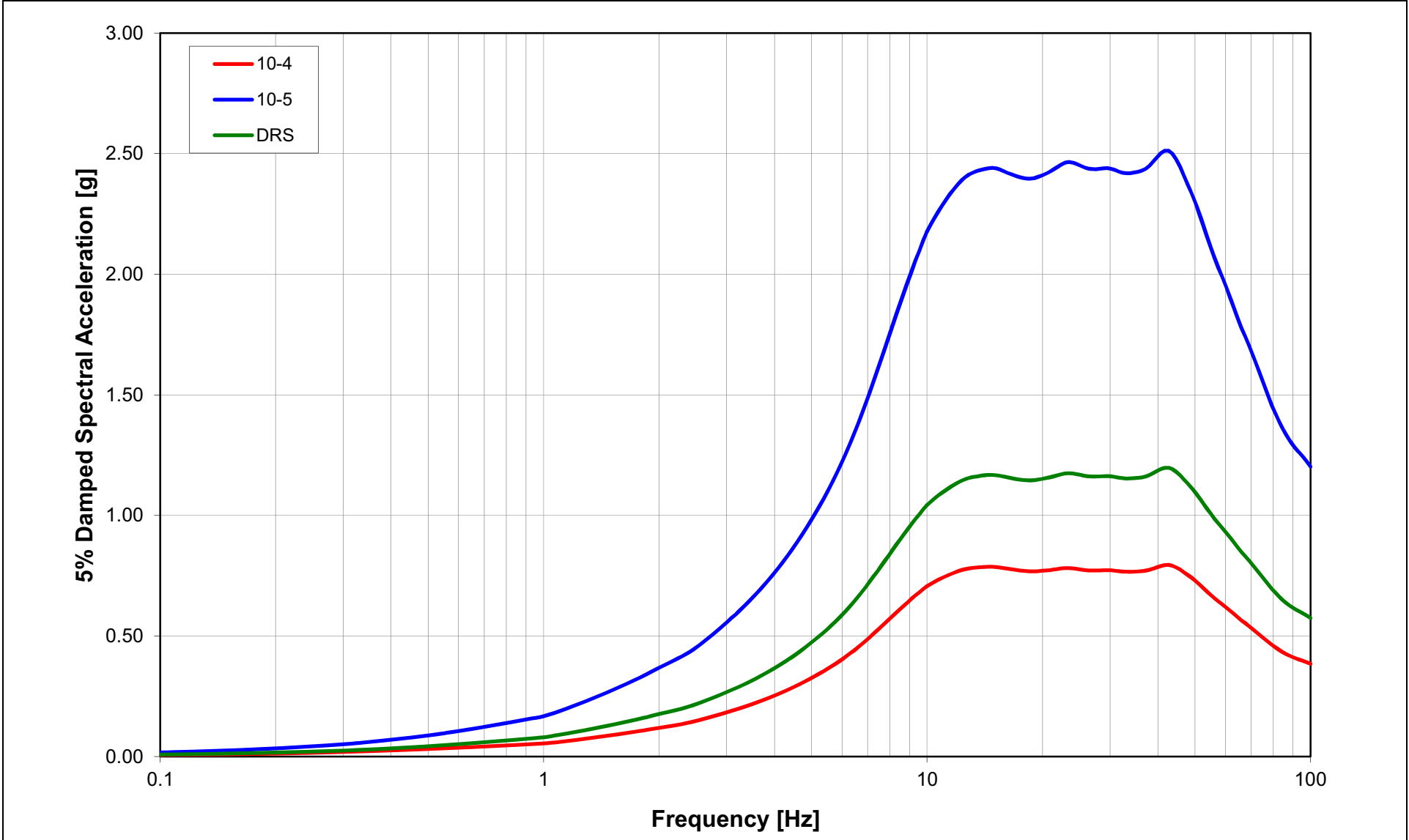
NAPS COL 2.0-27-A Figure 2.5.2-295 **Mean Horizontal Full Column Outcrop UHRS at 10^{-4} and 10^{-5} Hazard Levels and Full Column Outcrop DRS for RB/FB Soil Column at Elevation 241 ft (BoF for CB)**



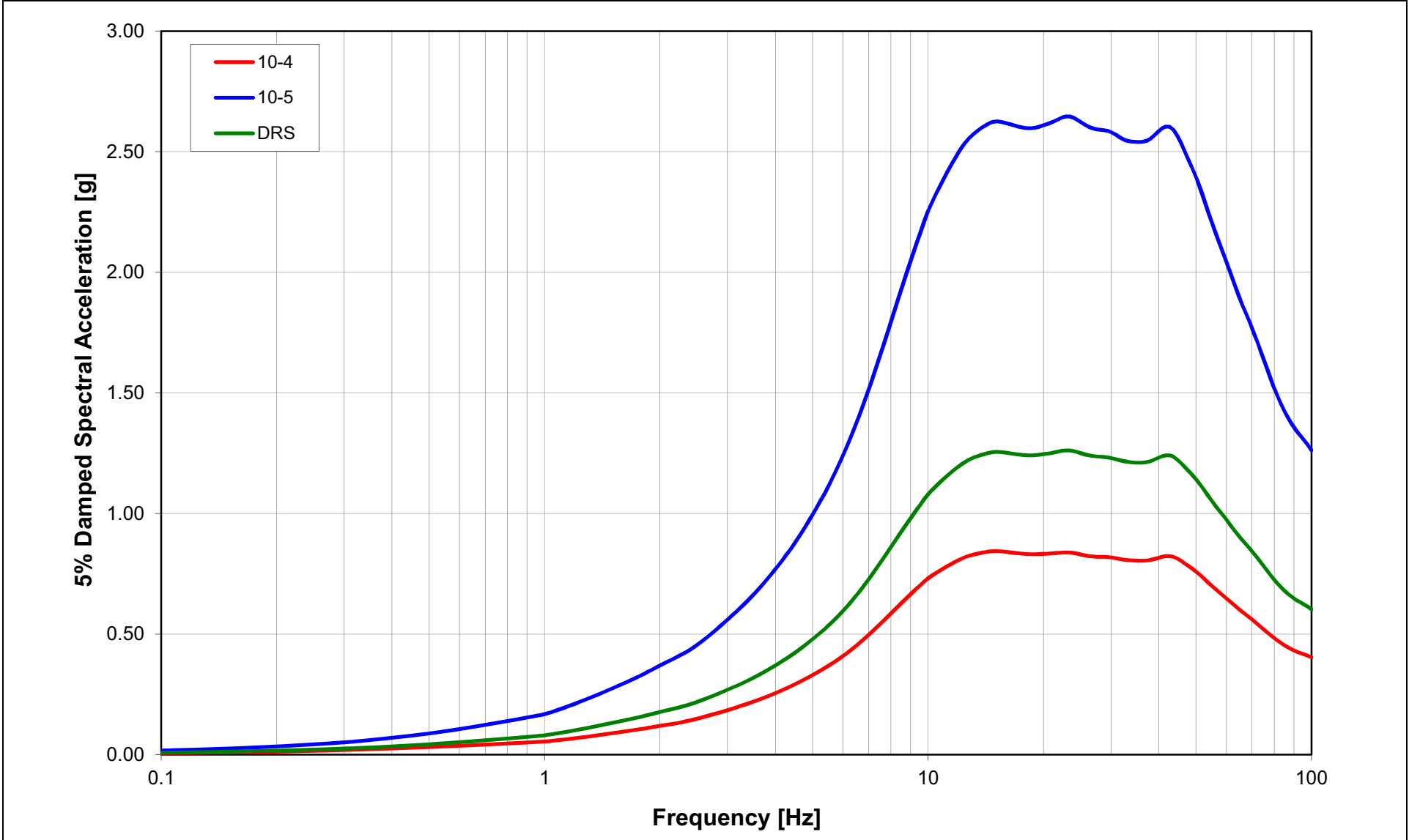
NAPS COL 2.0-27-A Figure 2.5.2-296 **Mean Horizontal Full Column Outcrop UHRS at 10^{-4} and 10^{-5} Hazard Levels and Full Column Outcrop DRS for RB/FB Soil Column at Elevation 290 ft (Finished Grade)**



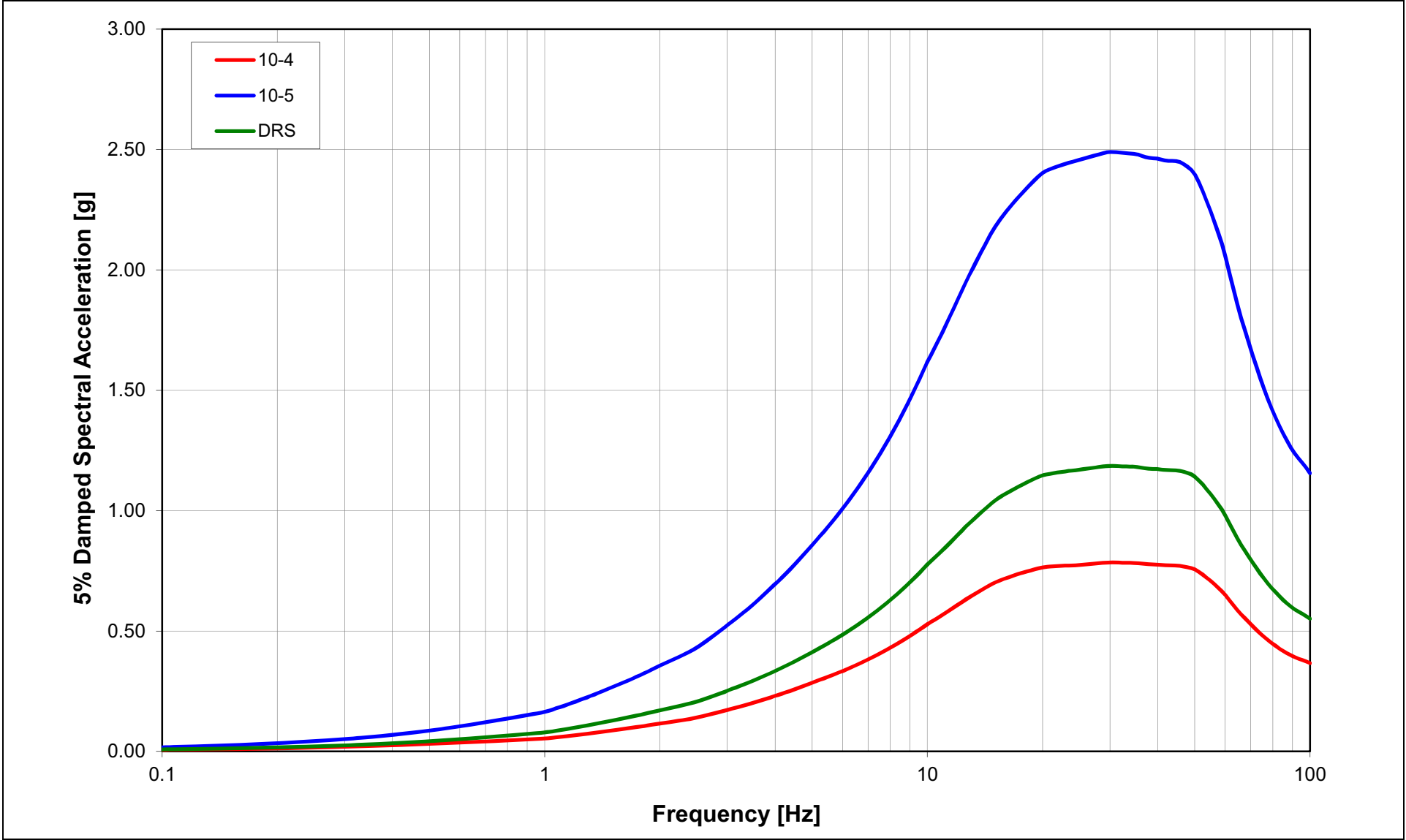
NAPS COL 2.0-27-A Figure 2.5.2-297 **Mean Horizontal Partial Column Outcrop UHRS at 10^{-4} and 10^{-5} Hazard Levels and Partial Column Outcrop DRS for RB/FB Soil Column at Elevation 224 ft (BoF for RB/FB)**



