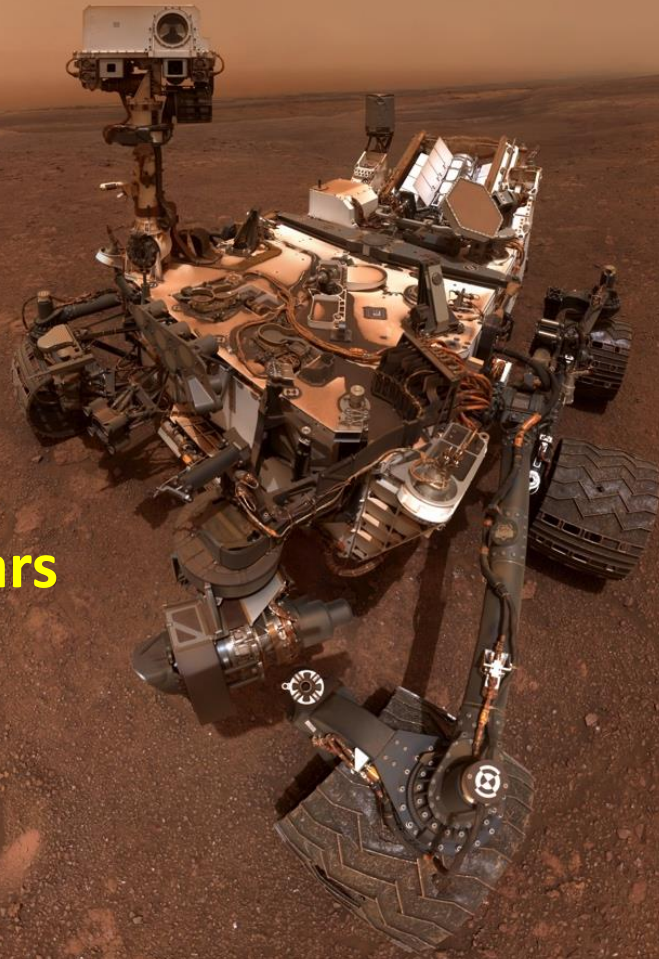


Curiosity Rover's Adventure on Mars

Rovers are used to explore Mars remotely. NASA programs the rovers to complete tasks by sending them step-by-step instructions from Earth.





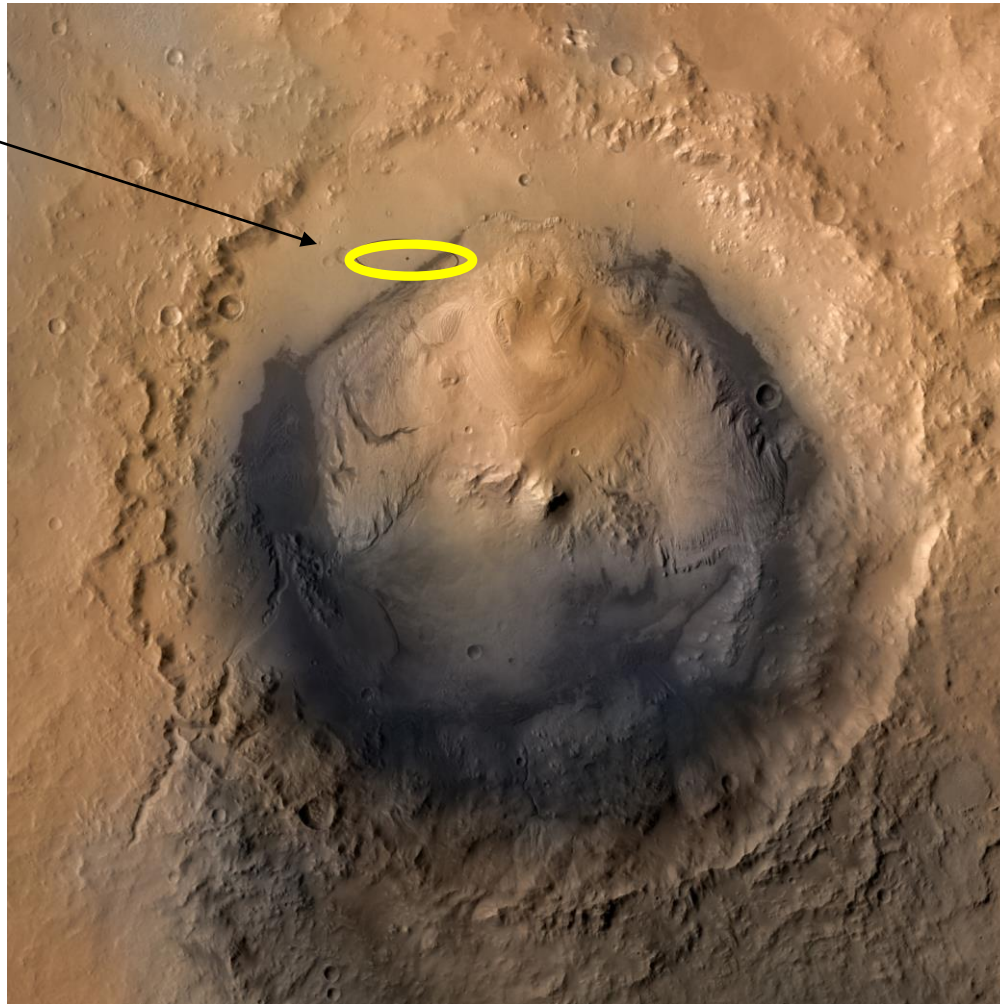
Mission controllers celebrate the successful landing of Curiosity on Mars on August 6, 2012. How many people do you think were needed to get the rover to Mars?



