Effect of Off-Road Vehicles in Canyon.
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Introduction

This paper is about how off-road vehicles can damage the environment and cause erosion. Riding off-road vehicles can be fun at times, but if you go off of the designated trail/road, then you’re causing lots of damage to the area that you’re not supposed to be on. Like if you’re riding in an open field or mountain sides then you’re uprooting the native plants that keep the dirt locked into the ground and prevent erosion. Erosion happens after any plants are uprooted, then the soil becomes loose and then squished together by the wheels of the off-road vehicle.

Why is off-roading a problem?

Whenever people go off-roading they don’t know the damage that they cause to the environment. By using any vehicle to go off-roading it could result in soil loss, damage to fish habitats like streams or lakes. Off-roading could also cause soil compaction and serious effects on plant regeneration. Soil compaction is when the soil is crushed together and doesn’t allow water or air to get to the roots of the plants causing them to die. Degradation of trails, including rutting and breakdown of any trail edges is another effect. Another danger of off-roading is the damage to any archaeological, scientific, historical, and other significant sites, and damage to natural features. This sometimes can cause irreversible effects, especially on rare features of interest in scientific studies. One danger of off-roading is that it causes excessive noise that could, in close proximity, result in physiological damage on animals and humans, and may induce anxiety, that could alter animal’s behavior patterns. Physiological means consistent with the normal functioning of an organism. In some circumstances, it could seriously downgrade the solitude of wild areas.

Some people don’t know that off-road vehicles exert two stresses on the lands that they traverse: shear stress that’s parallel to the surface, and compressive stress which is normal to the surface. Shear stress is the external force acting on an object or surface parallel to the slope. Compressive stress is when an object squishes another object that is perpendicular to the shear stress. The direct impact on vegetation caused by vehicles includes crushing of the foliage, root systems, and seedlings by the off-road vehicles wheels. When people go off-roading what they don’t know is that they are uprooting small plant cover and also disturbing root systems that are from larger plants that’s caused by shear stress induced in the soil. Also in addition, plant foliage and stems can be seriously damaged or uprooted by the superstructure of all kinds of vehicles, so that actual plant damage may also occur over an area much larger than the track width. Direct mechanical erosion of soil by vehicles creates notches in the land surface that are deepened and widened by accelerated and channeled runoff for a long period of time.
When erosion happens it could leave deep and wide cracks in the ground that could trap a car or other vehicles in it, and when it rains heavily it could make that crack bigger and wider. Rain on a mountain or a road that has loose soil could cause mud slides that could cover up plants within the area and make roads unstable. When eroded soils find their way to into a stream or lake that’s a town’s water source, it could increase both the sedimentation and turbidity of that waterway. When soil is disturbed by off-road vehicles from time to time it becomes less porous, causing a major decrease in its permeability to both water and air.

**All terrain vehicle ordinance.**

The Morongo Tribal Council has the ability to designate certain places on the reservation as open for ATV use and also some areas as off limits for ATV use. It’s against the law to operate an ATV within an area that is off limits for ATV use. The ordinance did not say which areas are off limit. The Tribal Council can also designate certain hours of when people can use ATVs on the reservation, and also designated a time when you should not ride an ATV. On Morongo it’s against the law to operate an ATV without a safty helmet. Also it’s against the law to operate an ATV with a passanger on board. It’s against the law to work an ATV on Morongo while on paved roads or in an unsafe manner. The set speed limit on the reservation near any home, business, occupied building, campground, or concentration of people or animals shall be 15 mph. In this ordinance it says that it unlawful for everyone including non tribal members to operate an ATV in a manner that could cause malicious damage to the land, wildlife or plants. This ordinance also says that it’s against the law to litter while operating an ATV.