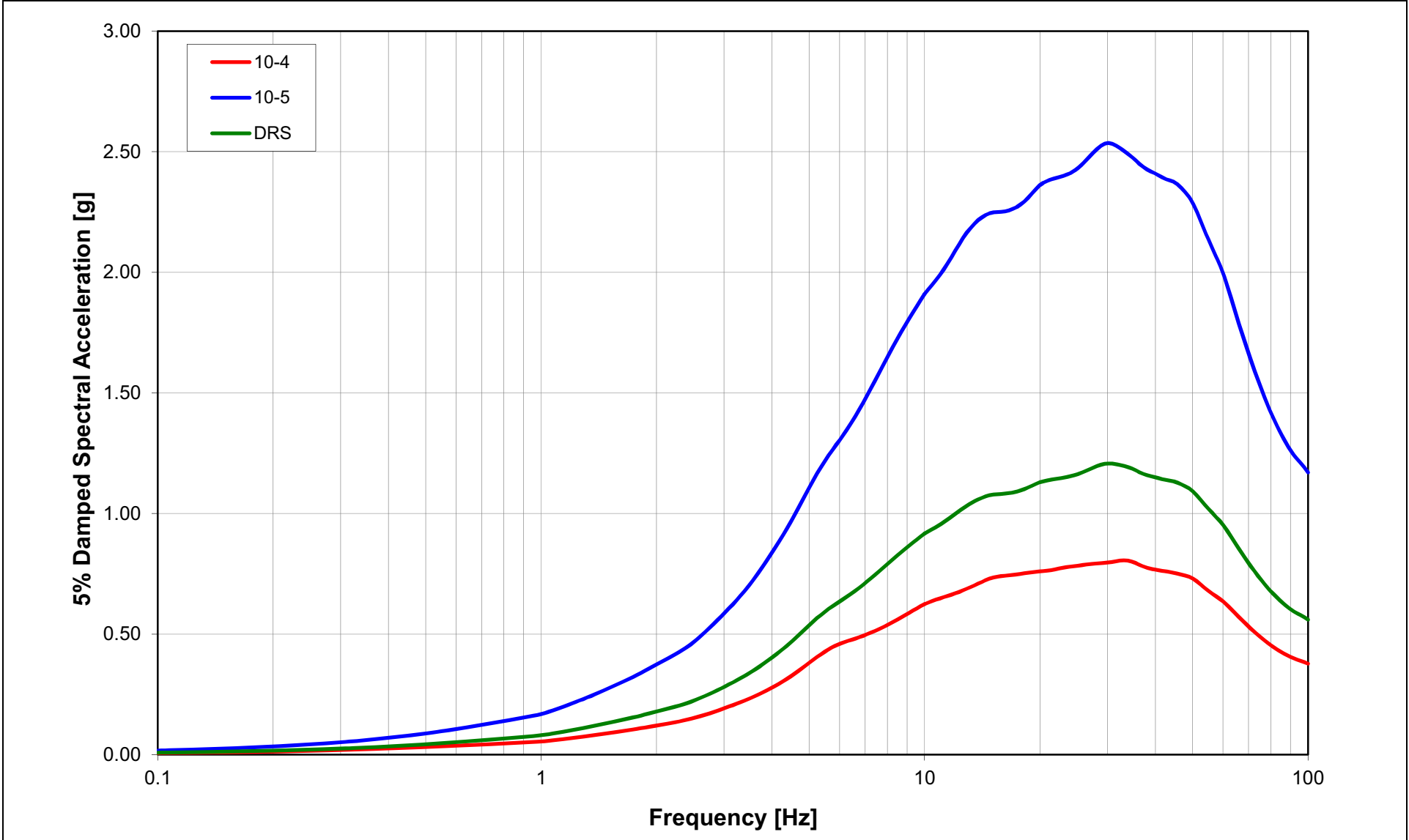
NAPS COL 2.0-27-A Figure 2.5.2-298 **Mean Horizontal Partial Column Outcrop UHRS at 10^{-4} and 10^{-5} Hazard Levels and Partial Column Outcrop DRS for RB/FB Soil Column at Elevation 241 ft (BoF for CB)**



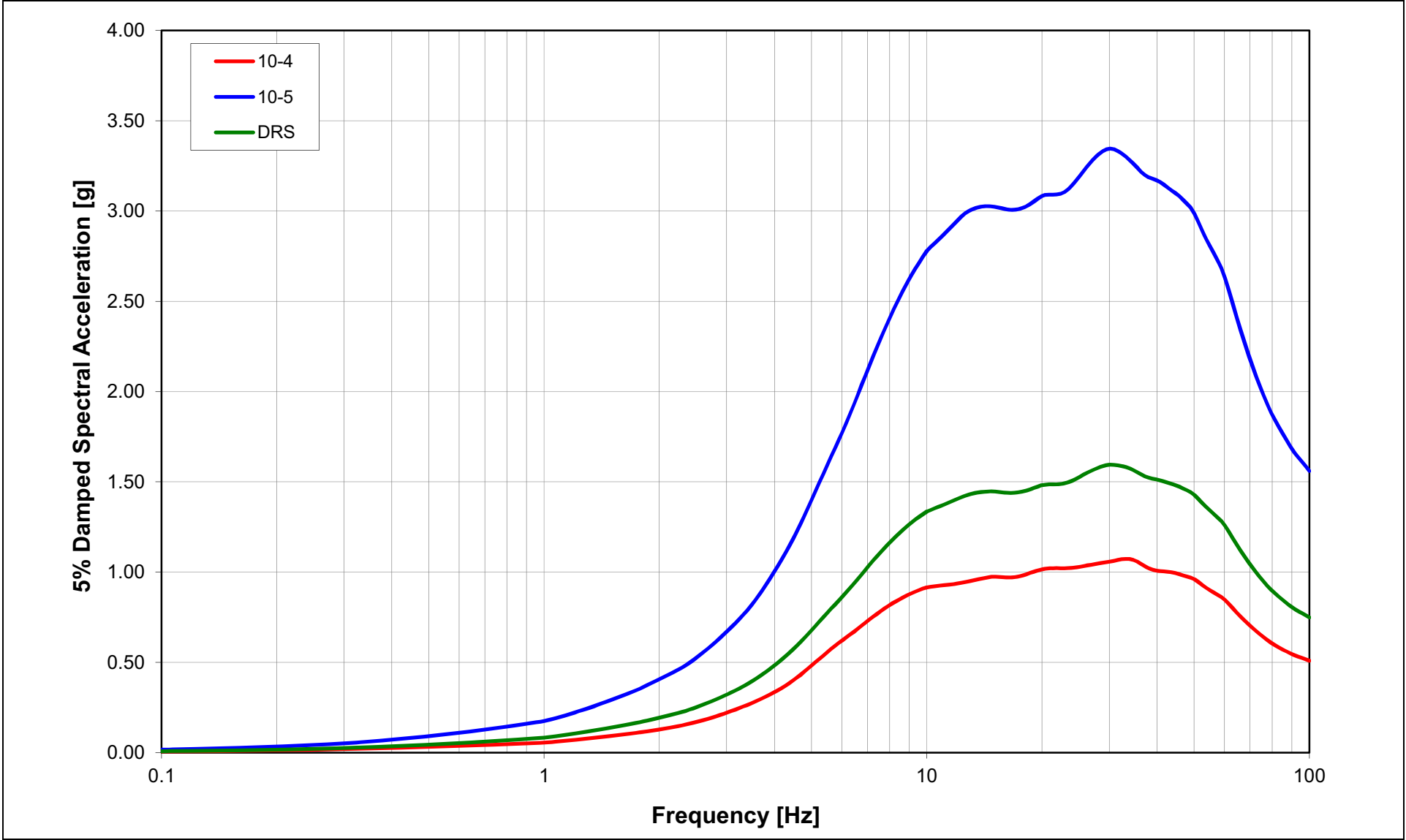
NAPS COL 2.0-27-A Figure 2.5.2-299 **Mean Horizontal Geologic Outcrop UHRS at 10^{-4} and 10^{-5} Hazard Levels and Geologic Outcrop DRS for RB/FB Soil Column at Elevation 224 ft (GMRS Horizon)**



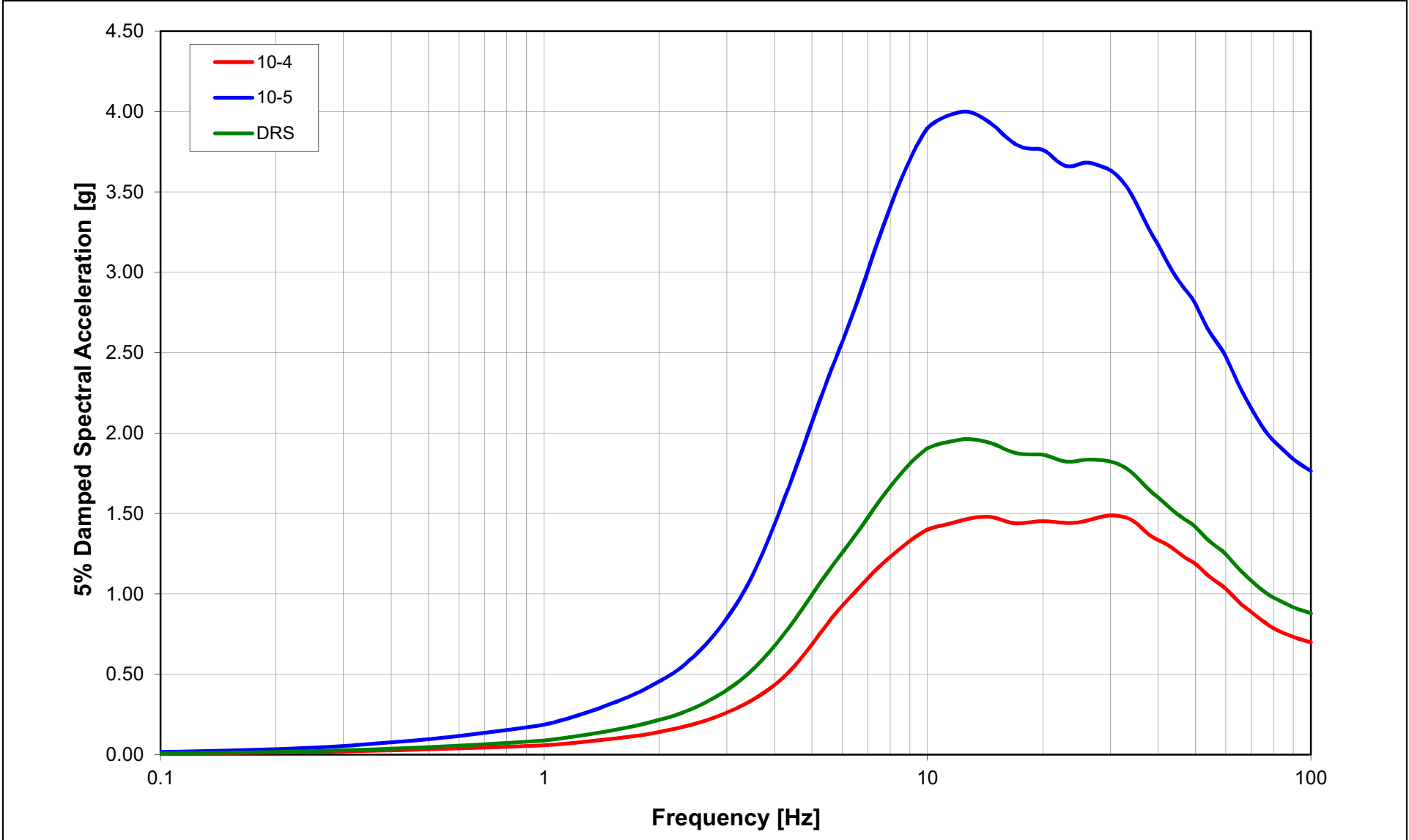
NAPS COL 2.0-27-A Figure 2.5.2-300 **Mean Horizontal Full Column Outcrop UHRS at 10^{-4} and 10^{-5} Hazard Levels and Full Column Outcrop DRS for CB Soil Column at Elevation 224 ft (BoF for RB/FB)**