It takes a large team to operate a mission on another planet! Over 400 scientists from across the world participate in the mission, and about 100 mission-controllers at NASA's Jet Propulsion Laboratory in Pasadena, CA operate the rover.

Curiosity's Landing Site: Gale Crater

Landing site



Gale Crater is 100 miles across. Mt. Sharp, a three-mile-tall mound of layered rocks, is in the center of the crater. Water may have once filled much of the crater.

Curiosity's Target: Mt. Sharp



Mt. Sharp, as seen from Curiosity. The rover is driving toward the foothills, where it will study the different layers of rocks.

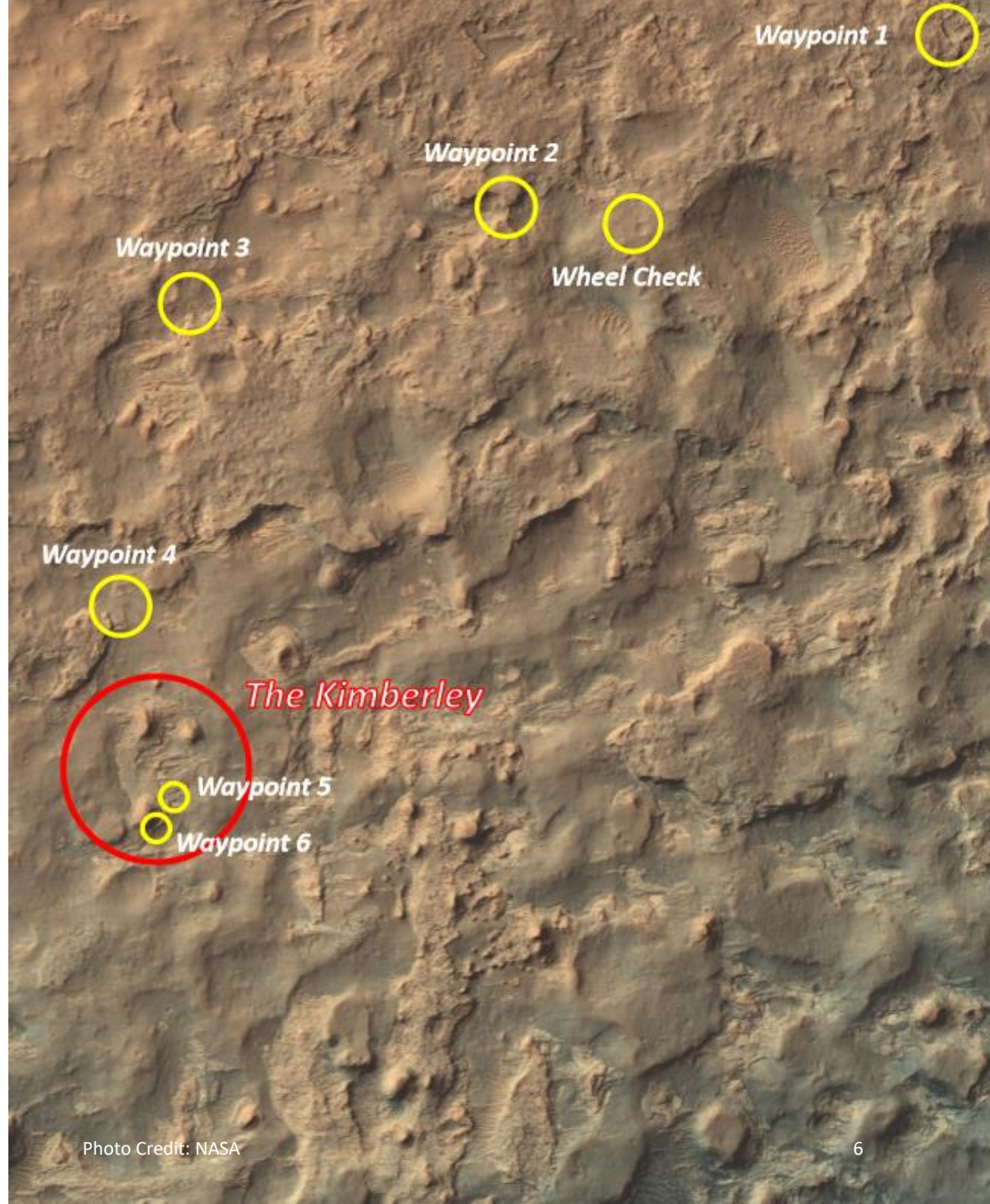


Curiosity's Mission

NASA's Curiosity rover gathers data to help us learn more about Mars and its ability to support life. Here you can see where it stopped along this journey.

Your mission:

Program your robot to get to each Waypoint on the large map! Then check out up-close images of each spot.



Waypoint 1 – Make Observations



What colors do you notice in this picture? What do you think the different colors mean? Does this remind you of anything you've seen on Earth?