**Off-road motorbike ordinance.**

Motorbikes ridden by tribal members or their decendants shall be allowed on tribal roads and in off-road areas that were designated by the Morongo tribe provided that they are registered with accordance in the ordinance. Motorbikes must be operated during the allowed hours and in areas approved for such use. The hours that you are not allowed to operate a motorbike are from one half hour after sunset to one half hour after sunrise. When people ride in the canyons, motorbike riders shall ride in a manner that will not harm the land or the environment. Tribal members are allowed to have one non-member guest ride with them provided that the guest has registered his or her motorbike in accordance with this ordinance and has received a one day pass to ride in the reservation while accompanied by said tribal member. Non members can aquire the one day pass at the administration building. If a tribal member wants to ride his or her motorbike on the reservation, he or she will have to fill out an aplication that includes this information; owners name, date of birth, current residence, mailing address, the name, make, and model of such vehicle. Tribal members can aquire this application at the administration building.
Erosion problems on Morongo.

On the reservation erosion is happening in the canyon and it’s getting worse. Everytime someone goes up into the canyon they are damaging the mountains that are there. Everytime someone takes an off-road vehicle into the canyon they uproot plants, compact the soil, and also spread the seeds of invasive plant species where ever they go. There are many many invasive plant species that could be sperad by dropping from the under carriage of an ATV or any other off-road vehicles. Some of these invasive plants would include the bull thistle. While up in the canyon I saw the kind of damage that off-road vehicles can cause and here are some examples;

The hill at the bog also known as “Bog Hill” showed some good examples of how much damage erosion can cause. The depth of this is 2ft 1in at point one, and 5ft 9in at point two.

Here is another good example of how much damage erosion can cause to a hill that’s located in Hathaway canyon. The depth of this is a total of 5ft.
Erosion control methods.

Over many years people have tried many ways to control erosion with many devices. Here are some examples of erosion control methods. One erosion control method is to place hay bales in a single row not to exceed 600ft in length and if you need to you can make another row. The hay bales also have to be imbedded into the ground at least four feet deep. I would put the hay bale fence on the side of the road so that it could slow down any water and also slow down some sediment too. If we put the hay bales into wattles it would cost $1800 plus another $50 for stakes. Another erosion control method is silt fencing; the filter fabric should be purchased in a continuous roll and cut to the length of the barrier to avoid the use of joints. I would place the silt fence on the side of the road to keep the erosion on the road to make sure that it doesn’t go anywhere else. The silt fencing would cost around $200 for 500ft. These two examples of erosion control methods are only two of many erosion control methods. Here are some solutions to fix erosion; one solution is that we need to fix the roads that people shouldn’t be riding on. Another solution is by reseeding those extra roads that were made by people on their off-road vehicles. By reseeding the area it would help a lot because it would keep the soil in place and make that area less desirable for people to ride on. Reseeding the area with just grass would cost $140, while reseeding the area with shrubs and other plants it would cost $1,080. The total for all of this would be $2190-$3130. Another solution is that we place water bars on the sides of the roads so that the water then goes to a certain side of the road so that the water could go to a vegetated area that could handle it.

Educating people on erosion.

There are many way to get people’s attention about the dangerous effects erosion can have on the environment. Here are some of the things I would do to help get people’s attention. The first way is to make a public service announcement for the Morongo Public access channel. Another way to get people’s attention about erosion is to put up signs on the side of the road and in the canyon that says “stay on the trails” or “stay on the roads”. Another way to get people’s attention about erosion is to put rocks on the side of the road making it harder and more difficult for people to go off-road in their ATVs and other off-road vehicles. One more way to get people’s attention about erosion is to make a poster about the dangers of erosion and how dangerous riding an off-road vehicle can be on land with a big crevasse in it. One last way to get people’s attention about erosion is to hang up the poster at school, at the community center, and at the environmental department. But after my time here as an intern I
have learned that it is easier to help prevent erosion than to fix it. That way if we prevent it then the canyon will go back to normal.

Conclusion

In conclusion I think that riding off-road vehicles off of the designated paths will continue to destroy our environment and cause erosion to happen faster. Also if we continue to ride off-road vehicles or ATVs at Bog Hill and the other hill, as some people call it Snot Hill, those crevasses will keep getting bigger and will keep losing sediment. By utilizing some of the methods I mentioned in this report then we will be able to restore the hills to what they used to be and help regrow any plant life too.

Work Cited