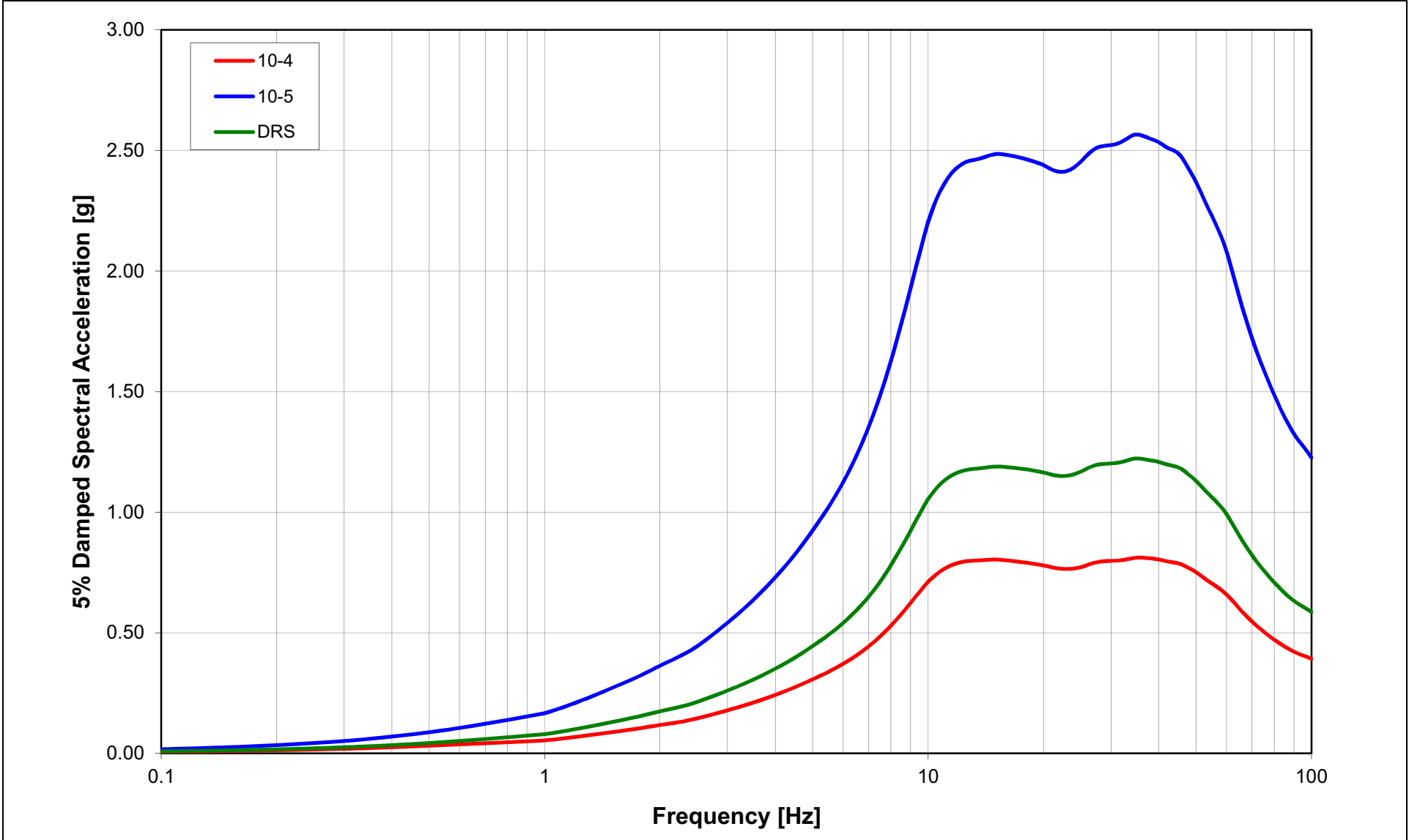
NAPS COL 2.0-27-A Figure 2.5.2-301 **Mean Horizontal Full Column Outcrop UHRS at 10^{-4} and 10^{-5} Hazard Levels and Full Column Outcrop DRS for CB Soil Column at Elevation 241 ft (BoF for CB)**



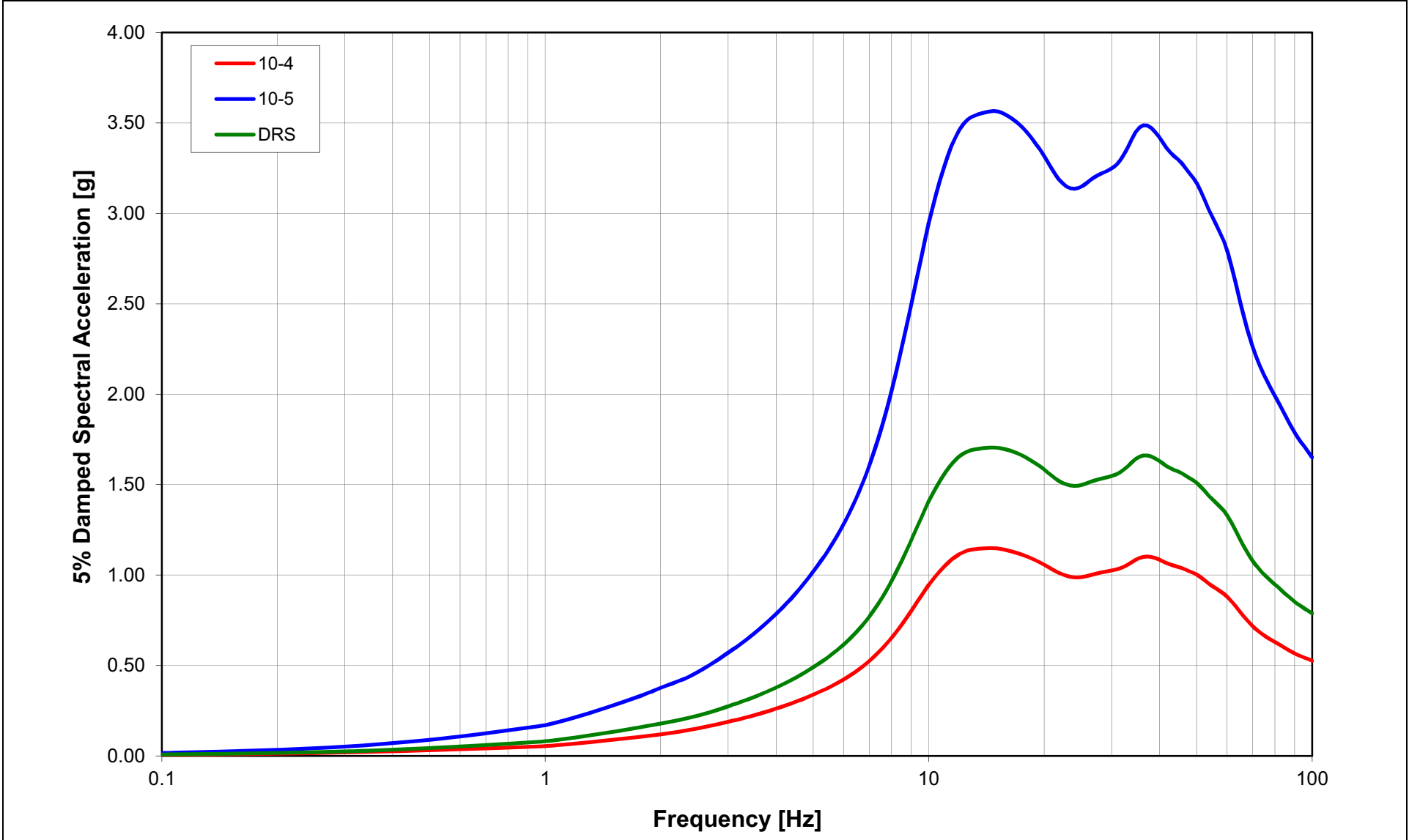
NAPS COL 2.0-27-A Figure 2.5.2-302 **Mean Horizontal Full Column Outcrop UHRS at 10^{-4} and 10^{-5} Hazard Levels and Full Column Outcrop DRS for CB Soil Column at Elevation 290 ft (Finished Grade)**



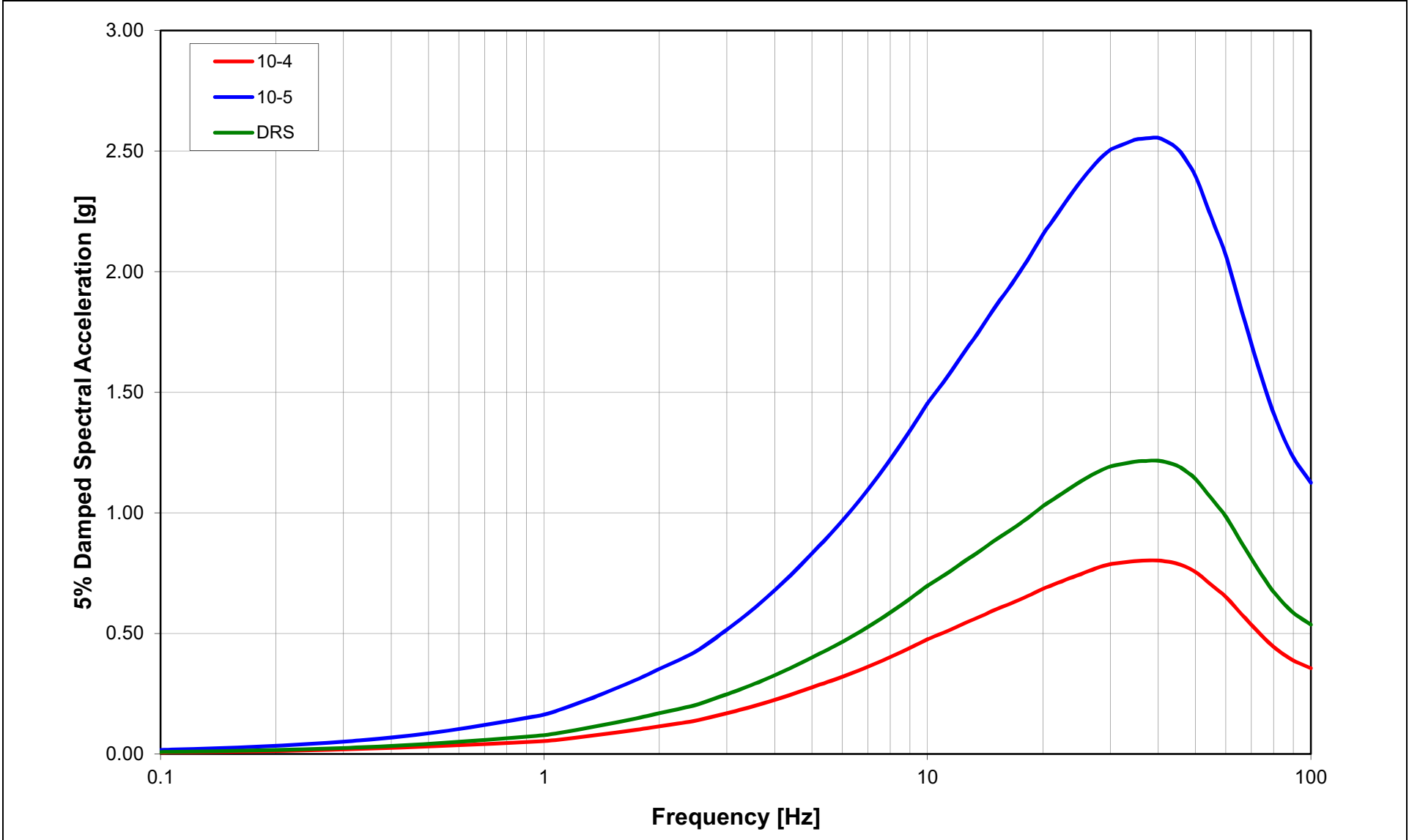
NAPS COL 2.0-27-A Figure 2.5.2-303 **Mean Horizontal Partial Column Outcrop UHRS at 10^{-4} and 10^{-5} Hazard Levels and Partial Column Outcrop DRS for CB Soil Column at Elevation 224 ft (BoF for RB/FB)**



