SMALL VOLCANIC FEATURES IN WESTERN ELYSIUM PLANITTA, Kathleen McBride, University of Houston Clear Lake, 2700 Bay Area Blvd., Houston, TX 77058, and Lunar and Planetary Institute, 3303 NASA Rd. 1, Houston, TX, 77058, and James R. Zimbelman, Center for Earth and Planetary Studies, National Air and Space Museum, Smithsonian Institution, Washington, D.C., 20560.

In addition to the large constructional volcanism of Elysium Mons, several small volcanic features have been found in the plains region immediately west of the volcano.

Located along the southwestern edge of Elysium Mons are three small shield volcanoes (first identified by Plescia) [1]. Each shield has an elongated vent 3 to 4 km in length. These vents run parallel to the concentric graben associated with Elysium Mons. Two of the volcanoes are clearly visible at 150 m/pixel. Lava flows can be seen extending from the vent down the flanks. At 250 m/pixel, the third shield volcano is less easily visible. It is identified by the contrast between its hummocky appearance and the smoothness of the surrounding plains.

In the plains units west of Elysium between 27°N, 218-219°W, four small cinder cones have been identified [2]. These domes are from 5 to 7 km in diameter and possess circular summit depressions ranging from 1 to 1.5 km in diameter. These summit depressions are interpreted to be calderas. The cinder cones are almost alligned parallel to the concentric grabens circumferential to Elysium Mons. There are other domes and knobby features located in this area that are randomly oriented and lack any summit depressions at 150 m/pixel. It is not known whether these features represent cinder cones because image resolution is too poor for summit depressions to be visible if they are present.

A probable volcanic center, located at 26°N, 220°W, has been identified by Mouginis-Mark and Brown [3]. It is called the "Elysium Fossae Complex" and is composed of a series of vents, lava flows and domes. The cinder cones are in close proximity and may be related to the volcanic complex.

Viking Infrared Thermal Mapper data has shown low thermal inertia values directly over Zephyrus Fossae, an arcuate graben located at 23°N, 216.5°W [4]. Thermal inertia is the measure of a materials responsiveness to mean insolation. The lower the thermal inertia, the smaller the particle size for an ideal surface of uniform particles. Low residual temperatures yield low thermal inertiias for all three of the large Elysium volcanoes (Elysium Mons, Hecates and Albor Tholii) [5]. The residual temperatures are the difference between the 20 µm nighttime temperatures and the Viking thermal model. The low thermal inertiias are not centered directly over the volcanoes but are slightly offest to the southwest. It is believed the low thermal inertiias for the large volcanoes is due to elevation. The fourth area of low thermal inertia is centered on Zephyrus Fossae and is not associated with any constructional volcanism or other topographic high. This area is interpreted to indicate a more complete intermixing of lava flows or the presence of extremely fine grained material (<20 µm in diameter) or both [6]. Since there is a lack of evidence of any substantial aeolian deposition or erosional features in the vicinity and because Zephyrus Fossae could represent a volcanic vent, a
pyroclastic origin is favored. However, image resolution is (250 m/pixel) insufficient to provide a positive identification of a pyroclastic source [6].

These small volcanic features indicate regional volcanism continued after large scale constructional and plains forming activity ended or decreased substantially.