Waypoint 1 - ANSWER

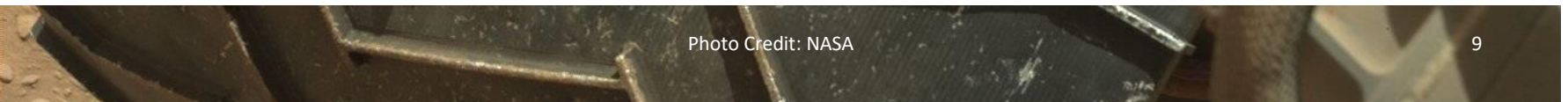


Geologists believe this ridge is composed of “mudstone” – likely formed when fine-grained sediment (mud!) was deposited in the bottom of a pond or lake. Could this mean Mars once had a lake? Could life have lived there?

Wheel Check: Make Observations



What do you think caused the dents in the wheels? How would you fix this problem?

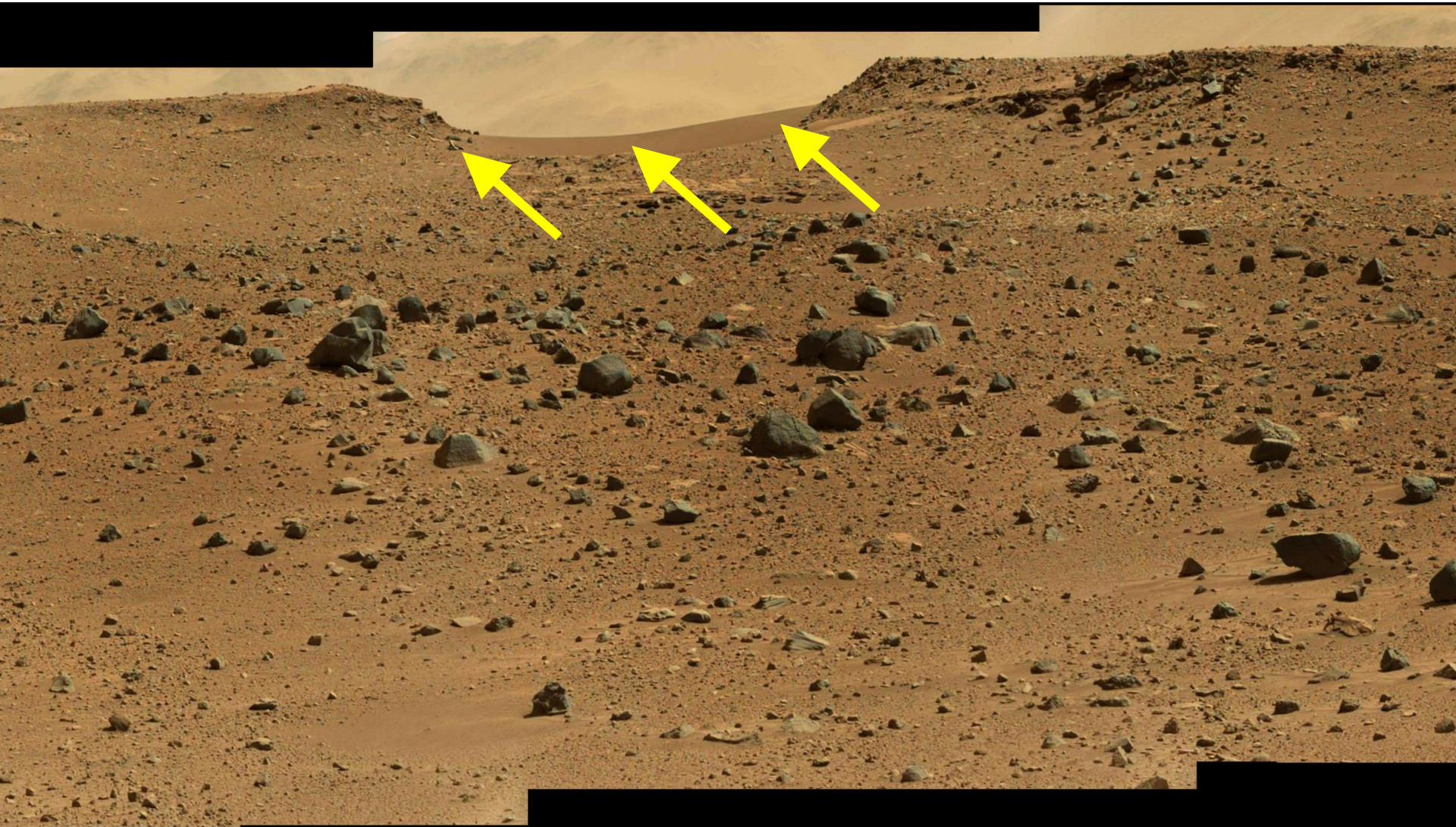


Wheel Check - ANSWER



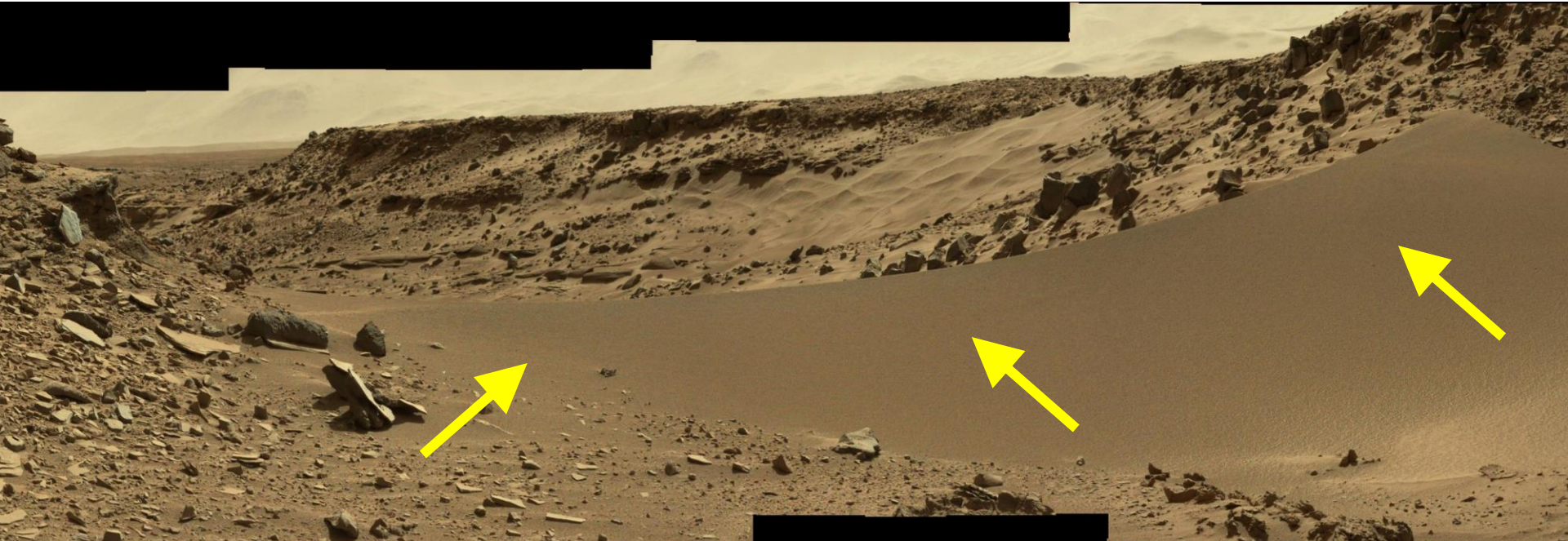
