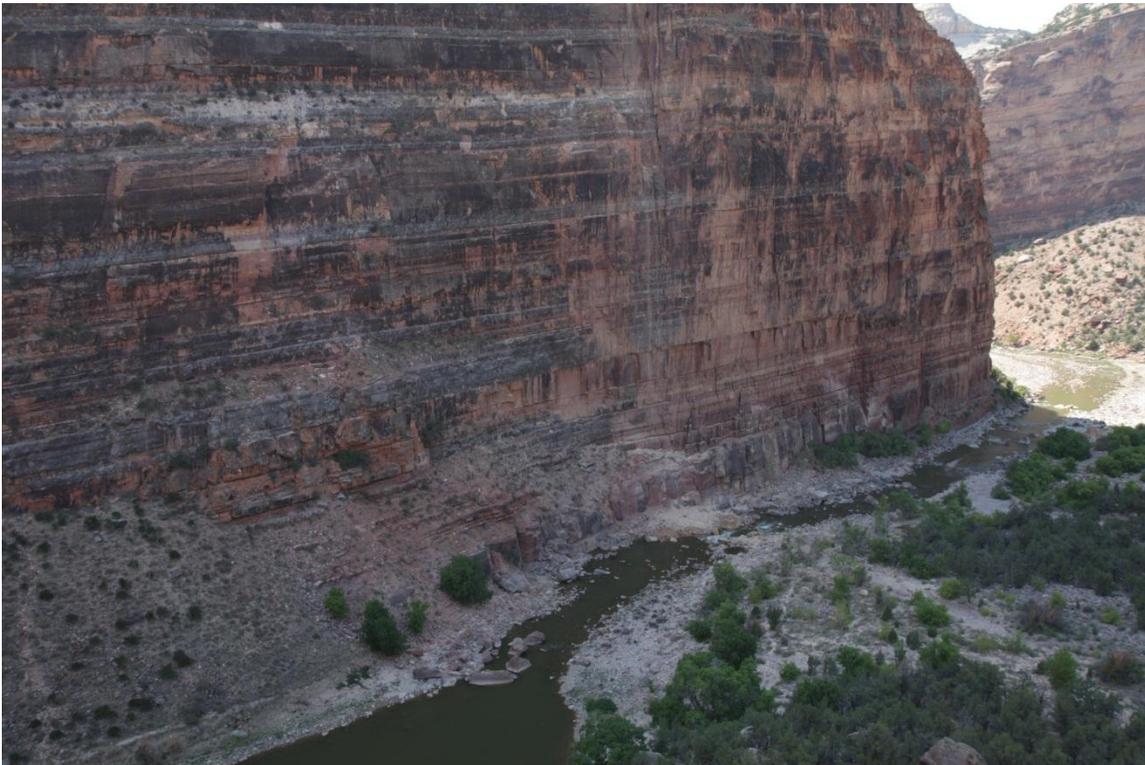


## **A 2012 WARM SPRINGS ROCKSLIDE THEORY**

**By Erik and Ron Feeley**

On August 26, 2012 Erik Feeley, Ron Feeley, Jeff Enyart and Brad Rutledge hiked in Dinosaur National Monument from Echo Park up the Yampa River to Warm Springs rapid to investigate a new rock fall reported by Pete Williams. Our initial findings confirmed what Pete had reported, and from our exploration we were able to expand our understanding of the event. Warm Springs is approximately five miles from the Echo Park campground. Our hike found the river flowing at 72cfs, allowing easy crossing of the river when necessary. We wanted to see the results of this rare event before it was modified by increased water flows and the 2013 spring runoff. We also hoped to understand the dynamics of the incident. Erik and Ron have joined together to give their perspective on what transpired. The following summary, non-academic in nature and coming from the focus of rafters and river enthusiasts, is intended to advise boaters of what challenges they may experience during the 2013 season.



**OVERVIEW OF WARM SPRINGS**

Photo by Pete Williams



WARM SPRINGS ROCKSLIDE

**There are three impact craters, each is numbered according to the timeline we feel they occurred. Crater One hit first, damming the river, and Crater Two made quite a splash – read on!**

The rock slab originated on the wall river left, downstream from and at approximately the same elevation as the “coke bottle” scar (approximately 750 feet elevation), perhaps slightly higher. In the river, in line with the new scar is the debris from the rock slide. Coincidentally, it is also where there was a washout from river right due to side floods of 2011. The debris is between the bottom of the tongue entry point of the rapid and the large boulder downstream known as Godzilla by our friendly commercial guides.



