Grand Canyon Essay, Research Paper

Introduction Location The Grand Canyon is located in the northwestern region of Arizona. It is over 277 miles long and 18 miles across at the widest point. At its deepest point the Grand Canyon is approximately a mile deep below the Earth’s surface. It reaches up to the borders of southwest Utah and eastern Nevada. It ranges from the Kaibab Plateau to the Painted Dessert. The Colorado River splits the Grand Canyon into two parts; the North Rim and South Rim. Being known as one of the world’s Seven Wonders, the Grand Canyon is the greatest gorge known to mankind. History of the Grand Canyon Efforts to preserve the canyon as a national park were begun soon after the establishment of Yellowstone but required thirty years of campaigning to take effect. The first protagonist, Senator Benjamin of Indiana, introduced a bill in the upper house in 1882 to make the area a national park. It failed. It was not until 1893 that William Harrison, as President of the United States, was able to establish the Grand Canyon Forest Preserve, which could be, and was, exploited by mining and lumber interests. President Theodore Roosevelt took up the cause after his visit in 1903. He established Grand Canyon National Monument in 1908. An act of Congress in 1919 established Grand Canyon National Park (Krell 1980). Main Geologic Features and Attractions of the Grand Canyon The Grand Canyon is a park composed of many geologic features. Its main feature is the Colorado River. Every year thousands of tourists travel down the Colorado River through the Grand Canyon. The Colorado carries half a million tons of sediment passed any point each day. Although only one hundred miles of the canyon wall lie within the park, many distinct features are present. On the north side of the park lies a fragment of the Lake Mead National Recreation Area and other public lands administered by the U.S. Forest Service. From the North Rim many people hike to the Bright Angel Trail or drive a bit longer to reach Point Imperial. Point Imperial is the highest point on either side of the canyon. From this point the Grand Canyon could be viewed from all possible directions, North-South-East-West. Another attraction is Cape Royal. Cape Royal gives a view of what is known as Angel’s Widow, a large hole in the rocks formed by erosion. Another point of attraction is Point Sublime. People can even camp at this point after getting a permit from park rangers. At the start of the South Rim you will pass points of interests like the Hopi House built by the Fred Harvey Company to encourage Southwest Indian crafts at the turn of the century. Just west from there is the Trail Overlook. The San Francisco Peaks, the highest mountains in Arizona, can be seen from here. The Bright Angel and Plateau Point trails can also be seen going down into the canyon. About half a mile away is Hopi Point. Here you can view the Shiva Temple, which is an isolated section of the Kaibab Plateau. About another mile away you can reach Mohave Point and then eventually the Abyss. The Abyss is one of the more popular stops on the South Rim. Huge sandstone columns fill up your entire view. Another attraction point is Pima Point. From here you could view the Tonto Trail which descends almost 70 miles through the canyon (Fishbein 1991). Facilities Available to Tourists For nearly a century, travelers have converged to the South Rim for many tourist attractions. Being closer to major population centers and trunk highways than its counterpart across the canyon, the South Rim is easily accessible by bus, plane, or car, and it has always drawn the heavier volume of tourists. As a consequence, it is well provided with many facilities for travelers both inside and outside of the park. Some of the facilities available for tourists are large campgrounds, motor lodge cabins, hotels, a bank, a post office, abundant parking lots, a visitor information center, and a museum. For transportation around the canyon quick shuttle buses and reliable railroad trains are easily accessible. Even in winter, when snow is deep on the ground but not on the plowed roads, the South Rim is accessible and visitors can witness the canyon walls frosted with snow (Aitchison 1991). Type and Age of Rock Formations Exposed in the Grand Canyon The Grand Canyon has some the oldest rock known to man. Its oldest rock is about two billion years old. The youngest rocks are about 280 million years old. The rocks that evolved in the Precambrian era were the Vishnu Shist, Brahma schist Zoraster Granite, bass limestone, Hakati Shale, and Shinumo Sandstone. During the Paleozoic, the last rocks to form were Tapeats Sandstone, Bright Angel Shale, Redwall Limestone, Hermit shale, Coconino Formation, Toroweap Formation, and finally the Kaibab Formation (Harris 1975). Pre- Cambrian Era Two-thousand million years ago during the Precambrian Era sands, silts, and mud were deposited in a shallow marine basin. Many volcanoes were present during this era. They contributed to a lot of the rocks present during this era. The Vishnu shist was also formed during this era. The Vishu Shist contains some of the oldest rock known to man. Paleozic Era Moving up to the Paleozoic Era a sea came from the west depositing three formations. The first formation would be the Tapeats Sandstone. At the base of the Tapeats formed a Basal Conglomerate, mud then formed the Bright Angel Shale. The deep water around the Grand Canyon in this era precipitated out, forming a ring of ooze, later becoming Muav limestone. Mesozoic Era Later on in the Mesozoic era bluish, gray limestone containing chert was deposited in a shallow sea. The Supai formation was also formed during this era. The Supai contains footprints of amphibians and primitive reptiles. Plant fossils are also found in the Supai. The various footprints and fossils indicate the region was a vast flood plain. The upper beds of the Supai are stained bright red possessing a thickness of approximately one thousand feet. Hermit shale, having a reddish brown color, was also deposited in this era. It contains ripple marks, mud cracks, and footprints. The flood plain during this era was gradually buried by sand dunes, which now form the Coconino Sandstone. The dunes are large, and the Coconino is 400 feet thick. Despite the large size of the dunes animals wandered around them, because we can see their footprints today. One can identify Coconino as the whitish band at the top of the canyon. The Kalibub plateau was also formed during this era. The Kalibub is over 300 feet thick and is mostly limestone. The formations of the Rocky Mountains were also uplifted during this era. The formation of what the present day Canyon looks like today, also began in the late stages of this era and continued on into the Cenozoic Era. A lazy stream, meandered through a gently sloping plain, cutting a shallow channel into the earth. Pressure within the earth slowly uplifted the surface, causing the river to run faster and ultimately cut deaper. As the river deepened, land on both sides was gradually eroded into the river and the canyon took on a V shape instead of forming a straight-side trench. Sides of the V shaped canyon began to break down as forces of erosion attacked them. Rain transported soil down into the canyon bottom where it was carried away by the river. Water from melting snow the froze in cracks in rocks, splitting them and further crumbling canyon walls.