Dents and holes (arrows) were being punched in the aluminum wheels – caused by driving the rover over sharp rocks. Mission controllers decided to follow a less rocky driving path.

Waypoint 2 – Make Observations



How does the area in the distance look different from the rest of the landscape?

Waypoint 2 - ANSWER



The area, called Dingo Gap, is filled with a sand dune! Curiosity drove through the sand to keep its tires safe from rocks.

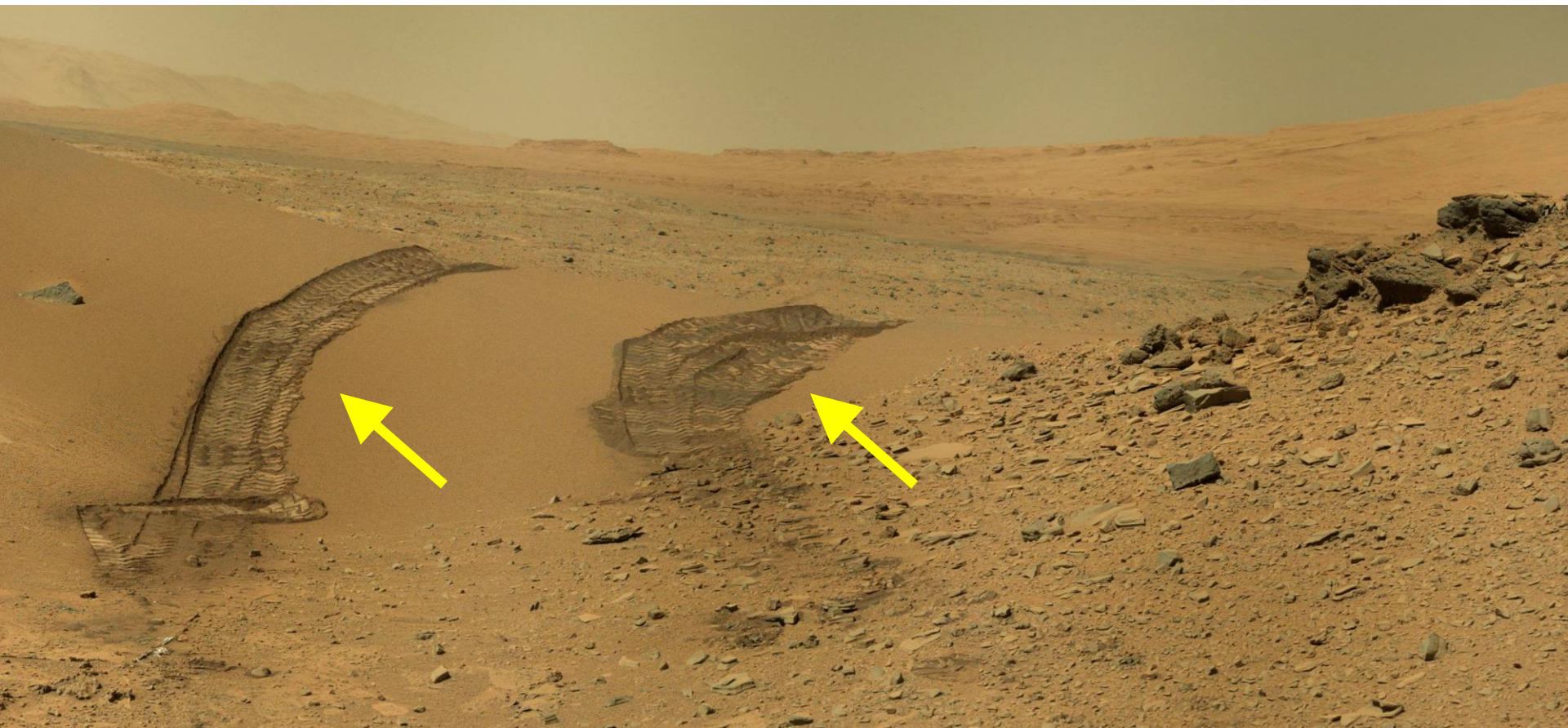
Photo Credit: NASA

Waypoint 2



Curiosity drove to the top of the sand dune filling Dingo Gap.