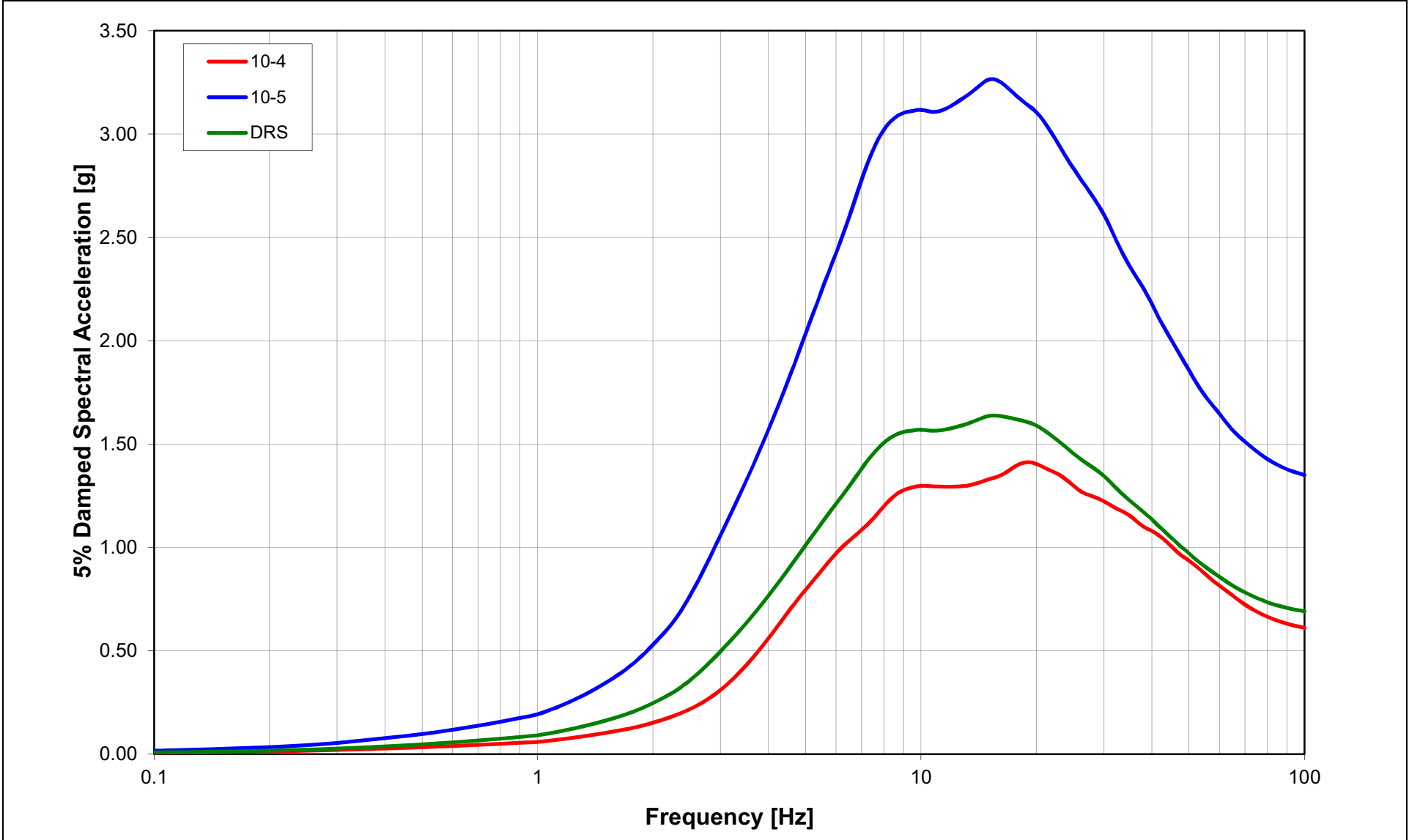
NAPS COL 2.0-27-A Figure 2.5.2-304 **Mean Horizontal Partial Column Outcrop UHRS at 10^{-4} and 10^{-5} Hazard Levels and Partial Column Outcrop DRS for CB Soil Column at Elevation 241 ft (BoF for CB)**

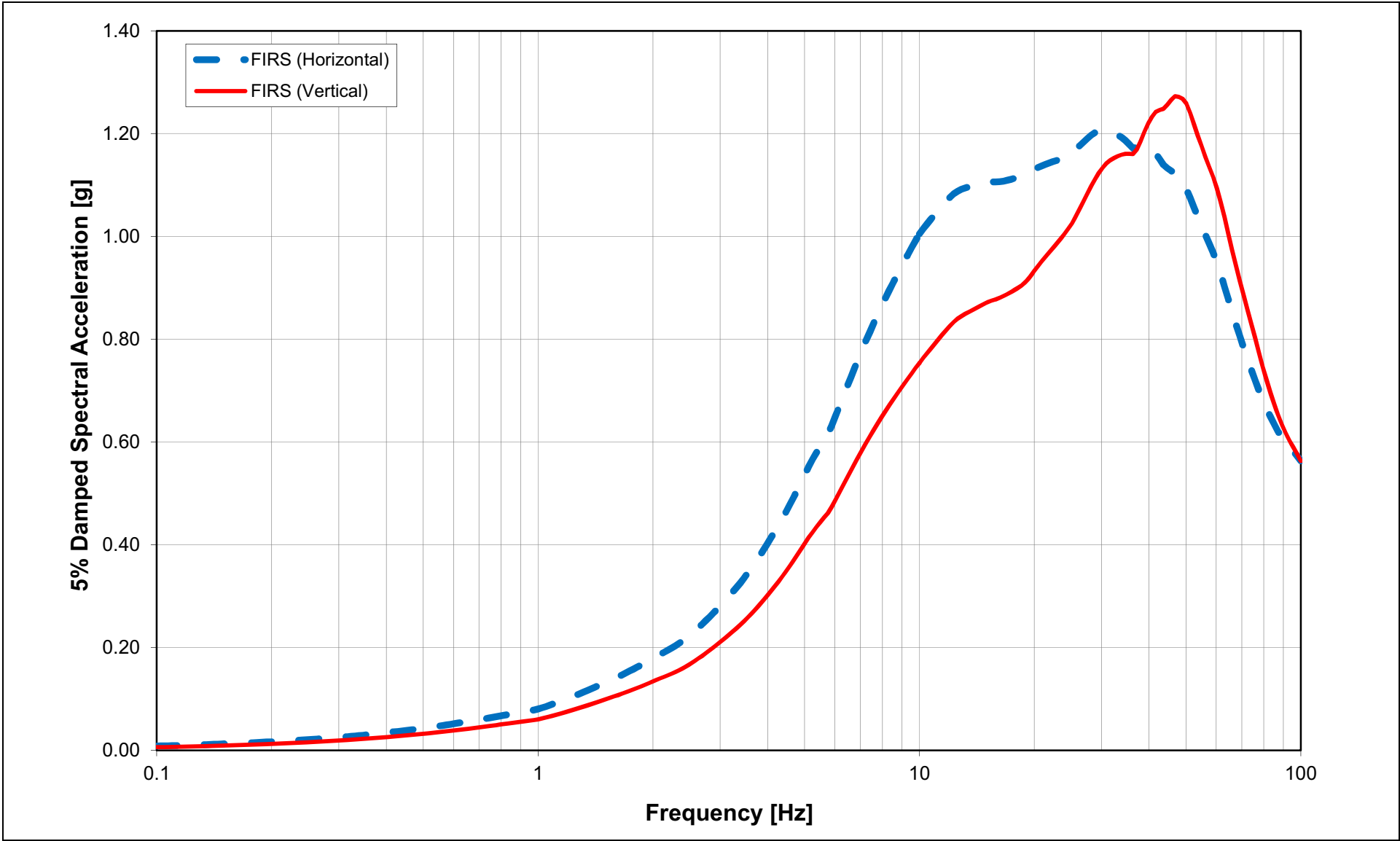


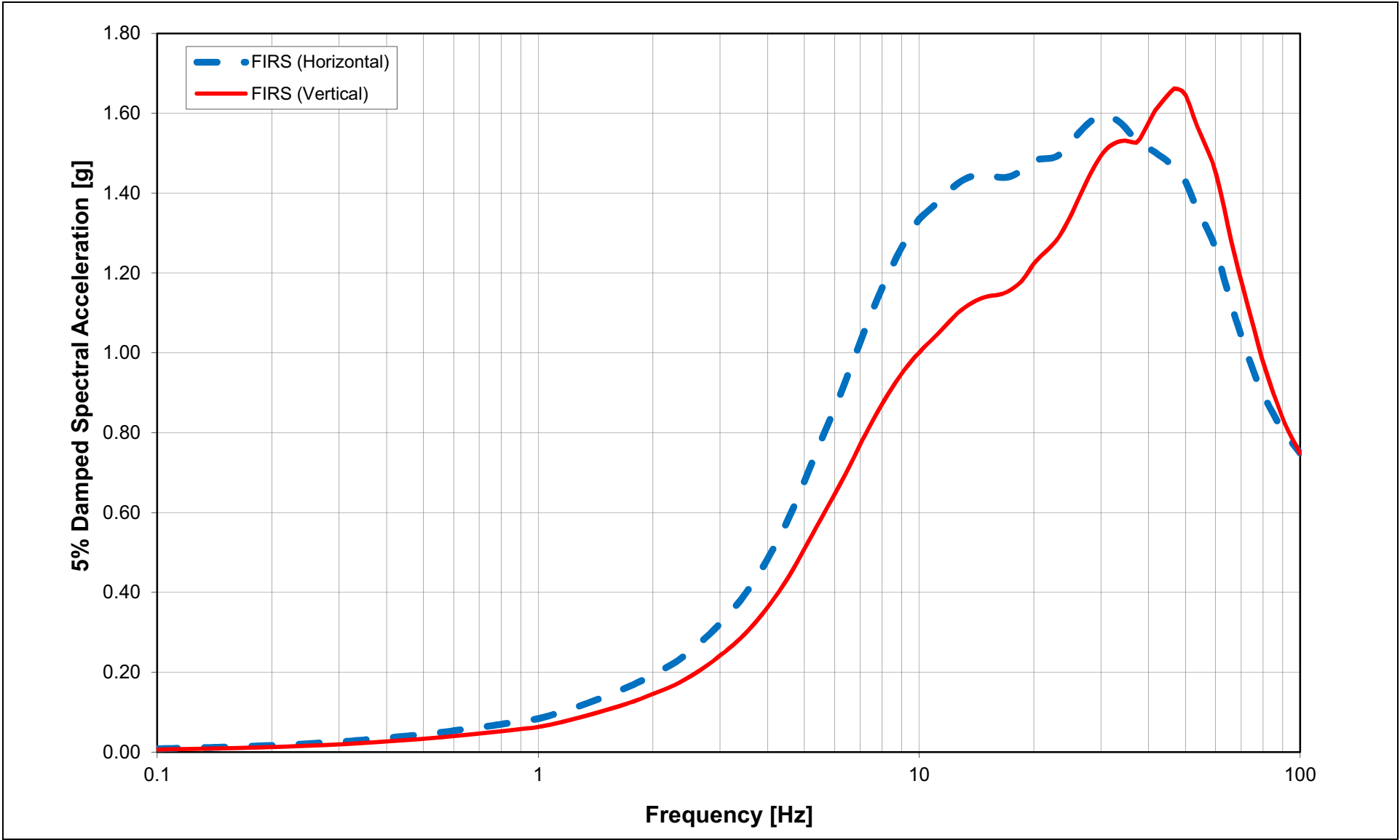
NAPS COL 2.0-27-A Figure 2.5.2-305 **Mean Horizontal Geologic Outcrop UHRS at 10^{-4} and 10^{-5} Hazard Levels and Geologic Outcrop DRS for CB Soil Column at Elevation 224 ft (GMRS Horizon)**

