MARS SCIENCE LABORATORY IN CONTEXT Michael Meyer, Mars Exploration Program, Planetary Science Division, Science Mission Directorate, NASA Headquarters, Washington, DC 20546

Mars is a terrestrial planet with a superb record of the planet's earliest environmental history, far exceeding that of Earth. Furthermore, Mars was once habitable and is a key to understanding how life began in our solar system. The Mars Science Laboratory (MSL) is the next flagship mission to Mars and may be considered the first astrobiology mission since Viking. As a long-lived rover carrying a sophisticated suite of instruments, the mission is poised to make a leap in our understanding of the habitability of Mars, past and present, and more significantly, of the biological potential of the red planet. Orbital assets have provided unprecedented resolution of the morphological and mineralogical surface of Mars. And MSL, with its imaging, analytical and in-situ measurement capabilities will provide essential ground truth to anchor regional and global remote sensing data. The mission's 10km-radius landing error ellipse, the roving capability, and integrated suite of measurements will provide the opportunity to test hypotheses generated from orbital high-resolution images. For example, MSL has the capability to confirm phyllosilicate mineralogy, in temporal and environmental context, and enable us to reconstruct an early portion of martian history. A central question to maximizing the science return from MSL and future missions is what types of deposits are most likely to preserve geological/geochemical signals of past environments? What sites might deposit and preserve organics, whether from meteoritic infall, physical/chemical processes, or even biotic remnants? MSL represents a major step in this process of assessing the preservation potential of martian deposits, opening the window to paleoenvironments and guiding us on what to seek on future missions.