Waypoint 2



After driving over the sand dune filling Dingo Gap, Curiosity looked back at its wheel tracks (arrows).

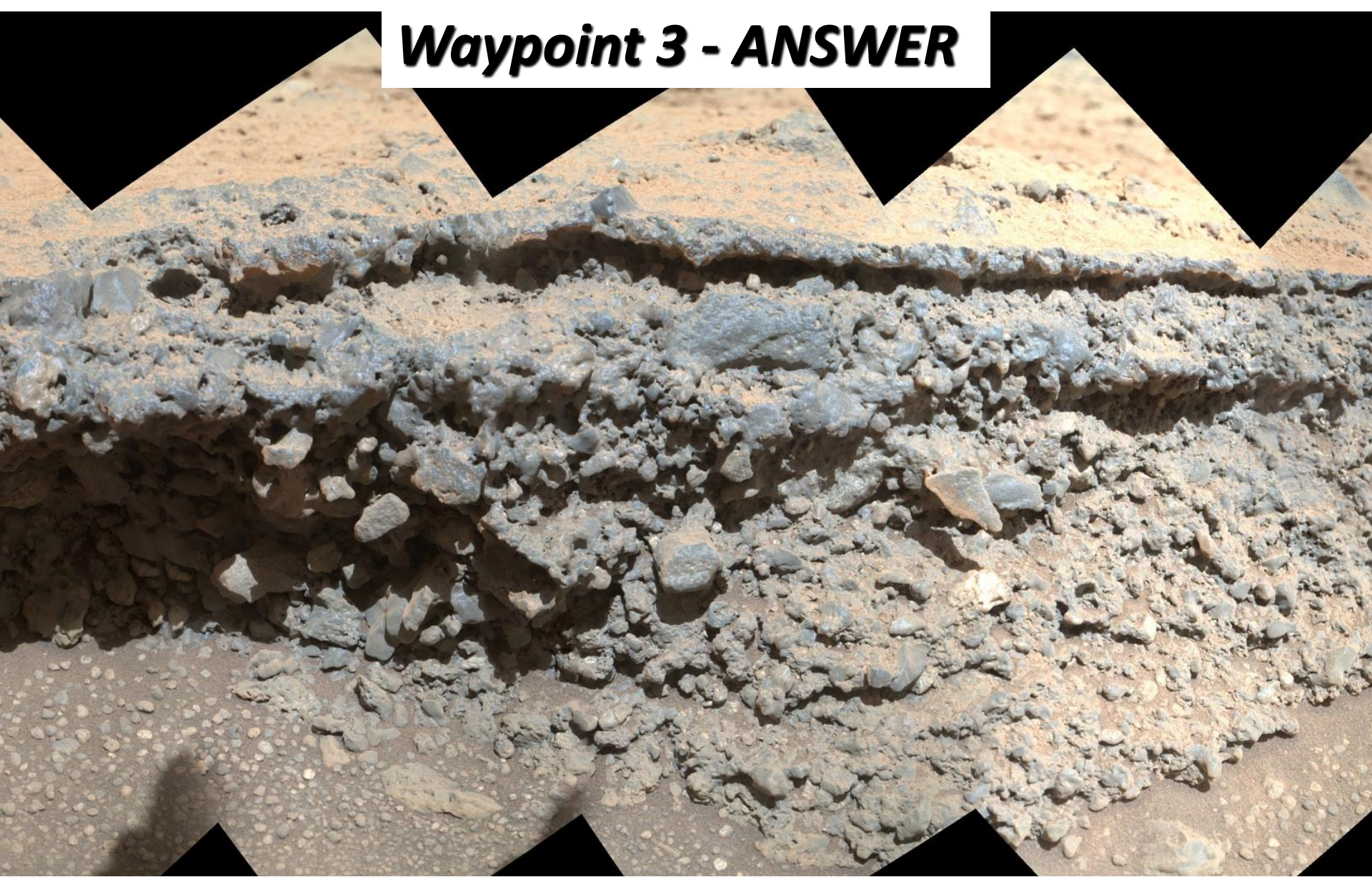
Waypoint 3 – Make Observations



Bungle Bungle outcrop