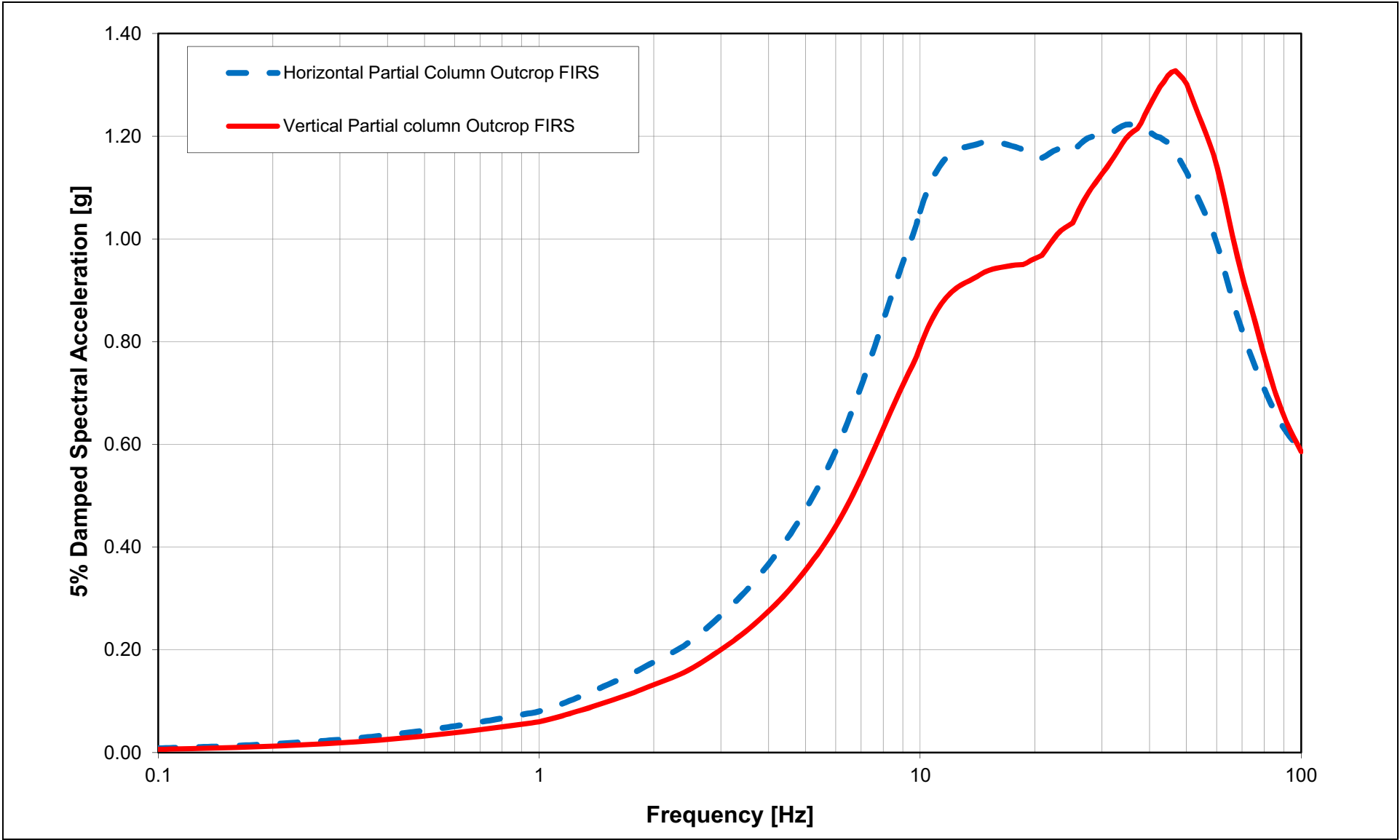


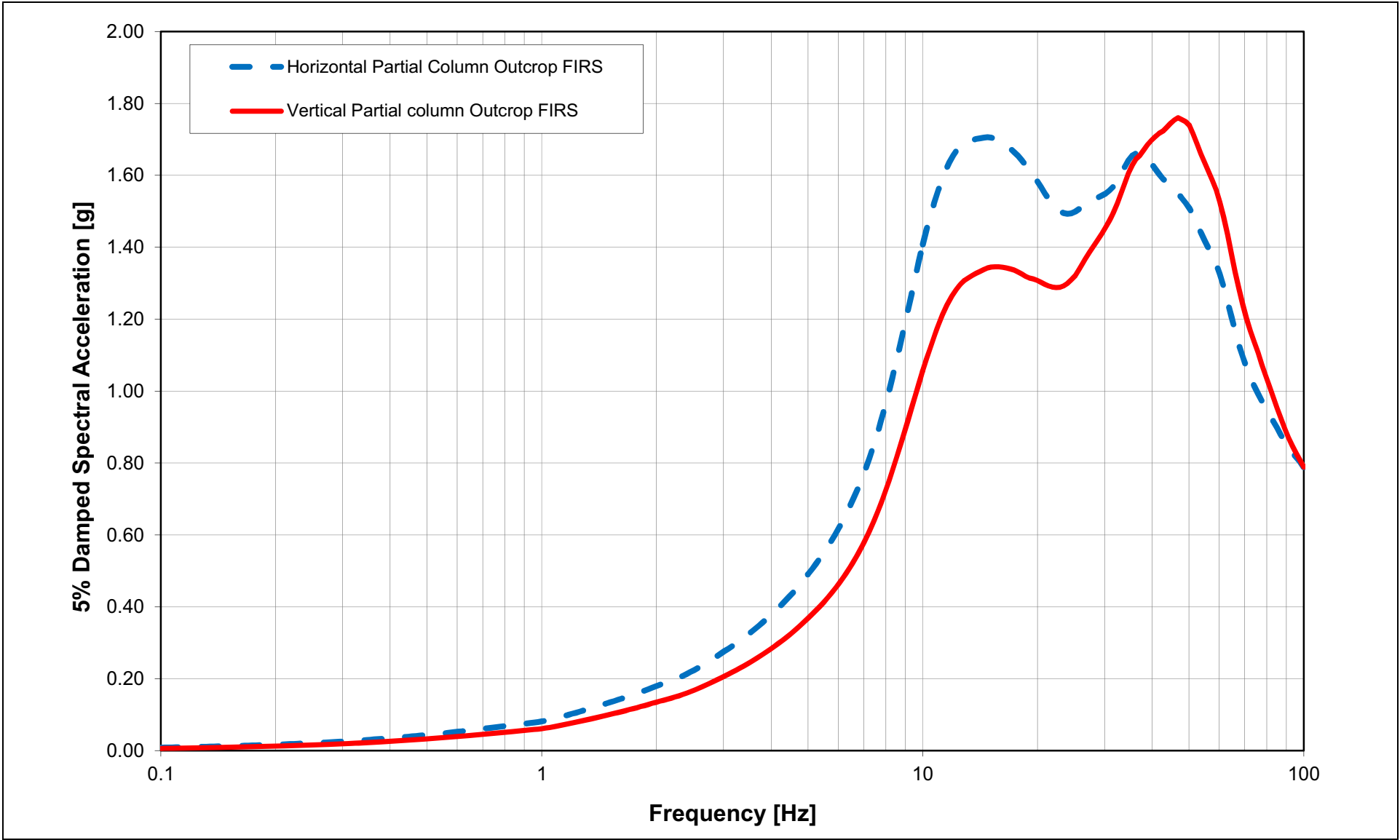
NAPS COL 2.0-27-A Figure 2.5.2-306 **Mean Horizontal Geologic Outcrop UHRS at 10^{-4} and 10^{-5} Hazard Levels and Geologic Outcrop DRS for FWSC Soil Column at Elevation 282 ft (BoF for FWSC)**