Cenozoic Era Following the Mesozoic era is the Cenozoic era. During this era the Colorado River was formed. It changed from a little stream to what is seen today. The river formed from an overflow of a lake. The river brought the flow of soft rocks and sediments through the canyon. As the river was developing, the Colorado Plateau was uplifted and warped. The uplift increased the gradient of the stream, thus allowing it to cut through the plateau. Now the canyon had begun to form. The river gradually removed and transported material from its bed, while weathering and mass wasting helped remove the rest of the material from the canyon (Harris 1975). Processes Presently Shaping the Grand Canyon Over the ages, the river has continued to cut deeper, ever following its original configuration, and as it cuts, the breakup of the canyon walls becomes accelerated, disintegrating in an ever-widening gap. In time, the canyon wall may disappear, leaving a flat plain again. Thus, rivers are the main forces that shaped the Grand Canyon and still are the main forces that presently continue to shape it now and in the future. (Krell 1980) Climate of the Region The Grand Canyon is a region of the world that has multi-climates. As the canyon wall progresses up the climates begin to change. At 2000 feet of elevation and lower, the climate is such of a hot dry desert. This are is called the “Lower Sonoran,” and is near the river. Between 2500 and 6000 feet, the climate is like the high desert in Mexico. This is called the “Upper Sonoran.”A lower Canadian type of climate is present at the elevations between 7500 and 9000 feet. This climate lies mostly in the North Rim. Another Climate that lies in the North Rim is that of one that is similar to the one around Hudson Bay. This is the sub arctic climate zone and is located over 9000 feet. (Davidson 1982) Flora and Fauna On the steep switchbacks through the Kaibab Limestone pinyon pine and juniper dominates in addition to the number, Christmas-tree-shaped Douglas firs, whose roots tenaciously grip the shallow, steep soil. Before pinyon pine had reached the canyon, spruce, fir, and limber pine had made up the rim forest. Surprisingly, there was no evidence of the intermediate ponderosa pine forest so prevalent in northern Arizona today. On the trail switchbacks through the cross-bedded Coconino Sandstone to the flat Cedar Ridge, junipers were abundant. Banana yuccas and Utah agaves, both sililar plants to the juniper, also existed. Woody blackbrush, a tough desert member of the rose family, exists across the Tonto Platform. Besides plants and flowers the canyon also yields bones of former canyon residents. Harrington’s mountain goat, Shasta ground sloths, and white-footed mice are just some of the area’s extinct inhabitants. Some animals still residing in the Grand Canyon area are coyotes, spotted skunks, woodrats, porcupines, chipmunks, squirrels, and pocket mice. (Fink, 129) Increased Tourism Each year four million people visit the Grand Canyon. Most of the people come just to visit for a day while others stay in nearby hotels or lodge cabins to repeatedly visit. In the summer the park is at its busiest time with well over 20,000 visitors a day. Pollution usually becomes another problem included with the enormous amount of tourists. The growing number of visitors places further demands on already strained facilities. There may come a time when the park can no longer hold all of the people that it attracts. The National Park Service is now requiring people to have permits to visit popular parts of the backcountry and river. Environmental Problems The Grand Canyon, being visited by four million tourists a year, is definitely susceptible to many environmental problems. The most obvious environmental problem occurring in the Grand Canyon in pollution. The primary reason of the increasing pollution is because of the overwhelming growth of tourists travelling to the Grand Canyon. Personal Reactions From near and far they come, four million each year, to see the Grand Canyon, long cherished as one of the nation’s and the world’s treasures. The Grand Canyon blends elements of color, contour, and immensity like no other possible place on the Earth. The Grand Canyon is a gift from God to us Americans and to the rest of the people of the world. It is one of the most beautiful parks in the world. Its great views and outstanding canyon walls make it a great place to visit anytime of the year. The Colorado River is an added attraction that adds excitement and adventure to the park, and is the main reason the park is in existence today.