NASA/JPL-Caltech/MSSS/Thomas Appéré

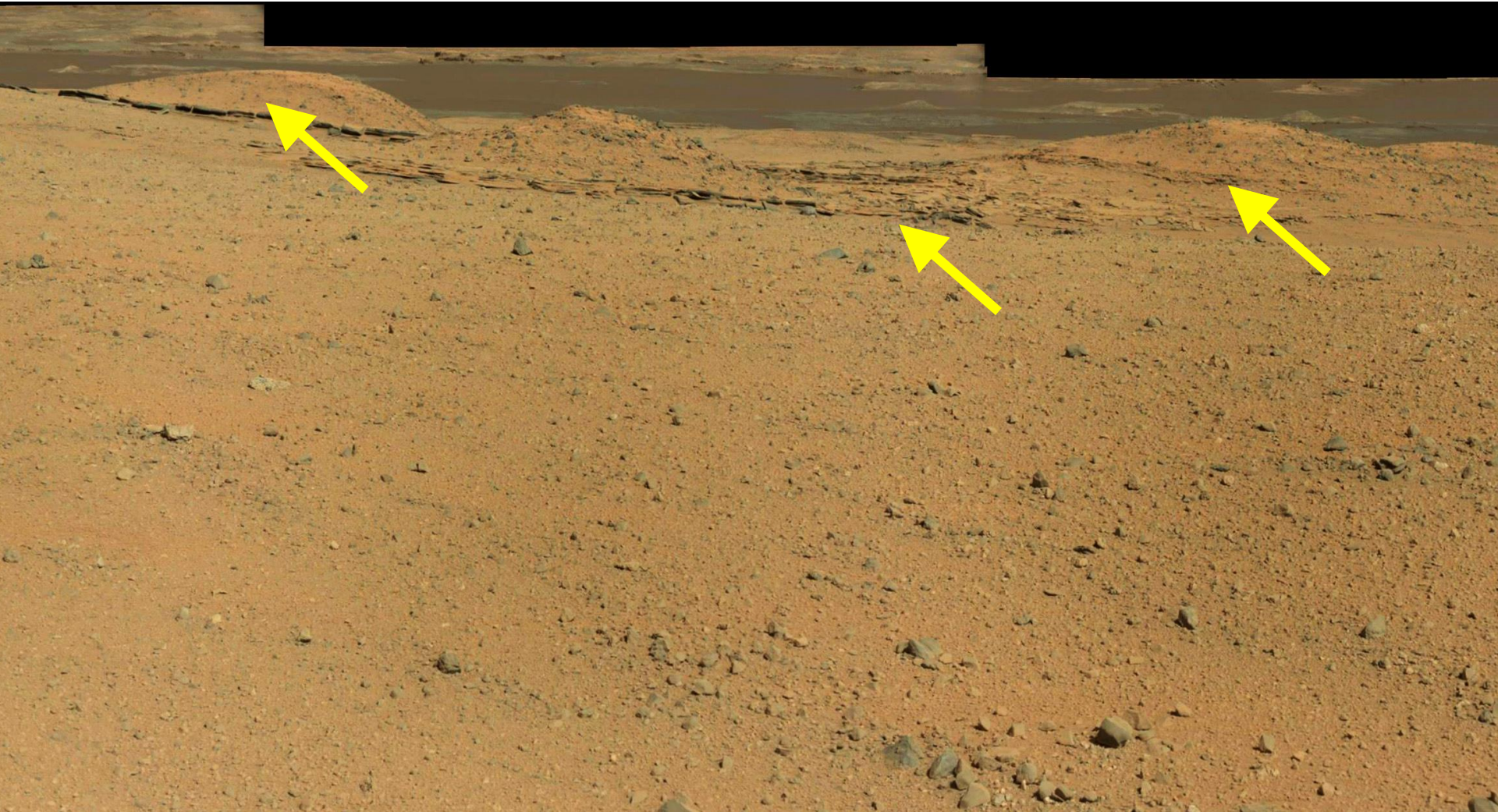
Curiosity drove close to examine this outcrop dubbed “Bungle Bungle.” What details do you notice about the outcrop? How do you think it might have formed?