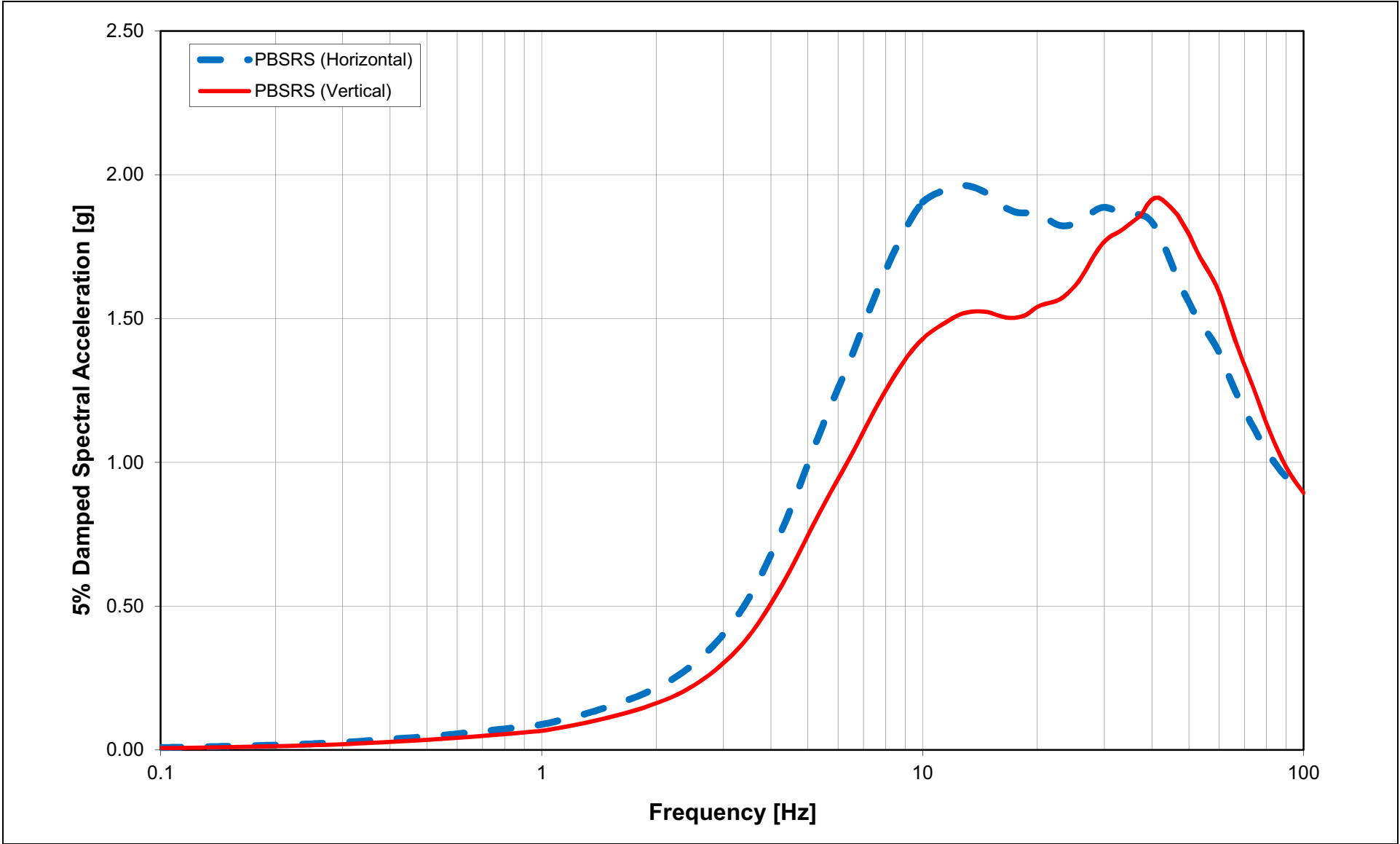


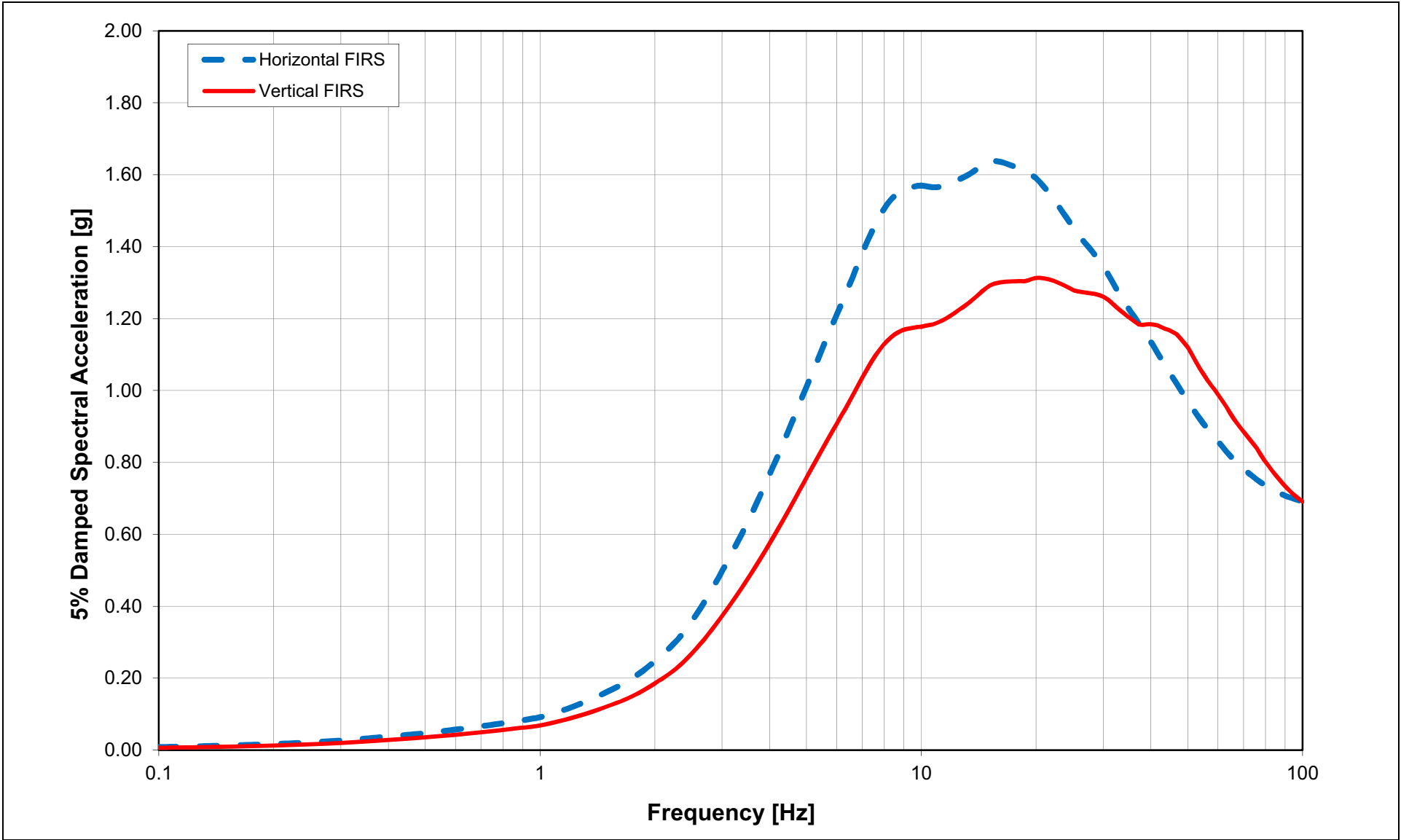


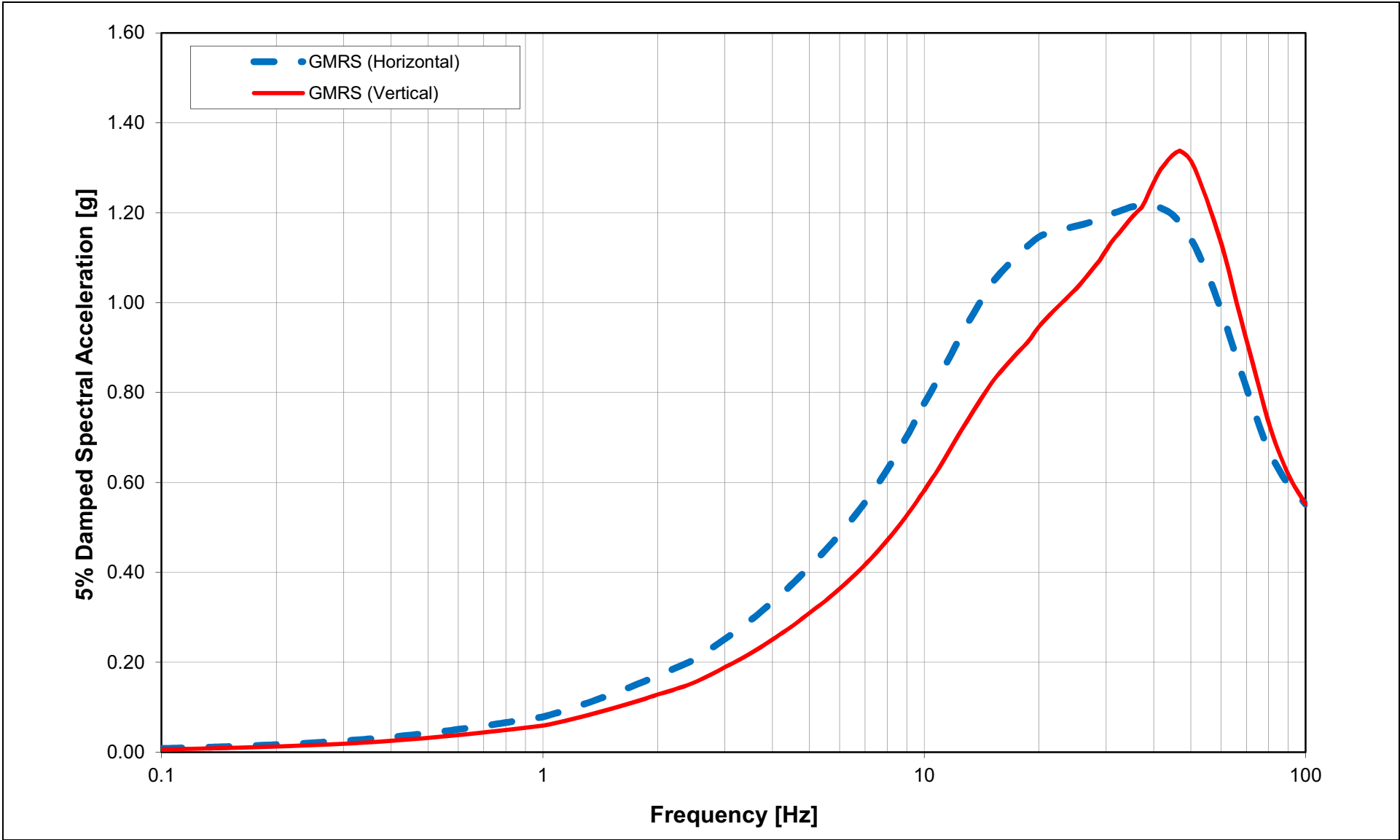




NAPS COL 2.0-27-A Figure 2.5.2-311 Horizontal and Vertical PBSRS for RB/FB and CB







NAPS COL 2.0-27-A Figure 2.5.2-314 Rock V/H Ratios Recommended in NUREG/CR-6728 (Reference 2.5-385)
NAPS ESP VAR 2.0-4

