

# Detection of Perchlorate and the Soluble Chemistry of Martian Soil at the Phoenix Lander Site

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The Wet Chemistry Laboratory on the Phoenix Mars Lander performed aqueous chemical analyses of martian soil from the polygon-patterned northern plains of the Vastitas Borealis. The solutions contained ~10 mM of dissolved salts with 0.4 to 0.6% perchlorate ( $\text{ClO}_4$ ) by mass leached from each sample. The remaining anions included small concentrations of chloride, bicarbonate, and possibly sulfate. Cations were dominated by  $\text{Mg}^{2+}$  and  $\text{Na}^+$ , with small contributions from  $\text{K}^+$  and  $\text{Ca}^{2+}$ . A moderately alkaline pH of  $7.7 \pm 0.5$  was measured, consistent with a carbonate-buffered solution. Samples analyzed from the surface and the excavated boundary of the ~ 5-centimeter-deep ice table showed no significant difference in soluble chemistry.

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