Waypoint 3 - ANSWER



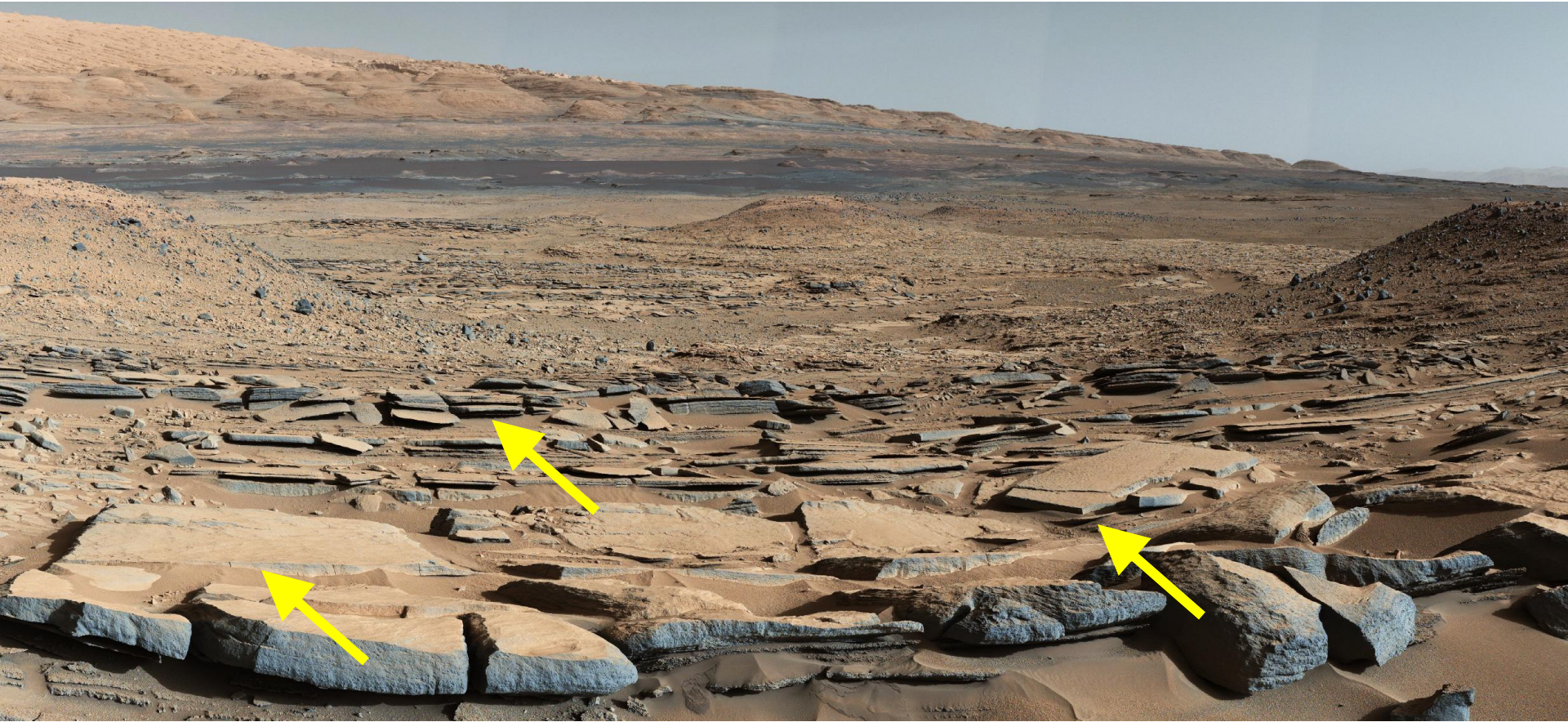
Bungle Bungle contains many rounded pebbles. Geologists believe this outcrop was formed when flows of water “tumbled” the pebbles, leading to the smoothed and rounded edges seen here.

Waypoint 4 - Make Observations



Curiosity approaches these rounded hills (arrows). Have you seen hills like this anywhere on Earth? What do they remind you of?

Waypoint 4 - ANSWER



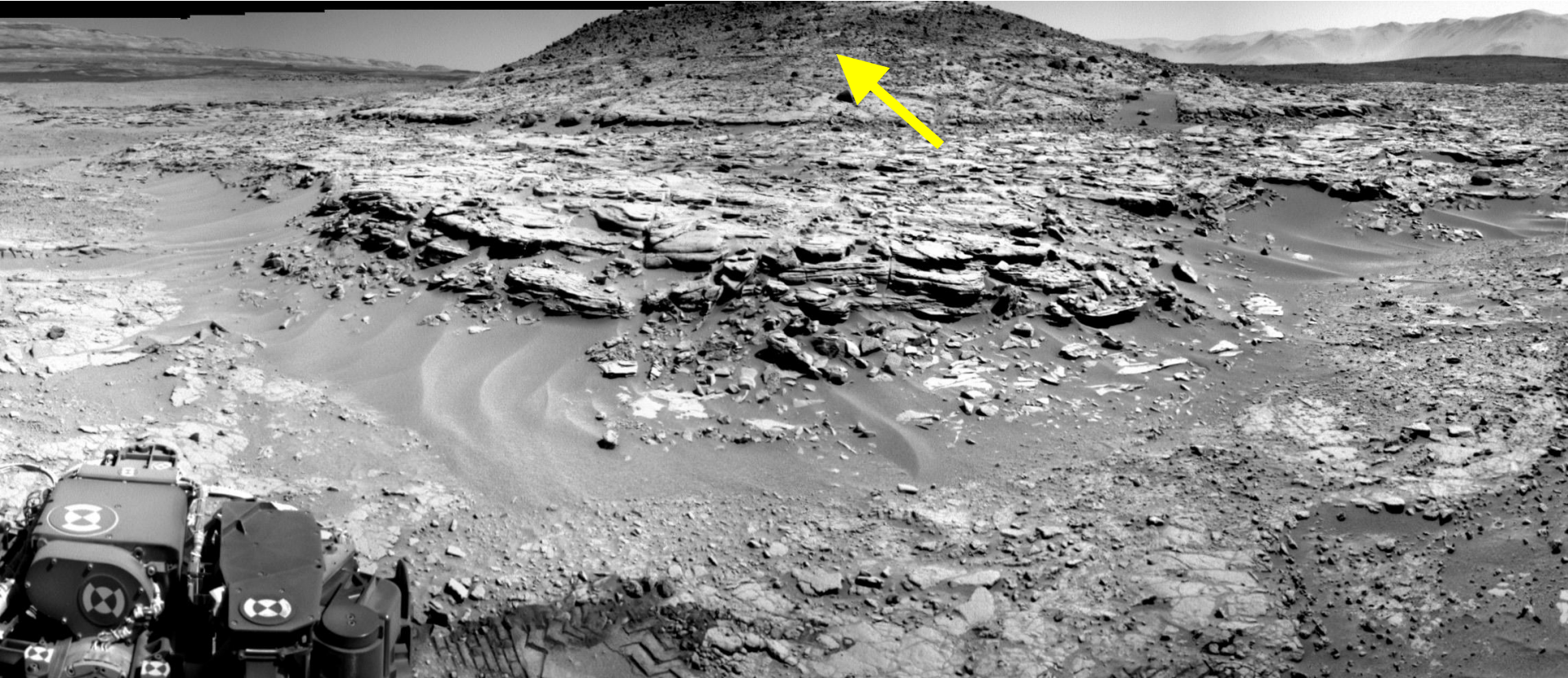
Geologists believe the flat layered outcrops (arrows) are made of sandstone – sand grains cemented into rock over time.