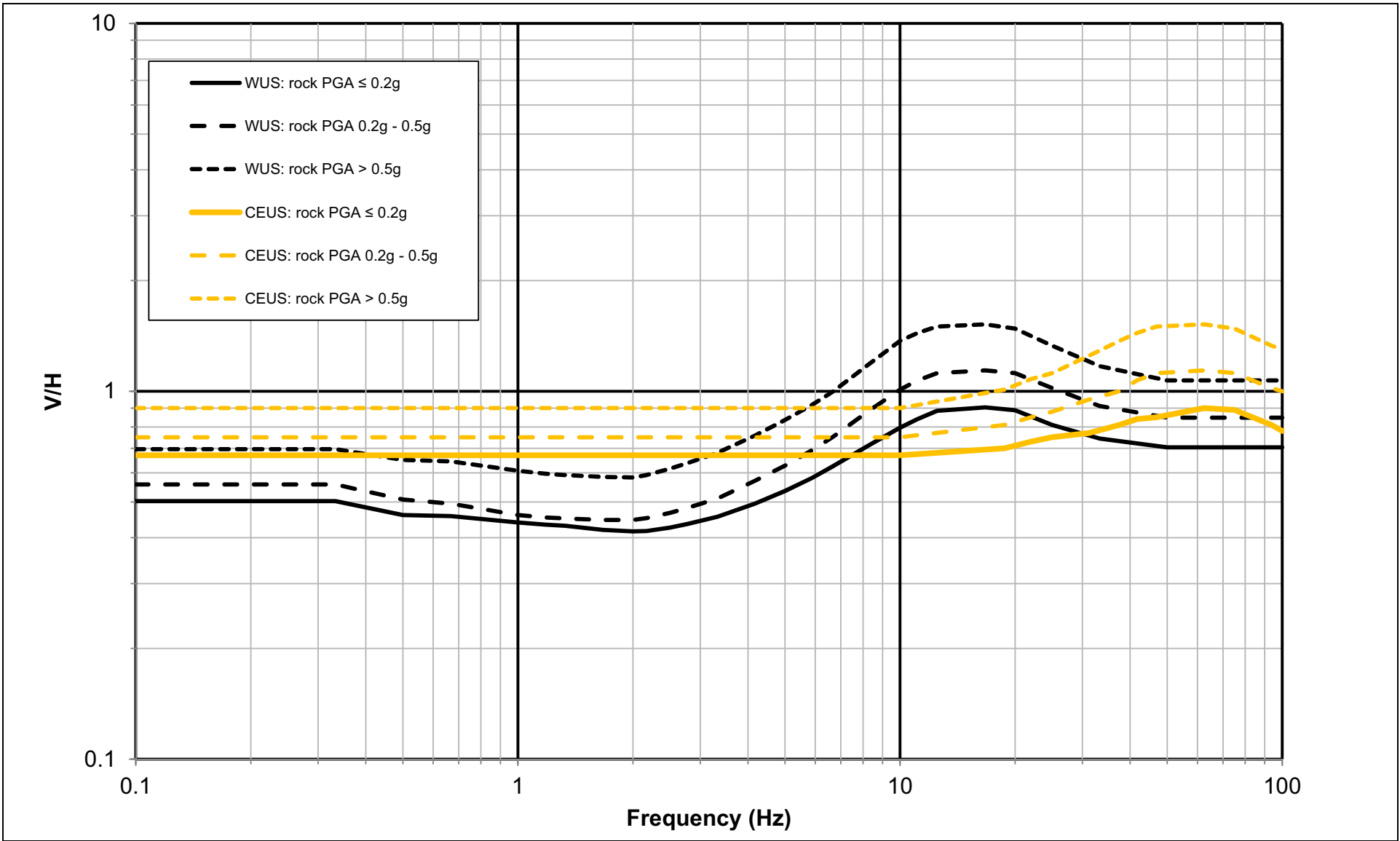
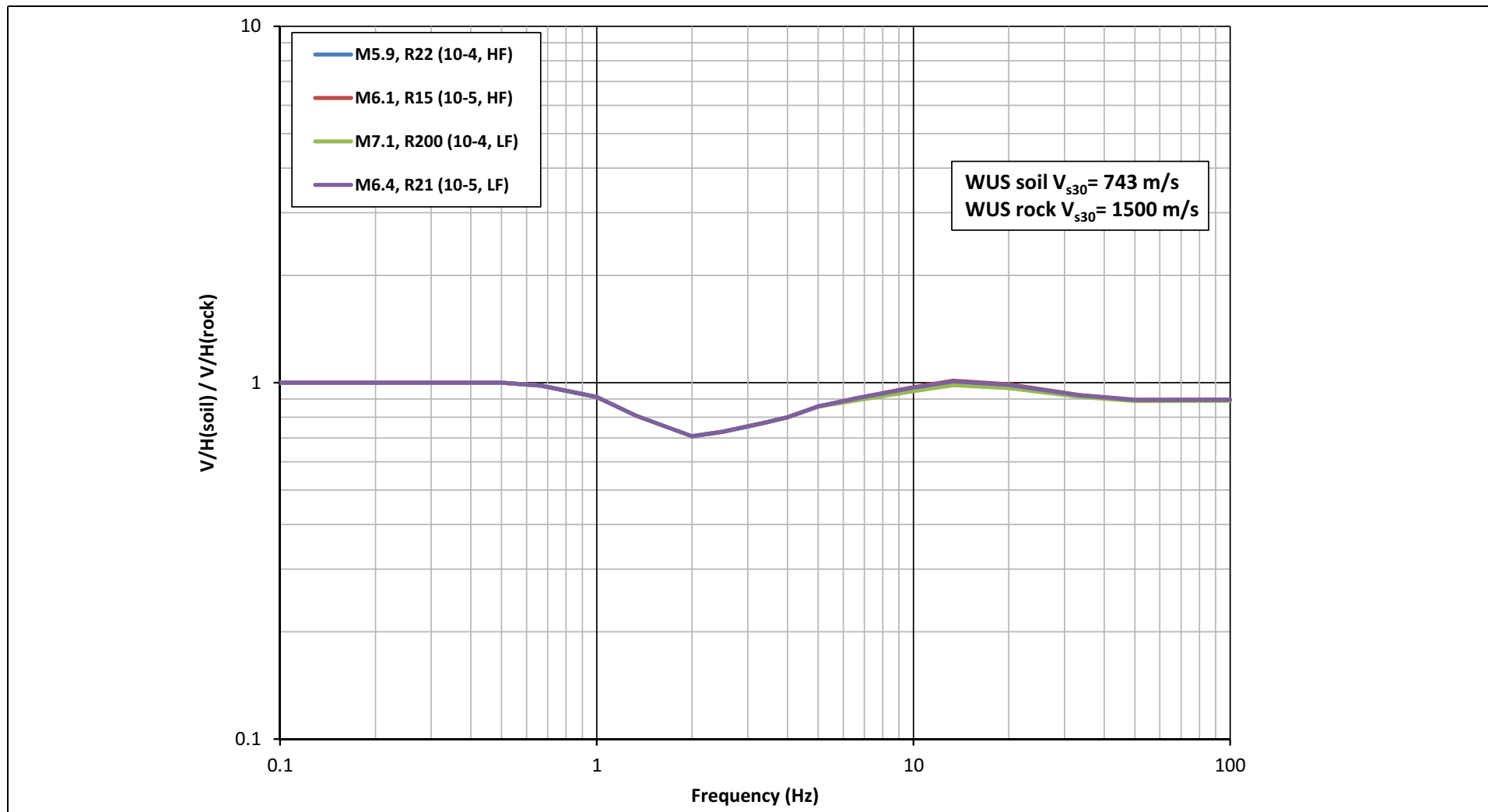
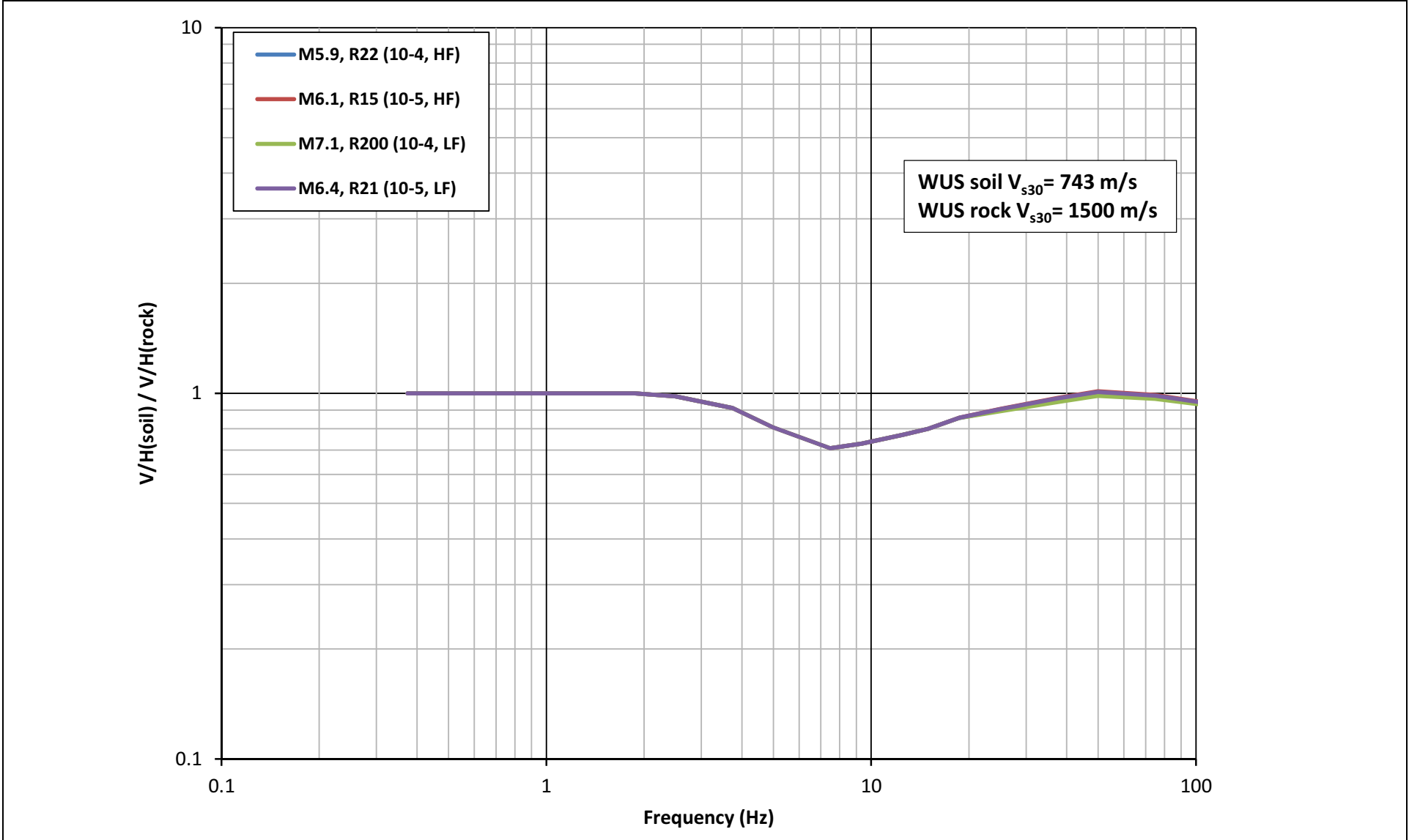


Figure 2.5.2-315 $V/H_{WUS,soil} / V/H_{WUS,rock} (f \text{ (Rock-to-Soil)})$ from GA11 V/H Model for the Suite of Controlling Magnitudes and Distances for Soil V_{s30} of 2,439 ft/s (743 m/s) and Rock V_{s30} of ~5,000 ft/s (1,500 m/s)



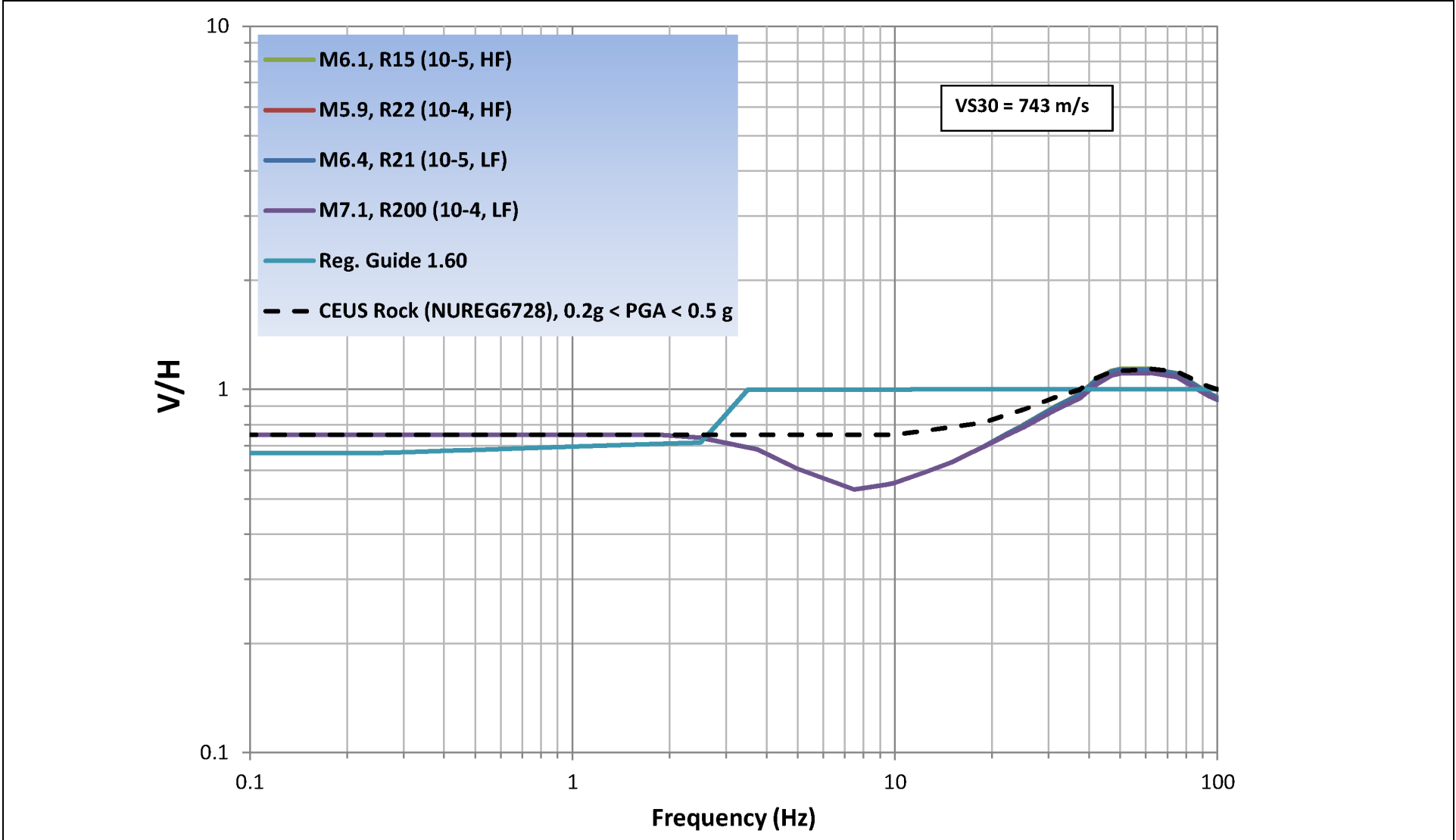
NOTE: The rupture distance of 10^{-4} LF case of **M7.1** has been capped to the maximum applicable distance (200 km) of the GA11 V/H model.