SLIDE SCAR

**The debris is approximately where the river doglegs to the right and a small lateral occurs, which is usually broken through by boatmen to avoid Godzilla and Maytag.**

It appears the rock slab fell in two separate stages. The first stage was a triangular section from the lower part of the scar. As it fell, it hit the ledge slightly below the scar and broke apart. A large portion was projected out further from the cliff than the accompanying debris. This large boulder created Crater One (~15 feet in diameter). The rest of the debris would have come down in various sizes of rocks and boulders, some of which were pulverized into sand. The combination of Crater One (located at the 2011 washout on river right) and the ensuing debris dammed the river long enough for a pool to form above the barrier. This newly formed dam of Weber debris/sand was saturated with water, creating a “cesspool” of Weber mud.



CRATER 1

**Crater Two had the most impact on the area.**

Prior to the river's ability to break through the newly formed debris dam that created the "cesspool", the second stage fall occurred, with the large rocks from the top of the scar breaking away from the cliff. The falling boulder careened off the ledge above and fell into the "cesspool"/dam area, creating a 25 foot crater. Widespread evidence of this event surrounded us.



CRATER 2 (Jeff sitting on edge of Crater 1)

## Read On

A homogeneous spray of Weber mud thickly coated the area surrounding Crater Two, appearing to have radiated from it. This mud was evident on the rocks in Crater One. The trees to river right of Crater Two, onshore, were covered by mud only on the side facing the crater. These trees had been broken and shredded into pieces. They had been bent over as though having been hit by a blast from Craters One and Two. Approaching the impact zone from downriver, we saw multiple “Weber bombs” – baseball-sized sandstone surrounded by a two foot diameter halo of mud amongst the cobblestone. They were evident up to 75 yards downriver of the impact zone.

### Crater Three – Undefined timeline but certainly last

This crater is river right and approximately thirty yards offshore from the devastating splash of the second crater event. The mud tsunami from Crater Two does not appear evident on the huge boulder that split apart in Crater Three (~15 feet in diameter). The rock that created the impact broke apart with the remnants resting around the crater. The mud spray does not appear in the area as far up as Crater Three except in the form of scattered “Weber bombs”, leading us to surmise that this was the finale of large boulders falling from above. The rock forming Crater Three may have been catapulted off the top of the rock that formed Crater Two, propelling it the greater distance from the river. The Weber mud may have been too heavy to be thrown as far as Crater Three in any sizeable mass.



CRATER 3

The new barrier in the river is comprised solely of Weber sandstone rock. The cliff side of the barrier is comprised of pebbles and sand as a result of pulverized rock. The river channel, at the 2011 washout, now includes two “smart car-sized” rocks with very sharp frog eyes that are unavoidable at low water flows.



ROCK BARRIER

To our rafting friends: it remains to be seen what changes will occur with the runoff in the spring of 2013. In prior years, the rapid should have been scouted because of changes due to flow fluctuations. The traditional run was to break through the small lateral at the top of the rapid and then adjust the run to avoid Godzilla and Maytag. That run will no longer exist, and scouting will now be a must! The introduction of large boulders now confines a boatman’s entry into the rapid, especially at medium to low flows, thus eliminating the sneaker run to river right. Presently it appears as though the river flow will be funneled directly into the large rock in the middle of the rapid, Godzilla. At certain flows there was a run on the left of Godzilla and then to the left of Maytag. The new rockslide may very well have created a situation where a left run through Warm Springs is a norm. At high flows above 10,000cfs, it is hard to guess what will happen to the small lateral at the top of the rapid. Perhaps the river right run will still be there, but we believe big waves will hamper any mid-rapid corrections. At low flows (4000cfs and below) many of the sharp-edged rocks, two in particular, are capable of shredding rubber. We want to emphasize the seriousness of this event. Additionally, the

rapid will change in the coming years as the new rocks shift positions and smaller debris on both sides of the river channel are washed away. Also, observing the slide origin through binoculars, various rocks around the scar appear precarious and may fall in the spring as a result of the freeze/thaw cycle.



LOOKING UPSTREAM – GODZILLA FRONT CENTER

Seeing the Warm Springs Rapid at low water was quite a treat. As the river changes, so must we as boatmen and Yampa River enthusiasts. This adventure and documentation were collaborated by many, and by their love of the canyon.

Erik Feeley and Ron Feeley  
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