Waypoint 5 – Make Observations

After several weeks of driving from Waypoint 4, Curiosity stopped to study these layered rocks. This image was taken by a high-resolution camera flying above Mars onboard the Mars Reconnaissance Orbiter. Can you spot the shiny rover and its wheel tracks? Locate it on the big map!



Waypoint 5



Curiosity looked through these layered rocks to find the best site to collect rock samples. The hill dubbed “Mt. Remarkable” (arrow) is directly ahead.

Waypoint 6 – Make Observations



After carefully examining the layered rocks, scientists chose this flat rock at waypoint 6 to take a rock sample. Here you can see Curiosity's arm. How do you think it took the sample?

Waypoint 6 - ANSWER



Curiosity drilled a shallow “test hole” followed by a deeper “sample hole,” and powdered rock was gathered.

Waypoint 6 – THE END

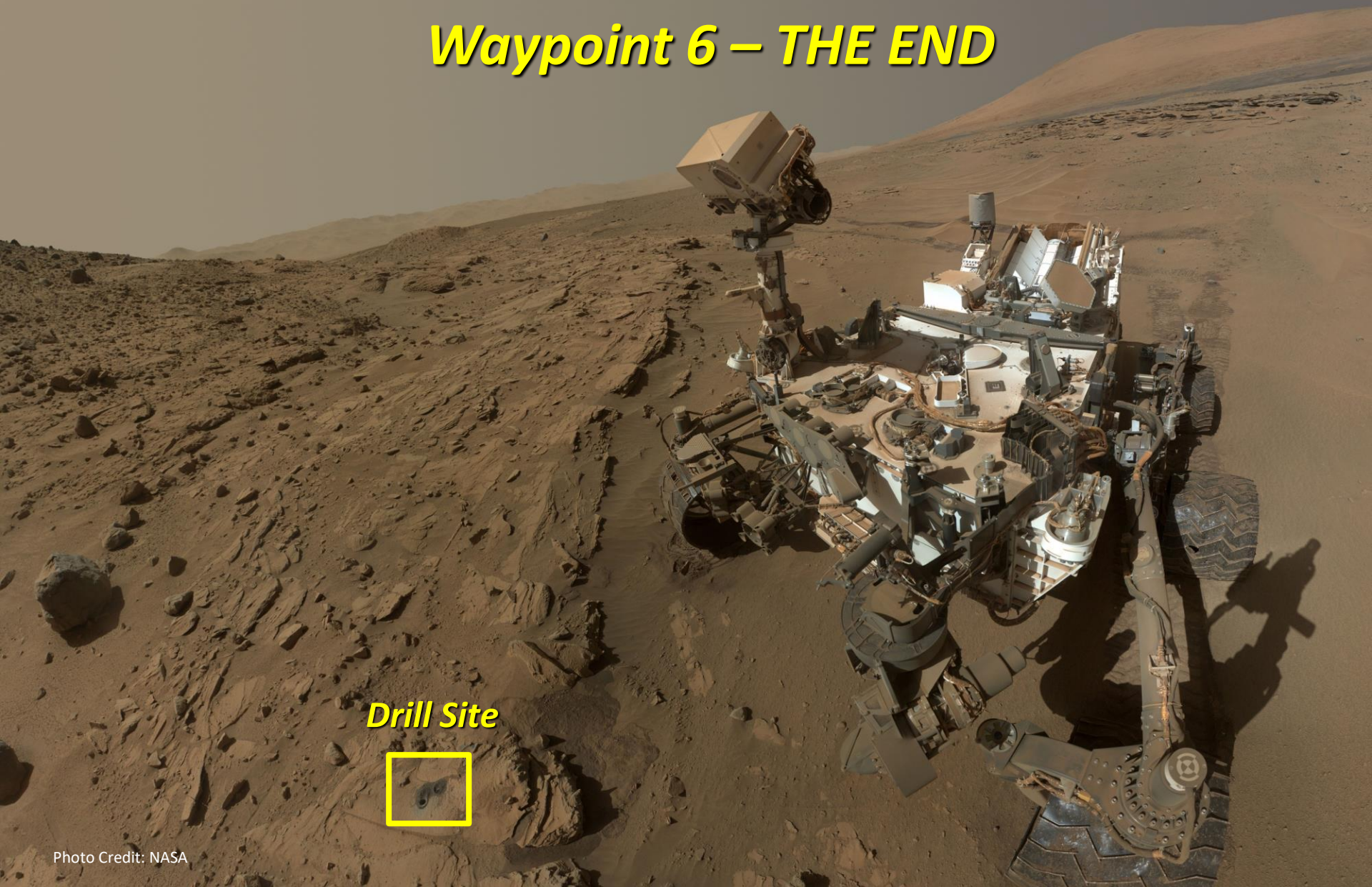


Photo Credit: NASA

Drill Site



Following drilling into Windjana, Curiosity snapped a self-portrait to celebrate a successful mission! To see how the rover takes a “selfie,” check out NASA’s explanation: <https://mars.nasa.gov/resources/22273/curiositys-selfie-at-rock-hall/>