NAPS COL 2.0-27-A
NAPS ESP VAR 2.0-4

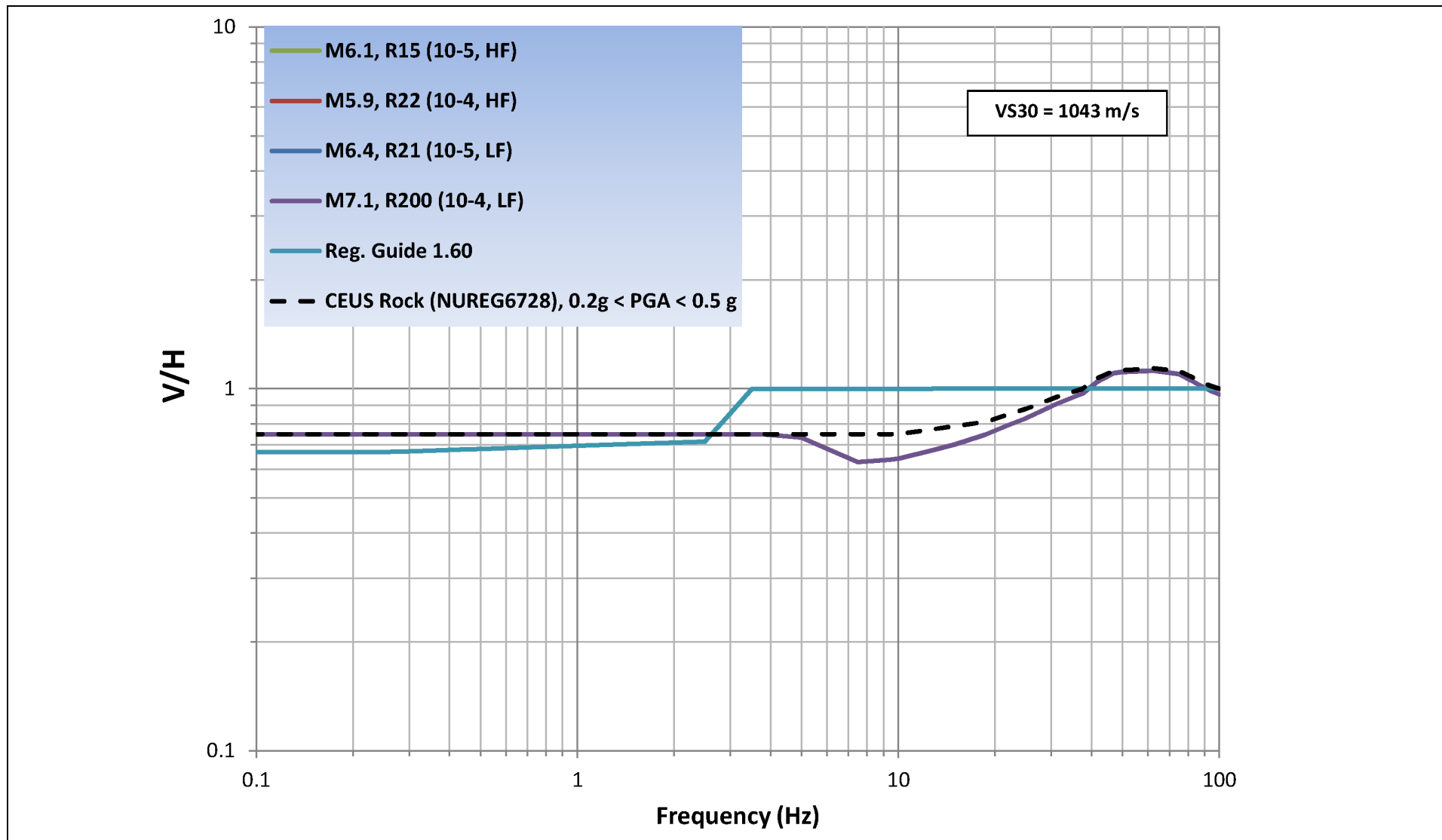
Figure 2.5.2-317

Initial $V/H_{CEUS,soil}$ for a Suite of Controlling Magnitudes and Distances and V_{S30} of 2,439 ft/s (743 m/s)



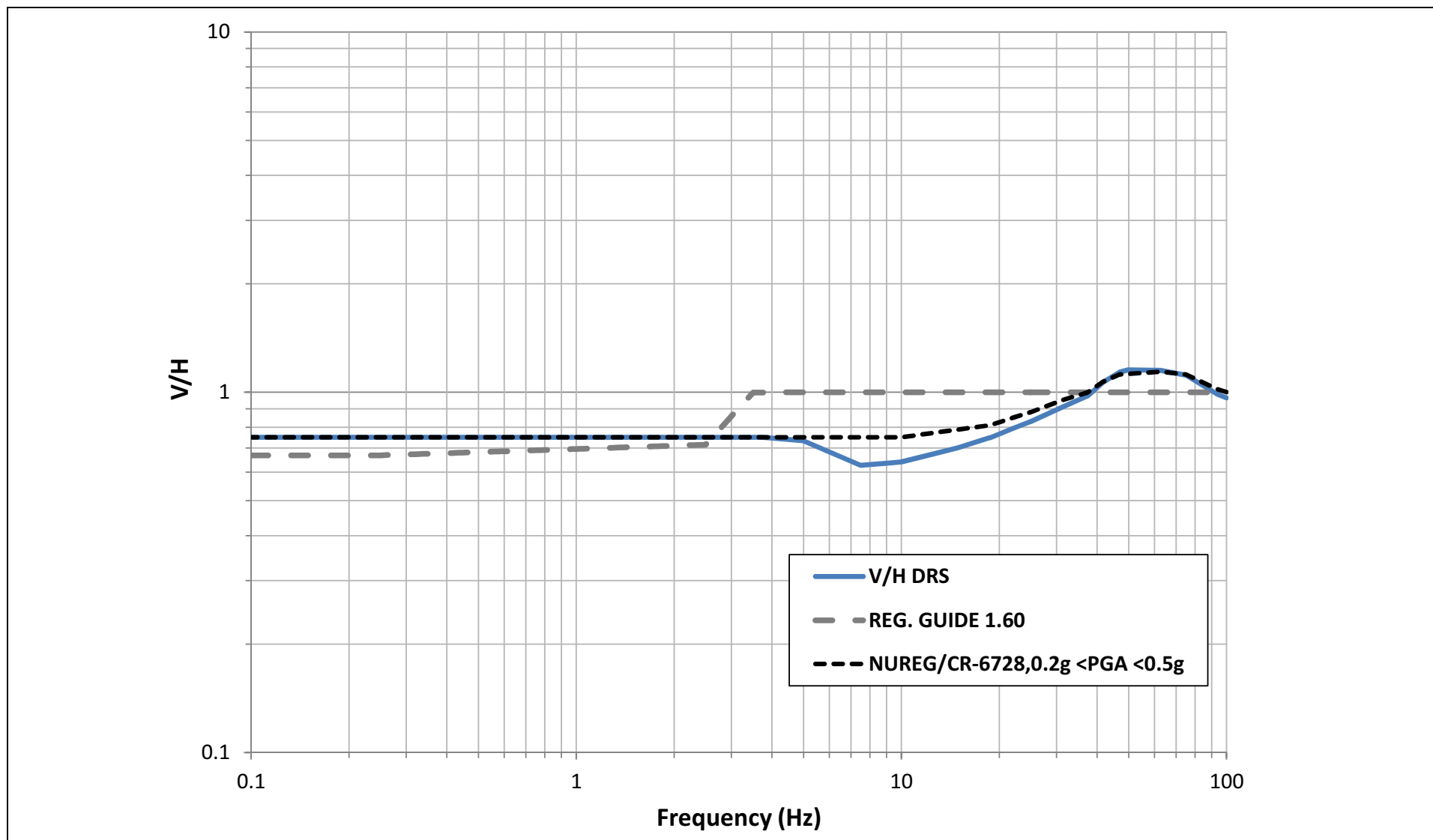
NOTE: Applicable $V/H_{CEUS,rock}$ and the V/H from RG 1.60 are shown for comparison.

Figure 2.5.2-318 Initial $V/H_{CEUS,soil}$ for a Suite of Controlling Magnitudes and Distances and V_{S30} of 3,423 ft/s (1,043 m/s)



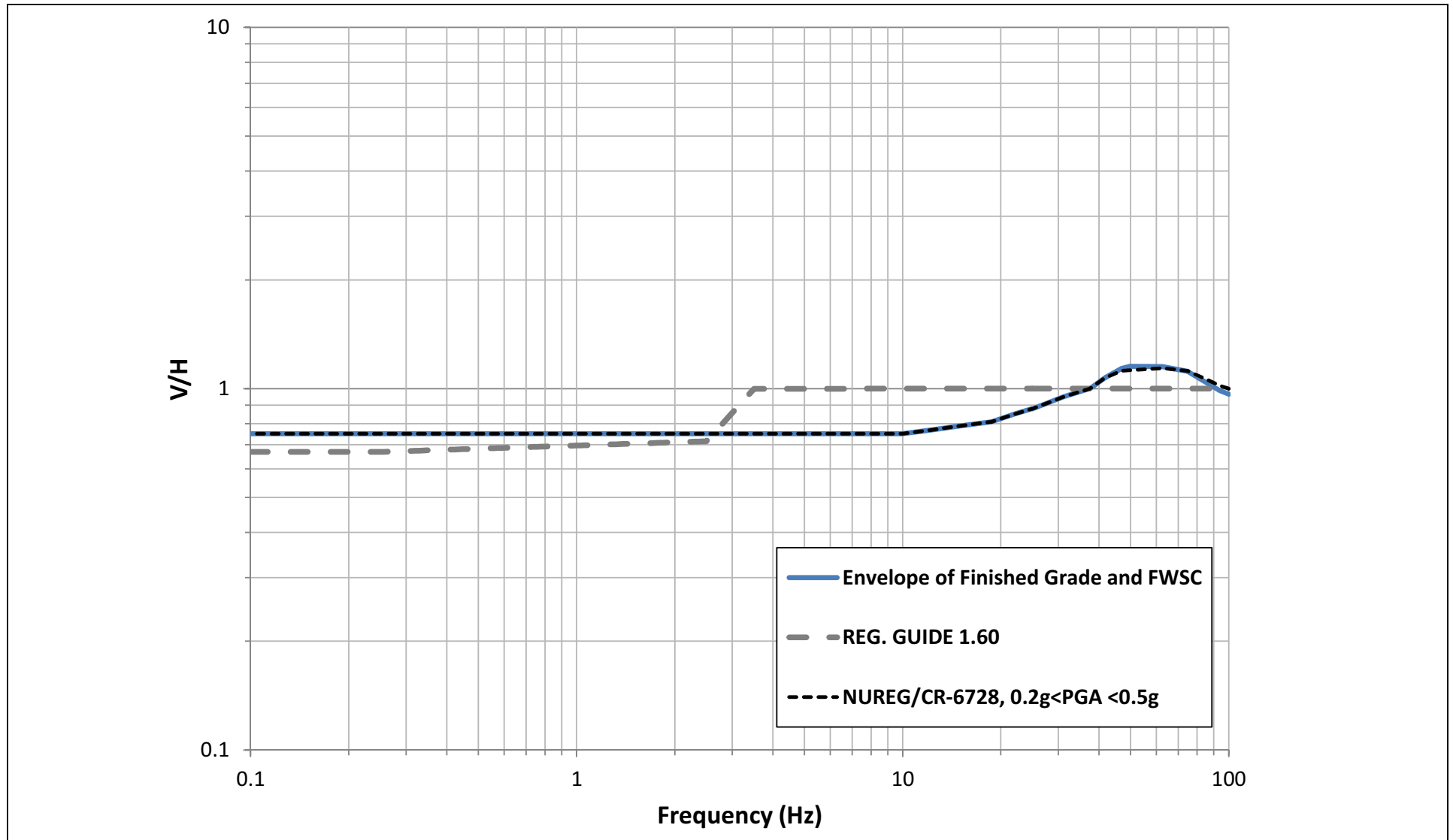
NOTE: Applicable $V/H_{CEUS,rock}$ and the V/H from RG 1.60 are shown for comparison.

Figure 2.5.2-319 Initial PBSRS $V/H_{CEUS,soil}$ Is the Envelope of 8 V/H curves (Figures 2.5.2-317 and 2.5.2-318)



NOTE: Applicable $V/H_{CEUS,rock}$ and the V/H from RG 1.60 are shown for comparison.

Figure 2.5.2-320 Final PBSRS $V/H_{CEUS,soil}$ Where Mid-Frequency Dip Has Been Removed



NOTE: Applicable $V/H_{CEUS,rock}$ and the V/H from RG 1.60 are shown for comparison.